IFRS convergence and accounting quality: India a case study

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A R T I C L E   I N F O

A B S T R A C T

This study examines the impact on accounting quality in India after converging Indian generally accepted accounting principles (IGAAP) with International Financial Reporting Standards (IFRS). The converged form of IGAAP is referred as Indian Accounting Standards (Ind AS). Using a pre-and post-IFRS adoption period design, we compare the quality of accounting information reported under IGAAP and Ind AS. Our results show that accounting quality deteriorates immediately after the adoption of Ind AS. In particular, we document that the implementation of IFRS-converged standards results in lower variability in net income, a higher magnitude of discretionary accruals, less timely recognition of losses, and lower value relevance of reported earnings. Subsequent tests suggest that the deterioration in accounting quality ameliorates with the passage of time. The findings of the study suggest that there may be a learning curve for the benefits of IFRS adoption/convergence to diffuse over time through a system. Moreover, simply adopting or converging to IFRS without concurrent changes in institutional and enforcement frameworks may not result in improvements in accounting quality, especially in countries with weak regulatory jurisdictions. Consequently, more attention needs to be paid to implementation and diffusion issues, such as integrating IFRS intentionally in the University curriculum and providing workshops and continuing education courses to improve stakeholder familiarity with IFRS. Improvements in the institutional structures of financial reporting should also be implemented.

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1. Introduction

Since the first serious attempts to promote a single set of high-quality accounting standards at the turn of the century, the widespread adoption of International Financial Reporting Standards (IFRS) has been nothing short of remarkable. Over 140 countries permit IFRS for domestic listed companies representing more than 85% of all jurisdictions in the world (Foundation, 2018). The case for IFRS adoption has been made based on both the capital market and real outcomes accruing to adopting firms and countries. While several studies focusing especially on the developed countries have documented several benefits (e.g., improved transparency, higher accounting quality, better comparability of financial reports, lower cost of capital, better investment decisions, increased following by foreign analysts, and cross border investment), the euphoria of the earlier years has been replaced by a more critical assessment of the evidence collected so far. Central to this reexamina-

tion is the question of whether some part of the documented benefits captured by extant studies may be driven by the concurrent improvements in the institutional and enforcement frameworks in adopting countries and not the adoption of IFRS per se (Ball, 2016; De George, Li, & Shivakumar, 2016; Leuz & Wysocki, 2016). Moreover, the bulk of the literature on IFRS adoption has focused on developed countries that have stronger legal enforcement mechanisms and where firms have higher incentives to be transparent.

Research on IFRS adoption in emerging economies is much more limited and has yielded mixed results (Samaha & Khlif, 2016). Similar to the literature on developed countries, several studies document the benefits of IFRS adoption in developing countries, including improved share turnover (Bova & Pereira, 2012), lower cost of capital (de Moura, Altuwaijri, & Gupta, 2020), the higher value relevance of accounting information (Alali & Foote, 2012; Outa, Ozili, & Eisenberg, 2017; Trimble, 2018), and improved earnings quality (Liu, Yao, Hu, & Liu, 2011; Melgarejo, 2017). Wijayana and Gray (2019), however, caution that cultural influences and the degree of accounting standards enforcement are still significant in explaining international differences in accounting quality and earnings management. Moreover, several studies (e.g., ; Badu & Appiah, 2018; Cang, Chu, & Lin, 2014; Ebaid, 2016; Mongrut & Winkelried, 2019) have documented little or negative impacts arising from the adoption of IFRS in developing countries. The evidence on economic consequences in developing countries is limited (Samha & Khlif, 2016) and interpretation is hampered due to differences in research designs and institutional settings in the countries and/or regions studied.

The purpose of the current study is to examine the impact of IFRS converged standards on accounting quality in India. We focus on accounting quality for several reasons. First, one of the philosophies behind the adoption of IFRS-based standards is to improve the quality of accounting information as the quality of accounting information largely depends upon the quality of the accounting standards chosen by firms (Naomi & Kevin, 2007). One of the stated objectives of the International Accounting Standards Board (IASB) is to improve accounting quality (International Accounting Standards Committee (IASC), 1989; Barth, Landsman, & Lang, 2008). Second, understanding the impact of mandatory adoption of IFRS on the properties of accounting numbers should be of interest to regulators and standard-setters of countries that have adopted or are contemplating the adoption of IFRS (Ahmed, Neel, & Wang, 2013). Third, it is important for market participants to understand the impact of IFRS adoption on accounting quality to help them reevaluate how they use accounting numbers in their decisions.[1]

India is an interesting case study from several standpoints. First, unlike most other countries, India opted to substantially converge its national Generally Accepted Accounting Principles (GAAP) to IFRS rather than go for a 'big bang' adoption.[2] Convergence requires aligning national standards with IFRS over many years rather than a one-time wholesale switch to IFRS. Second, India is one of the major emerging economies of the world with a growing private sector. In 2018–19, India received $64.4 billion Foreign Direct Investment (FDI) flows into its economy making it one of the top ten destinations for FDI during that period (World Economic Outlook Report, International Monetary Fund (IMF), 2019). As such attracting foreign investments is a top priority for the economic agenda of the country. Lastly, while India has a long tradition of public companies and active stock markets, corporate governance, regulatory, and institutional arrangements are still evolving.

Partly, due to its fragmented regulatory system, India took considerable time to formulate its accounting framework in line with IFRS. Part of the challenge stemmed from the existence of multiple bodies with varying powers and responsibilities for standard-setting and implementation of standards. The Institute of Chartered Accountant of India (ICAI), a private body, through its committee the Accounting Standard Board (ASB) sets accounting standards. However, the implementation of the standards requires the support of the Securities Exchange Board of India (SEBI), an autonomous stock market regulator, and ultimately the approval of the Ministry of Corporate Affairs (MCA), the nodal ministry for implementation of standards. The ICAI as far back as 2007 recommended harmonization of Indian accounting standards with IFRS, and the MCA acting on the advice of the ICAI made it mandatory for listed companies with a turnover (sales) of INR 10 billion (US$ 146 million)[3] effective 2011–12. However, the implementation date was deferred pending resolution of several issues including taxation, accounting regulatory framework, concerns over training, and implementation costs (Sharma, Joshi, & Kansal, 2017). In 2015, MCA released a roadmap of 39 IFRS-converged standards called Indian Accounting Standards (Ind AS) to be implemented in a two-phased approach from 2016 through 2018 using net worth thresholds.

This phased implementation of Ind AS provides a unique setting to compare and validate the results of the study. Analyzing two phases provides some confidence that the impact of Ind AS on accounting quality captured in the study is the result of the adoption of Ind AS and not any concurrent and complementary changes taking place during the transition phase, such as enforcement changes, changes in the legal system or regulatory frameworks, economic shocks, and institutional change. Moreover, the phased implementation allows us to test whether there is a learning element involved by comparing the firms required to adopt Ind AS in phase one (two years experience) versus firms that adopted Ind AS in phase two (one year experience). As suggested by several studies (e.g. Ahmed et al., 2013; Leuz & Wysocki, 2016; Ball, 2016), it may take

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[1] By examining the impact of mandatory adoption of IFRS on accounting quality directly, we provide evidence whether this is a likely explanation for the conjecture put forward for enhanced economic consequences documented by the extant literature. Tests of economic consequences that are predicated on market efficiency are problematic in emerging countries. Morck, Yeung, and Yu (2000) document high price synchronicity in emerging countries suggesting less firm-level information is capitalized into stock prices. Barring our proxies for earning timeliness and value relevance of earnings, our other accounting quality measures do not incorporate market price information unlike tests of economic consequences in which stock market information play a central role.

[2] China, Japan, and the US are other significant countries that have opted to go the convergence rather than the one-time adoption route. The US has, however, halted its formal convergence project.

[3] We use an exchange rate of 1INR = .0146US$ to convert all INR amounts to US$ to simplify the exposition.

time for firms and stakeholders to become familiar with the new standards and for their impact to fully diffuse and percolate throughout the system.[4]

There is a growing recognition among researchers that reporting quality is not only determined by accounting standards, but also by the firm's reporting incentives that are shaped by many country and firm-level factors. These factors include a country's legal system, its enforcement framework, capital market development, a firm's governance structure, and its operating characteristics (Ball, 2016; Ball, Robin, & Wu, 2003; De George et al., 2016). For example, Ball et al. (2003) find that although accounting standards in four East Asian countries (Hong Kong, Malaysia, Singapore, and Thailand) are comparable with those with common law bases (UK GAAP, US GAAP, and International Accounting Standards (IASs)), their financial statements are of lower quality. Similarly, Daske, Hail, Leuz, and Verdi (2008) and Byard, Li, and Yu (2011) find that capital market outcomes surrounding the mandatory adoption of IFRS are weaker, or even non-existent, in countries with weaker legal regimes and reporting incentives. The deep-rooted political and institutional factors in India (i.e. extent and nature of government involvement in the economy, legal system, securities regulation, regulatory bodies, and depth of financial markets) affect the implementation of regulatory changes. Moreover, India is characterized as a country with weak corporate governance and limited investor protection rights (Narayanaswamy, Raghunandan, & Rama, 2012). Also, the implementation of Ind AS has been challenging because of a fragmented regulatory system characterized by multiple regulators. Therefore, the impact of convergence to IFRS on accounting quality is an open question in a country that lacks the infrastructure for monitoring managers' financial reporting decisions.

The convergence approach adopted by India, compared with a 'big bang' adoption chosen by most countries, also comes with its pros and cons. On the one hand, a convergence approach theoretically provides a country and its companies more time to adapt to a new set of accounting standards. However, on the other hand, it may not foster the same sense of urgency to prepare for a different accounting framework as under a full one-time switch to IFRS adoption effected by a specified date. The Indian convergence experience with its many fits and starts seems to embody the later situation. Moreover, there is also a danger of more carve-outs to be retained under a convergence approach where individual domestic accounting standards are considered and modified to bring them in alignment to comparable IFRS rather than in a 'big bang' adoption where IFRS is generally adopted in full to replace domestic accounting standards. Significant carve-outs have the potential to limit the usefulness of IFRS (Ball, 2016).

Additionally, most studies have examined the immediate impact of IFRS adoption using limited post-adoption data. Adoption or convergence to IFRS may involve significant learning and, hence, the short and long-run effects may differ (Ball, 2016). Learning and behavioral theories of change recognize that decisions to change are dependent on willingness to change, awareness of the need to change, and perceived capacity to change effectively (Zahra, Sapienza, & Davidsson, 2006). There are costs involved in devising new capabilities and reconfiguring existing capabilities that are dependent on an organization's existing knowledge base, timeline, and support. It may take time for the changes to diffuse and percolate throughout the system. Post-adoption impacts that are documented in the short term, hence, may not persist as implementation guidance improves and stakeholder familiarity with IFRS standards increases (Ahmed et al., 2013).

This study investigates whether the convergence of domestic accounting standards (Indian GAAP) with IFRS enhances the quality of accounting information disclosed by Indian firms in their financial statements. In general, the results of this study indicate that convergence to IFRS is negatively associated with accounting quality. Specifically, the study documents that firms exhibit lower variability in net income, a higher degree of discretionary accruals, lower sensitivity of earnings towards bad news as compared to good news, and lower relevance of reported earnings to explain stock prices after the adoption of IFRS-converged standards. Additional tests indicate that the deterioration in accounting quality ameliorates with the passage of time, suggesting a learning curve for the benefits of IFRS adoption/convergence to diffuse over time through a system. Moreover, our findings suggest that simply adopting or converging to IFRS without strong implementation guidance, training programs to enhance stakeholder familiarity with the new standards, and possibly concurrent changes in institutional and enforcement frameworks, may not result in improvements in accounting quality - especially in countries with weak regulatory jurisdictions.

This study contributes to the accounting literature in several ways. First, it extends the accounting literature regarding the impact of IFRS adoption in emerging countries by examining whether accounting quality improved with the adoption of IFRS convergent standards in India, a leading developing nation. Second, by exploiting the phased implementation of the Ind AS, the study uses a research design to examine the impact of Ind AS on accounting quality. In additional tests, we also use a difference in difference design to validate our results while controlling for the impact of any concurrent and complementary changes taking place during the transition phase. Our study is one of the first to provide evidence regarding learning effects related to IFRS adoption/convergence. The results of the study suggest that like any other innovation, IFRS convergence may need some time to take hold. Concomitant changes in training and education of accountants and users, which take time, may be necessary before the benefits of IFRS convergence can be realized. The study also underscores the importance that mere adoption of high-quality standards may not lead to improved accounting quality in a country without the presence of strong institutional and enforcement frameworks. Thus, countries should not only commit to the adoption of IFRS but also to

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[4] We thank an anonymous reviewer for encouraging and providing us with very constructive suggestions to pursue this line of inquiry. Also since our original submission, an additional year of data became available, which enabled us to extend our study to capture learning effects.

strengthening elements of their institutional infrastructure and enforcement regime. Lastly, this study serves as a case study for other emerging countries that are either considering adopting IFRS or have adopted IFRS without realizing its benefits.

The remainder of the paper is organized as follows. Section 2 discusses the institutional framework, corporate governance, and accounting standard-setting framework in India. Section 3 discusses the relevant literature leading to hypotheses development. Section 4 discusses the methodology and the research design to test the impact of the adoption of Ind AS on accounting quality. The sample selection and descriptive statistics are discussed in Section 5. Section 6 presents empirical results and covers the discussion on robustness measures. Section 7 concludes the article with a discussion of results and limitations.

2. Indian financial reporting framework

The Indian financial reporting landscape is characterized by multi-layered legislative and institutional frameworks. The Companies Act, 1956 (Act) is a comprehensive code that regulates the operation of companies and also prescribes the mechanism for issuance of accounting standards for all Indian listed companies. Besides the requirements of the Act, public companies listed on the stock exchange must also comply with the regulations and guidelines of the SEBI. SEBI requirements are to be followed by the companies listed on both Indian stock exchanges, namely the Bombay Stock Exchange (BSE) and National Stock Exchange (NSE). Hence, the Act and the SEBI requirements together provide the legal framework of corporate reporting in India. A major shortcoming of the legal framework is that it does not provide for shareholder class action lawsuits, and in practice lawsuits against auditors are also rare. Additionally, the court system in India is extremely clogged and cases take many years to resolve, which provides another disincentive for stakeholders to bring a lawsuit against a company. As a result, an important disciplinary mechanism of corporate governance is absent in the Indian context.

ICAI is the premier accounting body in the country. In 1977, the ICAI established the ASB as an advisory board for the formulation of accounting standards and the development of a sound financial reporting environment in the country. Until 1997, there was no statutory backing of accounting standards in India. However, in 1998, the Companies (Amendment) Ordinance, was promulgated that gave statutory recognition to accounting standards and required the auditor to report on compliance with accounting standards. Subsequently, the Companies (Amendment) Act, 1999 was passed in the parliament, which gave legal status to the Companies (Amendment) Ordinance, 1998. This ordinance also provides for the constitution of the National Advisory Committee on Accounting Standards (NACAS), which is empowered to formulate accounting policy and accounting standards with the consultation of ICAI.

To increase the acceptability and transparency of financial statements of Indian companies in the global markets, ICAI recommended a convergence of the existing Indian accounting standards to IFRS. ICAI initiated the process of convergence in 2006. ASB formulated the new accounting standards, Ind AS, to align with IFRS. ICAI issued Ind AS in consultation with NACAS. NACAS recommended these standards to the Ministry of Corporate Affairs (MCA). MCA through its notification on February 16, 2015, issued the Ind AS. MCA also laid down an implementation road map for corporations and financial services entities, mandating the adoption of Ind AS in a phased manner. In the first phase, these standards are mandatory from April 1, 2016, for all listed and unlisted firms with a net worth of INR 5 billion (US$ 73million) or more. In the second phase, all other listed firms, as well as unlisted firms with a net worth of INR 2.5 billion (US$ 37 million) crores or more, are required to follow Ind AS from April 1, 2017, onwards. Thus, standard-setting in India requires timely coordination between various parts of the Indian legislative and regulatory framework.

2.1. Corporate governance

The substantive rules and the recent reforms pertaining to corporate governance in India suggest a relatively strong and evolving corporate governance framework. However, constraints related to the enforcement of rules, the overall strength of the legal system, the lack of market disciplinary forces, and the corporate cultures bring about a significant divergence in practice. Narayanaswamy et al. (2012) provide a comprehensive overview of corporate governance in India.

As in other emerging countries, family-owned firms are common in India, and pyramidal and cross-holding structures often allow controlling owners (known as promoters) to maintain tight control over the firm even when holding a relatively low equity investment in the firm. Family control typically involves the significant presence of family members on the board and in management. This gives rise to the classic problems of expropriation of minority interests and the potential for misappropriation of funds (e.g., tunneling). India experienced an Enron moment when the larger than $1bn fraud perpetrated by the chairman and founder of Satyam, one of the country's biggest IT outsourcing firms, came to light in 2009. The country's biggest corporate scandal pointed to serious lapses in the accounting, auditing, and corporate governance of the company.

Following the scandal, the country took steps to improve corporate governance. This included strengthening board independence, rotating audit firms and partners, and instituting a whistleblowing mechanism - but it takes time for good corporate governance to take roots. Clause 49 of the listing agreement of SEBI details the various corporate governance attributes that firms are required to disclose, including board structure, ownership structure, related party transactions, internal and external audits, and compensation structure. The new Companies Act of 2013 reinforces a set of well-defined corporate governance norms that listed companies must follow. The enforcement of corporate governance norms, however, has faced challenges in India due to weak market-disciplining mechanisms and inadequate enforcement machin-

ery. Market-based disciplining mechanisms, such as institutional investors, activist bondholders, hedge funds, shareholder class action suits, and the threat of takeover, are virtually absent in the Indian setting. Moreover, lax enforcement and insignificant monetary penalties coupled with an overburdened court system mean that regulations and the law are not a major deterrent for corporate misconduct (Narayanaswamy et al., 2012).

3. Literature review and hypotheses development

Proponents have long argued that IFRS is a single-set of high-quality standards and their mandatory adoption would provide significant benefits for both adopting countries and firms. Several studies have documented the favorable economic consequences of mandatory IFRS adoption. Prior studies found that the adoption of IFRS-based standards improves market liquidity (Daske et al., 2008), reduces information asymmetry (Leuz, 2003), lowers the cost of equity capital (de Moura et al., 2020; Li, 2010), improves analysts' information environment (Horton, Serafeim, & Serafeim, 2013), and results in a positive stock reaction around IFRS adoption (Armstrong, Barth, Jagolinzer, & Riedl, 2010). However, a growing debate in the literature is whether the economic consequences documented in earlier studies are a result of improvements in accounting quality or concurrent changes in capital market regulations, enforcement mechanisms, and corporate governance norms when countries adopted IFRS.

Ahmed et al. (2013), using a broad sample of 20 countries that adopted IFRS and exploiting a difference-in-difference design that controlled for country-level enforcement and firm-level characteristics, find that mandatory adopters exhibit greater income smoothing, greater earning aggressiveness, and more delayed recognition of losses. They do not find evidence consistent with meeting or beating earnings targets, but their evidence taken together suggests a decrease in accounting quality after mandatory IFRS adoption. Furthermore, their results hold mainly for IFRS adopters in strong enforcement countries. They conclude that accounting quality is unlikely to explain the positive economic consequences of IFRS adoption documented by earlier studies. Krishnan and Zhang (2019), in a controlled study, compare earnings quality between earnings under Canadian GAAP (CGAAP) and IFRS. They find that IFRS earnings are less value-relevant and less persistent relative to CGAAP.

Similarly, some country-specific studies have also yielded contradictory results concerning the impact on accounting quality as a result of adopting IFRS. Paananen and Lin (2009) document a decrease in accounting quality among German companies from 2000 to 2006, a period covering the IFRS adoption phase. Lin, Riccardi, and Wang (2012), based on a sample of German high-tech firms that transitioned to IFRS from US GAAP, find that accounting quality decreased after the switch, with IFRS numbers exhibiting more earnings management, less timely loss-recognition, and lower value-relevance.

Research in developing countries on the impact of accounting quality as a result of IFRS adoption is more limited. Most studies directly examined the value relevance of accounting information and not accounting quality per se - the channel through which value relevance of accounting supposedly improves. Alali and Foote (2012) document the value relevance of accounting information under IFRS in the Abu Dhabi Stock Exchange. Similarly, Outa et al. (2017) find that accounting information prepared under revised and converged IFRS display higher value relevance for a sample of listed firms in East Africa. Melgarejo (2017) examines both accounting quality and value relevance for a sample of firms from Latin America following the adoption of IFRS and documents that both earnings quality and the informativeness of accounting numbers improved. Trimble (2018) using discontinuities in earning distributions investigates the impact of mandatory IFRS adoption in 46 countries and finds an increase in accounting quality for both EU and non-EU countries, although the increase is more pronounced in developing non-EU countries.

However, Ebaid (2016) documents that in Egypt accounting quality as measured by earnings management decreases in the post-IFRS adoption period. Similarly, Badu and Appiah (2018) find that the value relevance of accounting information declined following the introduction of IFRS in Ghana. Meanwhile, Wijayana and Gray (2019) use a cross-cultural design encompassing 17 countries in the Asian Pacific region. They document that IFRS convergence is associated with reduced levels of earnings management, however, they also find that culture and the degree of accounting standards enforcement remain significant and persistent factors in influencing differences in earnings quality internationally.

The most relevant papers for our study are Liu et al. (2011) and Cang et al. (2014), as they examine earnings quality following the adoption of IFRS standards in China. The Chinese experience is relevant to the Indian setting because both countries followed a strategy of convergence rather than the one-time adoption of IFRS. Liu et al. (2011) document that generally accounting quality improves with decreased earnings management and increased value relevance of accounting measures in China following IFRS convergent accounting standards in 2007. Cang et al. (2014) examine the interaction of external corporate governance mechanisms and high-quality accounting standards (IFRS adoption) on earnings management behavior in China. They find that the adoption of IFRS in China provides new opportunities for managers to manage earnings, but does not improve the monitoring effect of analyst coverage. Similar to studies in the developed nations, the evidence of the impact of accounting quality in emerging economies as a result of IFRS adoption is also mixed.[5]

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[5] Samaha and Khlif (2016) provide a good overview of research on the economic consequences of IFRS adoption in developing countries.

3.1. Hypotheses development

The objective of IFRS is to provide "a single set of high quality" accounting standards, but there is no consensus on what "high quality" means (Ball, 2016). Broadly speaking, we take "high-quality standards" to mean standards that reflect the economic underlying rather than the legal form, reduce managerial discretion over accounting choices that restrict the smoothing or overstating of earnings, and increase the timely recognition of losses and gains. However, high-quality standards may not automatically translate to high accounting quality, as reporting quality is determined not only by the quality of accounting rules, but also by manager reporting incentives and other elements on a country's institutional infrastructure, such as the efficacy of enforcement mechanisms, corporate governance, and the legal system. Thus, it is not clear whether changing one element, such as accounting standards, would necessarily lead to improved accounting quality.

Proponents of IFRS point to several reasons why the adoption of IFRS may improve accounting quality. IFRS-based accounting standards eliminate or reduce allowable accounting alternatives thereby reducing managerial discretion (Barth et al., 2008). Any changes to the extent of managerial discretion allowed under the accounting standards may change the degree of manipulation of earnings. Ashbaugh and Pincus (2001) find that constraining accounting alternatives may constrain managers' opportunistic discretion in determining accounting amounts and, thus, will increase earnings quality. In the same vein, Ewert and Wagenhofer (2005) document that limiting managers' opportunistic discretion can increase the extent to which accounting numbers reflect a firm's underlying economics.

Second, IFRS permits accounting measurements, such as the fair value, that may better reflect the underlying valuation than domestic standards and make IFRS balance sheet and earnings more informative. Advocates of fair value accounting argue that fair value implies more value-relevant accounting information to investors and more accurately represents real volatility (e.g., Laux & Leuz, 2009). Barth (2018) noted that a reasonable number of researchers indicate that fair values are more relevant to the user's decision-making than historical cost-based amounts. Moreover, greater use of fair value accounting also leads to the recording of economic gains and losses in a more timely manner. The conservatism principle (prudence) is rigidly followed under Indian GAAP where "accounting is done for all future losses but not for future gains." Earnings reported are said to have more timeliness if they can capture the effect of all future losses but not future gains. Basu (1997) documents that earnings reflect bad news (negative returns) more quickly than good news (positive returns). Fair value accounting under IFRS-based standards is expected to recognize economic gains and losses in a timely fashion.

On the flip side, as IFRS are regarded as more principle-based standards, they lack detailed implementation guidance which provides more opportunities for managers to manage earnings thereby reducing accounting quality. Principles-based standards provide more flexibility and leave room for interpretation, especially in the absence of detailed implementation guidance. Second, IFRS may eliminate some accounting alternatives that may be more appropriate to capture the underlying economics of business, especially in a country's unique institutional setting, leading to an erosion in accounting quality. Third, as discussed earlier, the impact of IFRS implementation depends on the country's institutional factors, including the legal system, enforcement mechanisms, reporting framework, and corporate governance. Two IASB surveys reveal variations across countries in the version of IFRS formally adopted, in the selection by companies of optional treatments under IFRS, and in the level of enforcement in different jurisdictions, which all point to questions regarding reporting quality and comparability across countries (Nobes, 2006, 2013).

In the context of India and its choice to follow a convergence rather than a one-time adoption strategy, it is possible that IFRS reporting involves significant learning, and time is needed for these new standards to diffuse through the system to make an impact. Dynamic capabilities theory (Eisenhardt & Martin, 2000; Nelson & Winter, 2002; Teece, Pisano, & Shuen, 1997; Zahra et al., 2006) suggests that firms need the ability to integrate, build, and reconfigure internal and external competencies for addressing the rapid changes that occur in the external environments. There are costs involved in developing new capabilities and reconfiguring existing ones. Due to the costs and change process, all organizational changes or learning may not result in positive performance outcomes at the outset. Leveraging dynamic capabilities theory, we argue that the adoption of IFRS in India requires timely coordination between various aspects of the Indian legislative and institutional framework for accounting and auditing. Moreover, firms face several issues, such as awareness, training, cost, interpretation, infrastructure, and staffing, that are perceived as challenges for firms during the IFRS implementation process in India (Dhankar & Gupta, 2014). As a result, the benefits of IFRS, such as improved accounting quality, may take some time to be realized.

Moreover, the final Ind AS includes several carve-outs from IFRS to accommodate the unique conditions in India. Prominent areas of differences between IFRS and Ind AS persist in accounting for business combinations, financial instruments, leasing, revenue recognition, fair value accounting, and bargain purchase accounting (Uzma, 2016; Verma, 2018). Carve-outs are less than desirable because they point to uneven adoption of IFRS across countries, potentially negating the "comparability" benefits of a uniform standard and compromising accounting quality. In Appendix A, we provide a comparison of IGAAP, IFRS, and Ind AS in the areas where there exist carve-outs and differences with IFRS post-convergence.

Given the competing arguments and the mixed evidence, we formulate non-directional hypotheses to examine the impact of IFRS convergent standards, Ind AS, on accounting quality.

H: Accounting quality does not change after the implementation of IFRS-converged standards (Ind AS).

Following extant literature (e.g., Leuz, Nanda, & Wysocki, 2003; Barth et al., 2008, Ahmed et al., 2013), we operationalize accounting quality using four constructs (earnings smoothing, level of discretionary accruals, earnings timeliness, and value relevance of earnings), leading to four sub- hypotheses.

H1: The degree of earnings smoothing does not change after the implementation of IFRS-converged standards (Ind AS).

H2: The level of discretionary accruals does not change after the implementation of IFRS-converged standards (Ind AS).

H3: Earnings timeliness of profits does not change after the implementation of IFRS-converged standards (Ind AS).

H4: Value relevance of earnings does not change after the implementation of IFRS-converged standards (Ind AS).

4. Research design

4.1. Research design for pre-adoption and post-adoption periods

To test our predictions, we use a pre-Ind AS and post-Ind AS research design. We define the financial/fiscal year (FY) 2014–15 as the pre-adoption period and FY 2017–18 as the post-adoption period.[6] Additionally, to capture any learning effects, we also alternatively define the post-adoption period as FY 2018–19. We label FY 2017–18 as post-adoption period 1 and FY 2018–19 as post-adoption period 2. We run all tests using both alternative post-adoption periods.

4.2. Accounting quality measures (proxies) and empirical tests

We use four measures to capture accounting quality: earnings smoothing, discretionary accruals, earnings timeliness, and value relevance of earnings. Higher accounting quality is associated with lower earnings smoothing, the smaller magnitude of discretionary accruals, timely recognition of losses, and greater value relevance of earnings. To isolate the impact of Ind AS adoption on accounting quality, we include control variables associated with accounting quality in our models. These variables include the size of the firm (*Size*), degree of financial leverage (*LEV*), turnover (*Turn*), capital structure (*Eissue and Dissue)*, operating profitability (*CFO*), the free float of common stock (*FF*), and growth opportunities (*Growth*) (See Appendix B for the full list of variables and definitions).

4.2.1. Measurement of earnings smoothing

Earnings smoothing is a well-established practice under which managers manipulate their bottom-line earnings to avoid reporting fluctuating earnings. Following prior studies (Ahmed et al., 2013; Barth et al., 2008; Lang, Smith Raedy, & Wilson, 2006), we employ three different metrics to measure earnings smoothing. The first metric is the variability of change in net income, denoted by *VAR ΔNI**, where *ΔNI** is measured as residuals obtained from Eq. (1). In Eq. (1), a change in net income (*ΔNI*) is regressed with economic determinants of net income volatility. We run Eq. (1) separately for pre-and post-Ind AS adoption years and compare the variances of residuals obtained. We expect larger (smaller) *VAR ΔNI** if the adoption of Ind AS decreases (increase) earnings smoothing practices of managers.

$$\Delta NI_{it} = \beta_0 + \beta_1 Size_{it} + \beta_2 Growth_{it} + \beta_3 Eissue_{it} + \beta_4 Dissue_{it} + \beta_5 Turn_{it} + \beta_6 LEV_{it} + \beta_7 CFO_{it} + \beta_8 FF_{it} + \varepsilon_{it} \qquad (1)$$

where, *ΔNI* is change in net income scaled by total assets; *Size* is measured as the natural algorithm of total assets; *Growth* is measured as a percentage change in sales from period *t* to *t + 1*; *Eissue* is measured as the percentage change in shareholder's fund; *Dissue* is the percentage change in total outside liabilities; *Turn* is sales scaled by total assets; *LEV* is the proportion of total outside liabilities to total assets; *CFO* is net cash flow from operating activities scaled by total assets; *FF* is free float measured as the proportion of shares traded to shares outstanding at year-end. The subscript *i* and *t* denote firm and year, respectively. Residuals (ε_{it}) measures our main test variable (*ΔNI**).

Firms are known for using accruals to smoothen their cash flows (Ahmed et al., 2013). Hence, any change in the cash flows affects the net income of the firm. Accordingly, following prior studies (Barth et al., 2008; Lang et al., 2006), we use the ratio of the variability of change in net income to the variability of change in operating cash flows as the second metric to measure earnings smoothing practices of firms. The variability of change in net cash flows from operating activities *(VAR ΔCFO*)* is measured similarly as *ΔNI**. We replace *ΔNI* in Eq. (1) with *ΔCFO* as shown in Eq. (2). We run Eq. (2) separately for pre-and post-Ind AS adoption year for computing *ΔCFO**. *VAR ΔNI** will be less than *VAR ΔCFO** if firms use accruals to smooth cash flows while reporting net income. Accordingly, the lower (higher) ratio of *VAR ΔNI** to *VAR ΔCFO** implies an increase (decrease) in earnings smoothing practices.

$$\Delta CFO_{it} = \beta_0 + \beta_1 Size_{it} + \beta_2 Growth_{it} + \beta_3 Eissue_{it} + \beta_4 Dissue_{it} + \beta_5 Turn_{it} + \beta_6 LEV_{it} + \beta_7 CFO_{it} + \beta_8 FF_{it} + \varepsilon_{it} \qquad (2)$$

where *ΔCFO* is change in net cash flow from operating activities scaled by total assets. Other variables are defined above and in Appendix B. Residuals (ε_{it}) measures our main test variable (*ΔCFO**).

If firms are using more accruals to respond to poorer cash flows, then there should be a negative association between accruals and cash flows. We use Spearman's correlation between the net cash flow from operating activities (*CFO**) and total accruals (*ACC**) as our third measure of earnings smoothing, where *CFO** and *ACC** are measured as residuals from Eqs. (3) and (4), respectively. A larger negative correlation is indicative of greater earnings smoothing. If the adoption of Ind AS reduces the likelihood of earnings smoothing behavior, then a reduction in the magnitude of negative correlation is expected.

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[6] While the first mandated adoption became effective April 1, 2016, firms were allowed to voluntarily adopt Ind AS effective April 1, 2015. To avoid any contamination due to voluntary adoption, we consider the financial year (FY) 2014–15 as the pre-Ind AS adoption year, when all firms prepared their financial statements as per domestic GAAP.

$$CFO_{it} = \beta_0 + \beta_1 Size_{it} + \beta_2 Growth_{it} + \beta_3 Eissue_{it} + \beta_4 Dissue_{it} + \beta_5 Turn_{it} + \beta_6 LEV_{it} + \beta_7 FF_{it} + \varepsilon_{it} \tag{3}$$

$$ACC_{it} = \beta_0 + \beta_1 Size_{it} + \beta_2 Growth_{it} + \beta_3 Eissue_{it} + \beta_4 Dissue_{it} + \beta_5 Turn_{it} + \beta_6 LEV_{it} + \beta_7 FF_{it} + \varepsilon_{it} \tag{4}$$

where ACC is total accruals, measured as the difference between net income and CFO. All other variables are defined in Appendix B. Residuals (ε_{it}) of Eqs. (3) and (4) measure our main test variables CFO^* and ACC^*, respectively.

In sum, we expect higher $VAR\ \Delta NI^*$, a higher ratio of $VAR\ \Delta NI^*$ to $VAR\ \Delta CFO^*$, and a lower negative correlation between CFO^* and ACC^*, if the adoption of Ind AS results in constraining earnings smoothing practices of firms.

4.2.2. Measurement of discretionary accruals

Following prior studies such as Klein (2002) and Ahmed et al. (2013), we use discretionary accruals as a measure of accounting quality. To inflate (deflate) current-period earnings, managers bring (push) future (current) earnings to current (future) earnings by making use of discretionary accruals. We estimate discretionary accruals through performance-adjusted modified Jones model (Kothari, Leone, & Wasley, 2005), where total accruals are modeled as a function of change in sales adjusted for change in accounts receivables, the level of plant, property, and equipment, and return on assets as shown in following Eq. (5):

$$\frac{ACC_{i,t}}{AT_{i,t-1}} = \varnothing_1 \left(\frac{1}{AT_{i,t-1}} \right) + \varnothing_2 \frac{(\Delta REV - \Delta REC)_{i,t}}{AT_{i,t-1}} + \varnothing_3 \frac{PPE_{i,t}}{AT_{i,t-1}} + \varnothing_4 ROA_{i,t} + \varepsilon_{i,t} \tag{5}$$

where ACC denotes the total accruals, measured as the difference between NI and CFO; AT is the total assets of the firm, ΔREV is change in revenue from operations; ΔREC is change in accounts receivables; PPE represents gross value of plant, property, and equipment; ROA is the return on assets. All variables are scaled by lagged total assets to overcome the problem of heteroskedasticity. The inverse of assets ($1/AT$) is used as another control variable that provides additional control for heteroskedasticity that is not alleviated by using total assets as the deflator. The residuals ($\varepsilon_{i,t}$) measures the discretionary component of accruals. Both positive and negative values of discretionary accruals represent earnings manipulation via accruals (Klein, 2002; Bergstresser & Philippon, 2006), hence, we use the absolute value of discretionary accruals ($ADAC$) to capture the magnitude of earnings manipulation. A higher value of $ADAC$ reflects a greater departure of reported earnings from normal earnings and indicates lower accounting quality.

H2 states that the level of discretionary accruals does not change after the adoption of Ind AS. We use Eq. (6) to test this assertion.

$$ADAC_{it} = \beta_0 + \beta_1 IFRS_t + \beta_2 Size_{it} + \beta_3 Growth_{it} + \beta_4 Eissue_{it} + \beta_5 Dissue_{it} + \beta_6 Turn_{it} + \beta_7 LEV_{it} + \beta_8 FF_{it} + \beta_9 CFO_{it} + \varepsilon_{it} \tag{6}$$

where $ADAC$ is the absolute value of residuals obtained from Eq. (6). Our main variable of interest is $IFRS$, an indicator variable that takes a value equal to one for post-adoption values, and zero for pre-adoption values. All other variables are defined above and in Appendix B. We interpret a significantly positive (negative) β_1 as indicative of the increased (decreased) magnitude of discretionary accruals with the adoption of Ind AS.

4.2.3. Measurement of earnings timeliness

We follow Basu's asymmetric timeliness model (1997) for estimating the timely recognition of losses and defining bad (good) news when the current stock return is negative (positive). Accordingly, if the losses are timely recognized, then a strong positive relationship is expected between return and earnings. It implies that more of the earnings information reaches the market in the period of the losses. The model is as follows:

$$EPS_{it} = \alpha_0 + \alpha_1 Ret_{it} + \alpha_2 BAD_{it} + \alpha_3 BAD_{it} * Ret_{it} + \varepsilon_{it} \tag{7}$$

where EPS is earnings per share scaled by the stock price at year-end. Ret is a continuously compounded return. BAD is dummy variable measures the frequency of negative returns, takes value equals one if Ret is negative, and zero otherwise. The coefficient of Ret (α_1) measures the timeliness of good news, referred to as the return response coefficient. The coefficient of BAD (α_2) measures the impact of negative news on earnings. The coefficient of interaction variable - BAD^*Ret (α_3) captures the response of bad news in the form of a negative return concerning good news in the form of a positive return. We expect α_3 to be greater than zero if there will be a high sensitivity of bad news in relation to the good news. We use Eq. (8) to measure the impact of Ind AS on earnings timeliness.

$$EPS_{it} = \alpha_0 + \alpha_1 Ret_{it} + \alpha_2 BAD_{it} + \alpha_3 BAD_{it} * Ret_{it} + \alpha_4 IFRS_t + \alpha_5 IFRS_t * Ret_{it} + \alpha_6 IFRS_t * BAD_{it} + \alpha_7 IFRS_t * Ret_{it} * BAD_{it}$$
$$+ \alpha_8 Size_{it} + \alpha_9 LEV_{it} + \alpha_{10} Growth_{it} + \varepsilon_{it} \tag{8}$$

Our main variable of interest is $IFRS_{it} * Ret_{it} * BAD_{it}$ which is expected to be significant and greater than zero if the adoption of Ind AS enhances earnings timeliness. Other variables are defined above and in Appendix B.

4.2.4. Measurement of value relevance of earnings

Value relevance refers to the ability of accounting measures to capture and summarize firm value. It is another approach to examine accounting quality because firms with higher accounting quality are expected to have a higher ability of earnings to explain the current stock price. There will be a higher association between stock prices and earnings and book value if the

accounting quality is higher. We follow Ohlson's price-earnings model (1995) to examine the value relevance of earnings and express the stock price as a function of earnings per share and book value of equity per share. The test model is as follows:

$$MVPS_{it} = \alpha_0 + \alpha_1 EPS_{it} + \alpha_2 BVPS_{it} + \varepsilon_{it} \qquad (9)$$

where *MVPS* is the natural logarithm of market value per share. *EPS* is previously defined. *BVPS* is the natural logarithm of book value per share. We run Eq. (9) separately for the pre-and-post Ind AS adoption year. The coefficient of *EPS* (α_1) is expected to be higher if the adoption of Ind AS improves the value relevance of earnings. Following prior studies (for example, Cheng, Hsieh, & Yip, 2007; Van der Meulen, Gaeremynck, & Willekens, 2007), we compare the adjusted R-square of Eq. (9) in the pre-and post-adoption periods, where higher adjusted R-sq. implies a greater ability of earnings to explain variation in the market value.

We use model (10) to test H4 that the adoption of Ind AS does not affect the value relevance of earnings.

$$MVPS_{it} = \alpha_0 + \alpha_1 EPS_{it} + \alpha_2 BVPS_{it} + \alpha_3 IFRS_t + \alpha_4 IFRS_t * EPS_{it} + \alpha_5 IFRS_t * BVPS_{it} + \varepsilon_{it} \qquad (10)$$

where *MVPS*, *EPS*, *BVPS*, and *IFRS* are defined previously. Our main variable of interest is *IFRS*EPS* whose coefficient is expected to be positive if Ind AS enhances the value relevance of earnings.

5. Sample and descriptive statistics

5.1. Data collection and sample selection

The data is sourced from the prowess database maintained by the Centre for Monitoring Indian Economy (CMIE). We initiate the analysis with all BSE-listed firms (4817) with the data available for pre-Ind AS year (2014–15) and post-Ind AS periods 1 (2017–18) and 2 (2018–19). We exclude financial firms because they have a different financial reporting framework. We winsorized all the continuous variables at 1% and 99% percentile to remove the effect of outliers. We exclude firms with missing observations for measuring earnings smoothing metrics for post-period 1. So, our primary sample consists of 2,138 firms for testing H1 for period 1. Further, after excluding the firms with missing observations for measuring other proxies during post-period 1, we are left with a final sample of 1,961, 2,042, and 1,826 firms for testing our H2, H3, and H4 (period 1), respectively. After excluding firms with missing observations for measuring metrics for post-period 2, we are left with 2,058, 1,891, 1,967, and 1,739 firms for testing our H1, H2, H3, and H4 (period 2), respectively. Table 1 describes the sample selection process in detail.

5.2. Descriptive statistics

Table 2 presents descriptive statistics of our main test variables and control variables in the pre-and both post-Ind AS adoption years. Among test variables, the mean of change in net income (ΔNI^*), change in cash flows from operations(ΔCFO^*), cash flows from operations (CFO^*), and accruals (ACC^*) is zero both during pre-and post-Ind AS periods, as these are residuals from the regressions. Related to post-period 1, the standard deviation (SD) of ΔNI^* decreases from 0.161 to 0.119 after the adoption of Ind AS. The SD of ΔCFO^* decreases from 0.126 to 0.113 in the post-adoption year. This implies lesser variability in net income and cash flows, and provides us initial evidence of earnings smoothing practices of firms after adopting Ind AS. The average absolute discretionary accruals (*ADAC*) increases from 5% (0.055) to 7% (0.068) of total assets in the post-adoption year. Additionally, the average frequency of losses (*BAD*) reduced from 46% (0.459) to 22% (0.223) in the post-adoption year, showing lower incorporation of bad news in the reporting under Ind AS. It is consistent with the initial evidence of earnings smoothing practices because if earnings are smoothed, then large losses should be relatively decreased.

For post-period 2, the differences with the pre-period for the above-discussed variables are generally in the same direction as post-period 1, however, the magnitude of differences is much smaller. This suggests that the initial evidence on the deterioration of accounting quality observed in post-period 1 is mitigated with the passage of time.

6. Results and analysis

6.1. Tests of the impact of Ind AS adoption on earnings smoothing

Table 3 presents the comparison of our three earnings smoothing metrics between pre-and post-adoption years. For a post-adoption period 1, Table 3 (Column 1) shows that the variability of net income ($VAR\Delta NI^*$) significantly decreased from 0.026 in the pre-adoption period to 0.014 in the post-adoption period, which implies that net income became less volatile after the adoption of Ind AS. It indicates increased earnings smoothing practices among firms. This finding is further confirmed by a fall in the ratio of the variance of net income (ΔNI^*) to the variance of cash flows (ΔCF^*) in the post-adoption year when it is reduced from 1.623 to 1.117. Further, the spearman's correlation between cash flows and accruals (CFO^* and ACC^*) turned more negative. The correlation coefficient is decreased from −0.652 to −0.698 in the post-adoption year. This increased negative correlation implies that firms are more likely to respond to poorer cash flows by making use of accruals. Taken together, our results show significantly lower $VAR\Delta NI^*$ (-0.012), decreased ratio of $VAR\Delta NI^*$ to $VAR\Delta CFO^*$ (-0.506),

Table 1
Sample selection.

Panel A: Primary sample for earnings smoothing	Firms
Initial sample of firms from prowess database	4,817
Less: financial firms	1,106
Less: firms with missing observations for measuring earnings smoothing metrics during 2017–2018	1,573
Sample of firms for testing H1 (period 1)	2,138
Less: firms with missing observations for measuring earnings smoothing metrics during 2018–2019	80
Sample of firms for testing H1 (period 2)	2,058
Panel B: Sample for discretionary accruals	
Sample from panel A above	2,138
Less: firms with missing observation required for performance adjusted Jones model during 2017–2018	177
Sample of firms for testing H2 (period 1)	1,961
Less: firms with missing observations required for performance adjusted Jones model during 2018–2019	70
Sample of firms for testing H2 (period 2)	1,891
Panel C: Sample for earnings timeliness	
Sample from panel A above	2,138
Less: firms with missing observations required for Basu's asymmetric model during 2017–2018	96
Sample of firms for testing H3 (period 1)	2,042
Less: firms with missing observations required for Basu's asymmetric model during 2018–2019	75
Sample of firms for testing H3 (period 2)	1,967
Panel D: Sample for value relevance of earnings	
Sample from panel A above	2 138
Less: firms with missing observation required for Ohlson's price-earnings model during 2017–2018	312
Sample of firms for testing H4 (period 1)	1,826
Less: firms with missing observations required for Ohlson's price-earnings model during 2018–2019	87
Sample of firms for testing H4 (period 2)	1,739

Table 2
Descriptive statistics of control variables in the pre-and post-Ind AS periods.

Test variables	Pre-Ind AS adoption (2014–2015)			Post-Ind AS adoption (2017–2018)			Post-Ind AS adoption (2018–2019)		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
ΔNI	2138	0.004	0.171	2138	0.006	0.124	2058	0.011	0.141
ΔNI^*	2138	0.000	0.161	2138	0.000	0.119	2058	−0.003	0.137
ΔCFO	2138	−0.007	0.169	2138	0.001	0.220	2058	0.002	0.156
ΔCFO^*	2138	0.000	0.126	2138	0.000	0.113	2058	−0.001	0.123
CFO	2138	0.050	0.144	2138	0.066	0.206	2058	0.053	0.120
CFO^*	2138	0.000	0.140	2138	0.000	0.175	2058	0.000	0.118
ACC	2138	−0.026	0.209	2138	−0.035	0.209	2058	−0.025	0.141
ACC^*	2138	0.000	0.194	2138	0.000	0.174	2058	0.000	0.136
Ret	2042	0.043	0.483	2042	0.041	0.608	1967	0.279	0.454
BAD	2042	0.459	0.498	2042	0.223	0.416	1967	0.755	0.429
ADAC	1961	0.055	0.043	1961	0.068	0.092	1891	0.059	0.071
EPS	1826	0.018	0.316	1826	0.134	1.224	1739	0.012	0.249
MVPS	1826	4.485	1.786	1826	4.001	1.731	1739	4.287	1.858
BVPS	1826	3.965	1.439	1826	3.876	1.343	1739	4.035	1.453
Control variables									
Size	2138	7.980	2.084	2138	7.832	2.053	2058	8.049	2.095
Growth	2138	0.281	4.235	2138	0.358	6.310	2058	0.235	2.599
Eissue	2138	−0.039	4.636	2138	0.043	2.235	2058	0.076	4.915
Dissue	2138	0.215	1.402	2138	0.223	3.352	2058	0.154	1.332
Turn	2138	0.999	0.967	2138	1.113	1.082	2058	0.990	0.852
LEV	2138	0.651	0.623	2138	0.624	0.474	2058	0.639	0.625
FF	2138	0.001	0.002	2138	0.001	0.003	2058	0.000	0.002
ΔREV	1961	0.057	0.430	1961	0.070	0.557	1891	0.080	0.376
ΔREC	1961	0.026	0.130	1961	0.022	0.222	1891	0.011	0.099
PPE	1961	0.286	0.212	1961	0.290	0.209	1891	0.276	0.216
ROA	1961	0.021	0.126	1961	0.031	0.121	1891	0.027	0.114

Note: All the variables are defined in Appendix B.

and more negative correlation between *CFO** and *ACC** (0.046) in the post-adoption period. Hence, these results do not support H1 and suggest more earnings smoothing practices among firms after the adoption of Ind AS. These results are consistent with Ahmed et al. (2013), where firms operating in countries with weaker enforcement mechanisms are more likely to be engaged in earnings smoothing practices following the adoption of IFRS-based standards.

Table 3
Comparison of earnings smoothing metrics.

Metrics	Pre-Ind AS adoption year	(1) Post-Ind AS adoption year (period 1)		(2) Post-Ind AS adoption year (period 2)	
	2014–2015 (A)	2017–2018 (B)	Diff 1 (B-A)	2018–2019 (C)	Diff 2 (C-A)
1. VAR ΔNI^*	0.026	0.014	−0.012***	0.019	−0.007*
2. VAR ΔNI^*/ VAR ΔCFO^*	1.623	1.117	−0.506**	1.237	−0.386
3. Correlation (CFO^* and ACC^*)	−0.652	−0.698	−0.046**	−0.587	0.065*

Notes: ΔNI^* and ΔCFO^* are the residuals of equations (1) and (2), respectively where CFO^* and ACC^* are the residuals of equations (3) and (4), respectively. VAR ΔNI^* is the variance of ΔNI^*. VAR ΔNI^*/ VAR ΔCFO^* is the ratio of the variance of ΔNI^* and ΔCFO^*. Correlation (CFO^* and ACC^*) is the Spearman correlation between CFO^* and ACC^*. We test for a significant difference between pre-and post-adoption values using percentile bootstrapping with 1000 replications. ***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed) levels, respectively. See Appendix B for a detailed definition of variables.

When we consider post-adoption period 2, Table 3 (Column 2) indicates that the variance of net income (VAR ΔNI^*) decreases from 0.026 to 0.019 from pre to post-Ind AS period 2, whereas the corresponding figure for Ind AS post period 1 is 0.014, implying that variability of net income is more in year 2018–19 than year 2017–18. In support of this finding, Table 3 (Column 2) also shows that the ratio of the variance of net income to cash flows (VAR ΔNI^*/ VAR ΔCFO^*) decreases from 1.623 to 1.237 from 2014-15 to 2018–19, whereas the corresponding figure for FY 2017–18 is 1.117. The negative correlation between accruals and cash flows (Correlation (CFO^* and ACC^*) decreases from −0.652 to −0.587 from FY 2014–15 to FY 2018–19, whereas the corresponding figure is −0.698, implying that negative correlation reduces in FY 2018–19. Moreover, the negative difference for $VAR\Delta NI^*$, and the negative correlation between CFO^* and ACC^* for the post-adoption period 2 are only significant at 10%, while the negative difference in the ratio of $VAR\Delta NI^*$ to $VAR\Delta CFO^*$ is not significant.

Taken together, our results provide evidence of an increase in earnings smoothing practices immediately following the adoption of IFRS converged standards, but the increase is dampened with the passage of time.

6.2. Tests of the impact of Ind AS adoption on discretionary accruals

In Table 4, we present the results of ordinary least squares (OLS) regressions based on Eq. (6), which measures the impact of Ind AS on the magnitude of absolute discretionary accruals. For a post-adoption period 1, Table 4 (Column 1), the coefficient of our main variable of interest, IFRS, is positive and significant at the 1% level. Our results suggest that firms are managing earnings more aggressively under Ind AS and, hence, have higher discretionary accruals. This may be due to the inherent flexibility allowed under IFRS-based standards (Langmead & Soroosh, 2009), with their lack of detailed disclosure requirements or implementation guidance. This provides managers greater leeway to manipulate earnings through excessive use of these discretions. The results do not support H2.

Additionally, firm size is negatively associated with ADAC, implying that large firms are less likely to be engaged in earnings manipulations. Large firms generally have more sophisticated internal control systems, greater external monitoring, and audits by Big-N auditors, which reduces the opportunities for them to manipulate their earnings. Financial leverage is positively associated with ADAC, suggesting that leveraged firms are more likely to manage earnings to avoid violation of debt covenants – which is consistent with the debt hypothesis proposed by Watts and Zimmerman (1978).

Table 4 (Column 2) shows that the coefficient of variable IFRS is still positive and significant for post-adoption period 2, although both the magnitude as well as the significance level diminishes relative to post-adoption period 1. This suggests that firms are still managing earnings using discretionary accruals in post-adoption period 2 relative to the pre-adoption period, but the use of discretionary accruals in post-adoption period 2 diminishes relative to post-adoption period 1.

We also test for the significance of difference between the coefficients reported under column (1) and column (2). Column (3) shows that the difference between coefficients of our main variable of interest, IFRS, is statistically significant suggesting that the magnitude of discretionary accruals reduces in post-adoption period 2.

6.3. Tests of the impact of Ind AS adoption on timely recognition of losses

Table 5 presents the results of Eq. (7) measuring the incorporation of good news (profits) and bad news (losses) in earnings. Lang et al. (2006) document that a larger coefficient of BAD^*Ret signifies more timely loss recognition. Table 5, Column 1, shows the coefficient of BAD^*Ret is positive and statistically significant at the 1% level in the pre-adoption year. It is consistent with prior studies (Ball et al., 2003; Basu, 1997). However, this coefficient becomes negative in post-adoption year 1 (Table 5, Column 2), suggesting that firms are not incorporating the impact of bad news in earnings in a timely manner under Ind AS. Further, Table 5 (Columns 4 and 5) presents the results of Eq. (8), measuring the impact of Ind AS on the timely recognition of losses. For the post-adoption period 1, Column 4, the coefficient of our main variable of interest- $IFRS^*BAD^*Ret$ is negative and significant at a 1% level, suggesting a decrease in the asymmetric timeliness of loss recognition among firms after adoption of Ind AS. Hence, the results do not support H3 and indicate that earnings timeliness is reduced after the adop-

Table 4
Impact of Ind AS adoption on discretionary accruals.

Dependent variable: Absolute discretionary accruals (ADAC)						
	(1) IFRS = 1 for 2017–2018, and zero for 2014–2015		(2) IFRS = 1 for 2018–2019, and zero for 2014–2015		(3) Difference between coefficients	
	Coefficient	t-stats	Coefficient	t-stats	Difference	t-value
IFRS	0.011***	(4.897)	0.005**	(2.670)	−0.006**	2.056
Size	−0.005***	(−8.391)	−0.002***	(−3.600)	0.003***	4.184
Growth	0.002***	(6.864)	0.000	(−0.560)	−0.002***	3.711
Eissue	0.000	(1.546)	0.000	(−0.310)	0.000	1.348
Dissue	0.000	(−0.653)	0.004***	(4.280)	0.004***	3.847
Turn	0.003**	(2.553)	0.008***	(6.580)	0.005**	2.530
LEV	0.019***	(8.321)	0.005***	(3.110)	−0.014***	4.973
FF	1.438***	(3.287)	0.311	(0.660)	−1.127*	1.749
CFO	0.080***	(7.619)	−0.059***	(−5.560)	−0.139***	9.309
Intercept	0.072***	(14.106)	0.060***	(14.040)	−0.012*	1.874
Adjusted R-sq.	0.078		0.037			
p-value	0.000		0.000			
Observations	3,922		3,852			

Notes: The table shows the results of equation (6) measuring the impact of Ind AS on the magnitude of absolute discretionary accruals (ADAC). ***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed) levels, respectively. See Appendix B for variable definitions. We use t-value for difference between two slopes to test the significance of difference between regression coefficients.

tion of IFRS-based standards. Among the control variables, firm size (*Size*) and the degree of financial leverage (*LEV*) are negatively related to *EPS*, whereas growth opportunities (*Growth*) is positively related to *EPS*.

For post-adoption period 2, Table 5, Column 3 indicates that the coefficient of *BAD*Ret* is positive and significant at 10%, while Column 5 shows that the coefficient of *IFRS*BAD*Ret* is positive, although not significant (0.309, p > 0.10) - suggesting that H3 cannot be rejected. This implies that there is a deterioration in earnings timeliness immediately after the adoption of Ind AS (2017–18, period 1), but that earnings timeliness subsequently improves (2018–19, period 2). Column 6 shows that the difference between the coefficient of *IFRS*BAD*Ret* between post-adoption periods 1 and 2 is significant at a 5% level of significance, reinforcing that earnings timeliness is higher in post-adoption period 2 relative to post-adoption period 1.

6.4. Tests of the impact of Ind AS adoption on the value relevance of earnings

Table 6 provides the OLS regression results of model (9) in the pre-and post-adoption years. The positive coefficient of *EPS* suggests that reported earnings explain the stock price. This coefficient decreases from 0.022 in the pre-Ind AS adoption period (Column 1) to −0.114 in post-adoption period 1 (Column 2), but increases and becomes positive to 0.368 in post-adoption period 2 (Column 3). This suggests the reduced ability of reported earnings to explain stock price in the year immediately following adoption of Ind AS but a recovery in the explanatory power of earnings in the subsequent year. We document a similar pattern in the adjusted R-square of the model (9) that decreases from 63.8 to 52.8 percent in post-adoption period 1 but recovers to 64.7 percent in post-adoption period 2.

Table 6 also provides the results of the model (10) (Columns 4 and 5) that measure the impact of Ind AS on the value relevance of earnings. For the post-adoption period 1, the coefficient of our main variable of interest *IFRS*EPS* is negative and statistically significant at the 5% level, suggesting a reduced predictive ability of earnings to explain stock return under Ind AS. The coefficient of *IFRS*BVPS* is also negative and significant, suggesting the reduced ability of book value to explain market value under Ind AS. In sum, contrary to H4, a decrease in value relevance follows the adoption of Ind AS.

Table 6 (Column 5) repeats the analysis for post-adoption period 2. Our results show that for both *IFRS*EPS* and *IFRS*BVPS* the coefficients are positive but not significant. Contrary to results for post-adoption period 1, this suggests that there is no change in value relevance of earnings between the pre-adoption period and post-adoption period 2 and that H4 cannot be rejected. However, column (6) shows that the difference between coefficients of *IFRS*EPS* reported under column (4) and column (5) is statistically significant at a 1% level of significance, suggesting that the ability of reported earnings to explain the market value of shares in post-adoption period 2 is higher as compared to post-adoption period 1.

Overall, our empirical results indicate that accounting quality proxied by earnings smoothing, discretionary accruals, earnings timeliness, and value relevance of earnings weaken immediately after the implementation of IFRS-converged standards. However, our results also suggest that the deterioration in accounting quality ameliorates with the passage of time.

Table 5
Impact of Ind AS adoption on earnings timeliness.

Dependent variable: Earnings per share (EPS)

Variables	(1) Pre-Ind AS period 2014–2015		(2) Post-Ind AS period 2017–2018		(3) Post-Ind AS period 2018–2019		(4) Extended model when IFRS = 1 for 2017–2018, and zero for 2014–2015		(5) Extended model when IFRS = 1 for 2018–2019 and zero for 2014–2015		(6) Difference between coefficients (5–4)	
	Coeff.	t-stats	Coeff.	t-stats	Coeff.	t-stats	Coeff.	t-stats	Coeff.	t-stats	Difference	t-Value
Ret	0.118	(1.521)	0.429***	(7.829)	0.351	(0.733)	0.138	(1.617)	0.113	(0.630)	−0.025	0.127
BAD	0.039	(0.692)	0.012	(0.149)	0.306	(1.512)	0.045	(0.727)	0.032	(0.250)	−0.013	0.088
BAD*Ret	0.563***	(4.841)	−0.494***	(−3.557)	0.878*	(1.705)	0.454***	(3.567)	0.452*	(1.700)	−0.002	0.007
IFRS							−0.198***	(−3.464)	−0.021	(−0.140)	0.177	1.090
IFRS*Ret							0.287***	(2.926)	0.242	(0.620)	−0.045	0.113
IFRS*BAD							−0.032	(−0.340)	0.227	(1.160)	0.259	1.195
IFRS*BAD*Ret							−0.920***	(−5.166)	0.309	(0.670)	1.229**	2.496
Size							−0.017**	(−2.360)	−0.055***	(−3.680)	−0.038**	2.289
LEV							−0.364***	(−13.019)	−0.470***	(−9.180)	−0.106*	1.817
Growth							0.002	(−0.159)	0.003	(0.310)	0.001	0.339
Intercept	−0.061	(−1.579)	−0.272	(−6.313)	−0.095	(−0.562)	0.287***	(3.787)	0.664***	(4.240)	0.377**	2.170
Adjusted R-sq.	0.047		0.036		0.022		0.080		0.047			
p-value	0.000		0.000		0.000		0.000		0.000			
Observations	2,042		2,042		1,967		4,084		4,009			

Notes: The table shows the results of equations (7) and (8) measuring Basu's asymmetric timeliness model, and the impact of Ind AS on earnings timeliness, respectively. ***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed) levels, respectively.

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Table 6
Impact of Ind AS adoption on the value relevance of earnings.

Dependent variable: Market value per share (P)												
	(1) Pre-Ind AS period 2014–2015		(2) Post-Ind AS period 2017–2018		(3) Post-Ind AS period 2018–2019		(4) Extended model when IFRS = 1 for 2017–2018, and zero for 2014–2015		(5) Extended model when IFRS = 1 for 2018–2019 and zero for 2014–2015		(6) Difference between coefficients (5–4)	
Variables	Coefficient	t-stats	Coefficient	t-stats	Coefficient	t-stats	Coefficient	t-stats	Coefficient	t-stats	Difference	t-Value
EPS	−0.022	(0.270)	−0.114***	(−4.958)	0.368***	(2.540)	0.104	(1.257)	0.105	(0.510)	0.001	0.009
BVPS	0.990***	(55.737)	0.946***	(45.167)	1.014***	(40.910)	0.910***	(45.813)	0.921***	(38.920)	0.011	0.399
IFRS							−0.168	(−1.523)	−0.363**	(−2.610)	−0.195	1.277
IFRS*EPS							−0.210**	(−2.447)	0.339	(1.330)	0.549***	3.503
IFRS*BVPS							−0.052*	(−1.946)	0.024	(0.750)	0.076**	2.065
Size							0.126***	(11.920)	0.115***	(10.960)	−0.011	0.740
LEV							0.332***	(5.507)	0.463***	(6.470)	0.131	1.457
Growth							0.005	(1.609)	0.000	(0.060)	−0.005	0.857
Intercept	0.559	(7.490)	0.351	(4.109)	0.190	(1.750)	−0.326***	(−3.297)	−0.351***	(−3.250)	−0.025	0.182
Adjusted R-sq.	0.638		0.528		0.647		0.613		0.665			
p-value	0.000		0.000		0.000		0.000		0.000			
Observations	1,826		1,826		1,739		3,652		3,565			

Notes: The table shows the results of equations (9) & (10) measuring Ohlson's price-earnings model, and the impact of Ind AS on value relevance of earnings, respectively. ***, **, and * indicate significance at 1%, 5%, and 10% (two-tailed) levels, respectively. See Appendix B for variable definitions.

6.5. Sensitivity analysis

To validate our results, we perform additional robustness checks. Unlike comparing accounting quality between the pre- and post-Ind AS adoption period, we compare accounting quality between two categories of firms in the pre-and post-Ind AS adoption period. We divide the sample of firms into two categories, namely test firms and benchmark firms. Test firms are listed firms required to adopt Ind AS on April 1, 2016, whereas benchmark firms are listed firms required to adopt Ind AS effective April 1, 2017.

For test firms, FY 2015-16 is the pre-Ind AS adoption year, and FY 2016-17 is the post-Ind AS adoption year.[7] Any change in the accounting quality of test firms in the post-adoption year (FY 2016-17) is either due to Ind AS or concurrent regulatory or economic shocks that took during 2016-2017, whereas any change in accounting quality of benchmark firms in the post-adoption year (FY 2016-17) is solely due to concurrent or economic shocks. Therefore, in our robustness measure, we use a difference-in-difference approach to test for the difference between the accounting quality of test firms and benchmarks firms as well as for the difference between the accounting quality of firms in the pre-and-post Ind AS adoption period. Our analysis (untabulated) provides results in the same direction. Our inferences or conclusion do not change, except we do not find a significant decrease in the asymmetric timeliness of loss recognition in our robustness tests.

We also leverage the phased adoption of IFRS in India to test for the learning effect. We compare the accounting quality between test firms and benchmark firms for 2017–18. The year 2017–18 is the second year of implementation for test firms, whereas it is the first year of implementation for benchmark firms. In untabulated results, although only significant at 10%, we find that test firms have lower earnings smoothing and discretionary accruals practices than benchmark firms in 2017–18. Similarly, we find that benchmark firms do not recognize losses in as timely a manner relative to test firms. Lastly, the value relevance of earnings for test firms is higher than for benchmark firms. These results are consistent with the learning effect documented in our main results.

7. Conclusion and discussion

In this study, we investigate the impact of newly implemented IFRS-converged standards on the accounting quality of Indian firms. We find evidence of increased earnings smoothing following the immediate implementation of Ind AS. The results also suggest that the level of discretionary accruals increases during post-implementation. The sensitivity of earnings to incorporate bad news as compared to the good news is also lower under the new accounting framework. Lastly, the value relevance of earnings also decreases after the implementation of Ind AS. However, we also document that the deterioration in accounting quality does not persist and ameliorates with the passage of time. Our overall results suggest that IFRS reporting may require significant learning and, therefore, it may take time for the benefits of IFRS adoption/convergence to diffuse through a system and materialize.

Our results are consistent with Paananen and Lin (2009), Ahmed et al. (2013), and Cang et al. (2014), who also document a decrease in accounting quality or an increase in earnings management following the adoption of IFRS. We add to the literature by providing preliminary evidence that there may be a learning curve for the benefits of IFRS adoption/convergence to diffuse over time through a system. Learning and behavioral theories of change recognize that decisions to change are dependent on willingness to change, awareness of the need to change, and perceived capacity to change effectively (Zahra et al., 2006). There are also costs involved in devising new capabilities and reconfiguring existing capabilities that are dependent on an organization's existing knowledge base, timeline, and support. The learning/implementation process is dynamic and may be unstable characterized by learning and adjustment lags, ongoing experimentation, and trial-and-error learning (Nelson & Winter, 2002). Because of the costs and change process, all organizational change or learning may not result in positive performance outcomes at the outset. Yet as the knowledge base of the firm increases, so should the positive outcomes of the learning and change processes (Nelson & Winter, 2002). Thus, the positive effects of dynamic capabilities may require time to appear because of the costs involved in developing and exercising them.

The Indian experience fits this framework for several reasons. First, standards-setting in India relies on a complex multi-layered system that requires coordination between multiple regulatory and legislative bodies. The process of converging Indian GAAP with IFRS is characterized best as one with many fits and starts, absent a well-thought-out timeline and road-map. The long period of time that it took for convergence to finally happen as the initiative was initiated as far back as 2007 as well as the fits and starts in the implementation may have lulled companies and other stakeholders into inaction resulting in a sub-optimal implementation of Ind AS with unintended consequences. Moreover, firms are required to enhance their capabilities with the change in their external environment, consistent with dynamic capabilities theory. With the adoption of IFRS, firms were required to make significant changes in their business processes, systems and controls, and management. Hence, they faced several issues, such as awareness, training, cost, interpretation, infrastructure, and staffing, that hindered their ability to transition to IndAS effectively in the short run - leading to sub-optimal outcomes.

Moreover, as Ball (2016) contends that reporting quality is not only determined by accounting standards but also by the firm's reporting incentives that are shaped by many country and firm-level factors. Despite some progress, India is still characterized by a weak enforcement mechanism with limited readdress through the legal system due to over clogged courts,

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[7] We exclude a small set of firms that voluntarily adopted Ind AS during 2015–16 from our test sample.

weak corporate governance, and limited investor protection rights. Thus, it lacks the institutional infrastructure for monitoring managers' financial reporting decisions. Moreover, IFRS is a principles-based system that provides room for judgment and avoids bright lines. In a setting with poor monitoring of managers' actions, the adoption of IFRS may create many new opportunities for managers' earnings management - resulting in a deterioration of accounting quality. Lastly, the carve-outs in Ind AS may have weakened the efficacy of the accounting standards.

The study suffers from several limitations and, therefore, one must be careful in generalizing our results. India followed a very unique and stylized process to converge its accounting standards with IFRS, so the India case study may not be fully generalizable to other countries. However, India's experience does provide several interesting lessons including the need to address implementation issues well in advance, including incorporating IFRS into the curriculum and building sufficient IFRS skills among accounting and auditing professionals. Moreover, it also points to the need to address institutional and corporate governance frameworks alongside the adoption of IFRS. Second, while we used proxies to measure accounting quality that is well-established in the literature, there is some debate that properties of accounting numbers are determined by a complex set of factors, and to that extent, our proxies may not be appropriate to capture accounting quality in the Indian context. Lastly, while we do use a post-adoption design of one and two years after the implementation of Ind AS to capture the impact of Ind AS on accounting quality and any learning effects, it could be that accounting standards impacts take a longer time to diffuse and percolate through the system. A longer window over several years may be more suitable to capture the full impact.

There is scope for additional research in this area. More sophisticated proxies for the variables of interest, the operationalization and inclusion of other relevant variables, and stronger methodological designs should provide clearer insights into the impact of the adoption of IFRS convergent accounting standards and accounting quality. For example, a longer-term longitudinal study would help capture the impact of IFRS more accurately, especially if learning and diffusion effects are in play. Studies examining other outcome variables, such as capital market consequences and trade-offs between relevance and reliability would also help to provide a fuller picture regarding the impact of Ind AS.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgment

Appendix A. Comparison between IGAAP, IFRS, and Ind AS

Basis	IGAAP	IFRS	Ind AS
1. Meaning	These are the Indian version of Generally Accepted Accounting Principles developed by the Ministry of Corporate Affairs (MCA) of the Indian government.	These are International Financial Reporting Standards (IFRS), developed by the International Accounting Standards Board (IASB) to bring uniformity in accounting standards across the globe.	These are converged form of IFRS, developed by MCA in consultation with the National Advisory Committee on Accounting Standards (NACAS) keeping in mind its suitability in the Indian economic environment.
2. Components of financial statements	As per Schedule III of Companies Act (2013), financial statements must include: (i) Balance sheet (ii) Profit and loss account (iii) Cash flow statement	The financial statements comprise: (i) Statement of financial position (ii) Statement of profit and loss and other comprehensive income (iii) Statement of changes in equity (iv) Statement of cash flows	A set of the financial statements under Ind AS comprise: (i) Balance sheet (ii) Statement of profit and loss (iii) Statement of changes in equity (iv) Statement of cash flows
	There is no framework for	The concept of fair-value	The governing body allows

Comparison between IGAAP, IFRS, and Ind AS (*continued*)

Basis	IGAAP	IFRS	Ind AS
3. Fair value accounting	measuring fair value for financial reporting. Transactions are recorded under a nominal value framework.	measurement is introduced by IFRS (IFRS 13).	firms to record assets at historical cost or fair value depending upon the nature of assets (Ind AS 113).
4. First-time adoption	There is no such provision for recording the value of assets.	A first-time adopter elects to record the value of property, plant, and equipment (PPE) on the date of transition to IFRS at its fair value (IFRS 1).	Ind AS permits first-time adopters to continue with the carrying value (book value) of PPE in the financial statements on the date of transition to Ind AS (Ind AS 101).
5. Revenue recognition	Revenue should be recognized with the transfer of risk and rewards of ownership, and there is no uncertainty concerning the collection of payment.	Revenue is said to be recognized when risk and reward of ownership have been transferred from seller to buyer; the seller does not have control over sold items; a collection of payment is reasonably assured.	Revenue is recognized on the following conditions: a. Transfer of significant risks and rewards of ownership of goods b. No continuing managerial involvement related to ownership nor effective control over sold goods c. Measurement of revenue reliable d. Probability of economic benefits flow to the entity e. Reliable measurement of costs incurred or to be incurred related to sale.
6. Breach of non-current liabilities	There is no provision regarding the breach of contract.	In case of loan liability, if firms breach any of the debt covenants on the reporting date, then such loan liability should be classified as current, even if the breach is rectified after the balance sheet date (IFRS 1).	If firms rectify the breach on or before reporting date but before the approval of financial statements, then it need not be classified as current liabilities (Ind AS 1).
7. Agreements for the construction of the real estate	Revenue from agreements for the construction of real estate is recognized based on the percentage of completion method.	Revenue from agreements for the construction of real estate will be recognized on completion of the contract (IFRS 18).	The percentage of completion method is used to recognize the revenue in the books of accounts (Ind AS 18).
8. Bargaining purchase gain	There is no recognition of purchase gain. Firms record the assets at purchase price only.	The excess of the fair value of identifiable net assets acquired over the purchase consideration to be recognized in profit or loss as bargain purchase gain (IFRS 103).	The acquirer recognizes the gain in "other comprehensive income" on the acquisition date and accumulates the same in equity as a capital reserve (Ind AS 103).
9. Operating lease rental	Lessee recognizes the lease payment in the statement of Profit and Loss for the period.	In the case of operating leases, IFRS requires all lease rentals to be charged to the profit and loss account on a straight-line basis (IFRS 17).	Ind AS does not allow for a straight-line method when the rentals payments have been increased due to expected general inflation (Ind AS 17).

Appendix B. Variable definition

Variables	Definition & measurement
NI	Net income of the firm.
ΔNI	Change in NI scaled by total assets
ΔNI*	Residuals from the regression of ΔNI on economic determinants of net income variability as shown in equation (1).
VAR ΔNI*	Variance of ΔNI*.
CFO	Net cash flow from operating activities of the firm.
CFO*	Residuals from the regression of CFO on its determinants as shown in equation (3).
ΔCFO	Change in CFO scaled by total assets
ΔCFO*	Residuals from the regression of ΔCFO on economic determinants of cash flow variability as shown in equation (2).
VAR ΔCFO*	Variance of ΔCFO*.
ACC	Accruals, measured as the difference between NI and CFO.
ACC*	Residuals from the regression of ACC on its determinants as shown in equation (4).
Size	Natural logarithm of total assets
Growth	Percentage change in sales from period t to t + 1
Eissue	Percentage change in common shareholders' equity from period t to t + 1
Dissue	Percentage change in total outside liabilities period t to t + 1
Turn	The proportion of sales to total assets
LEV	The proportion of outside liabilities to total assets
FF	Free float, measured as ratio of the number of shares traded to number of shares outstanding
ΔREV	Change in sales from period t to t + 1 scaled by lagged total assets
ΔREC	Change in account receivables from period t to t + 1 scaled by lagged total assets
AT	Total assets of the firm.
PPE	Gross value of plant, property, and equipment scaled by lagged total assets.
ROA	Return on assets, measured as NI divided by total assets
ADAC	Absolute value of discretionary accruals, where discretionary accruals are residuals of performance adjusted modified Jones model (Kothari et al., 2005) as shown in equation (5).
IFRS	An indicator variable that set to one for post-Ind AS adoption year, and zero for pre-Ind AS year.
EPS	Earnings per share deflated by the price at the beginning of the period.
Ret	Return is the natural logarithm of the ratio of the current to previous stock price, where prices are adjusted for dividends and stock splits.
BAD	A dummy variable that takes value equals one if Ret is negative, and zero otherwise.
MVPS	Natural logarithm of the market value per share.
BVPS	Natural logarithm of the book value per share.

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