Costs of Mandatory IFRS: Evidence of Reduced Accrual Reliability

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Abstract

This study investigates the impact of mandatory adoption of International Financial Reporting Standards (IFRS) on accrual reliability (Richardson et al. 2005). Using a large sample of Australian firm years drawn from before and after the mandatory adoption of IFRS, we find that accrual reliability declined significantly after mandatory IFRS implementation. Working capital, non-current operating, and financing accruals all contribute to this decline. We also find that brand name audit firms (i.e., the Big four) are able to significantly attenuate any decrease in accrual reliability during the post-IFRS period. Our results contrast with evidence identifying benefits of mandatory IFRS such as increased value relevance, but are consistent with at least some degree of trade-off between relevance and reliability. Such trade-offs seem to have been largely ignored in prior examinations of the impact of mandatory IFRS.

1. Introduction

This study contributes to our understanding of the effects of mandatory adoption of International Financial Reporting Standards (hereafter IFRS) by documenting the impact of the switch from Australian GAAP (AGAAP) to IFRS on the accrual reliability of Australian firms. Reliability (now referred to as "representational faithfulness") is one of the key qualities of financial reporting that both the Financial Accounting Standards Board (FASB) and the International Accounting Standards Boards (IASB) use in setting standards (FASB, 2010; IASB, 2010). [1] Reliability represents the quality of information assuring that information is reasonably free from error or bias and faithfully represents what it purports to represent. However, in contrast to the importance reliability has been given within financial reporting frameworks, there is remarkably little evidence on how IFRS adoption impacts on the reliability of accounting data. Prior evidence of the financial reporting effect of IFRS adoption focuses on several qualitative attributes of the audited financial information including relevance and comparability.[2] Our paper addresses this deficiency by examining how accrual reliability is affected by the mandatory adoption of IFRS.

Understanding the impact of IFRS adoption on accrual reliability is important. IFRS requires asset and liability measures to reflect economic transactions, with a preference for fair value accounting (Barth, 2006). Much of the value relevance literature (including many tests of IFRS) is premised on an assumption that audited financial statements are primarily intended to serve as a mechanism for valuing the firm, and that accounting reports serve as a primary means of revealing "new" information. This is inconsistent with the view that financial statements primarily play a stewardship, or confirmatory role (Ball, 2013). In fact, opponents of fair value accounting argue that this accounting regime may exacerbate short-term overreaction by market participants, as well as reducing the reliability of accounting information (Allen and Carletti, 2008; Plantin et al., 2008). In addition, there is a well-recognized trade-off between relevance and reliability (e.g., FASB, 2006; Schipper, 2003; Dye and Sridhar, 2004). Given the documented evidence of increased relevance after IFRS

[1] The FASB's conceptual framework defines reliability as encompassing representational faithfulness, verifiability and neutrality, while the IASB definition encompasses faithful representation, substance over form, neutrality, prudence, and completeness. Both the FASB and the IASB recently renamed "reliability" as "faithful representation", which encompasses verifiability, neutrality and completeness. The substitution proved unpopular with respondents, who expressed interest in retaining reliability as a primary quality. However, this modification does not affect our study because we examine features of reliability unrelated with the change. We therefore use the more familiar term, namely reliability.

[2] See for example Barth et al. (2008, 2012), Aharony et al. (2010) and Yip and Young (2012). Detailed discussion is provided in section 2.1.

adoption, the reliability of accounting information may decrease, indicating a possible cost of IFRS adoption on financial reporting quality.[3] Our focus on accrual reliability, while not necessarily reflecting priorities underlying the development of IFRS, nevertheless reflects a property of accounting likely to be important in serving what we characterize as its long-standing primary role.

Attributes of audited accounting data such as accrual reliability, as well as value relevance likely reflect influences other than prevailing accounting standards. Such influences include legal systems (including enforcement), political factors, ownership characteristics and tax regulations (Leuz and Wysocki, 2008). Prior evidence suggests that many of the benefits of mandatory IFRS are confined to countries where enforcement systems are strong.[4] Hence, we examine a single institutional setting (Australia), which has the added advantage of having a clear mandatory IFRS adoption date (annual reporting periods beginning on or after January 1, 2005) with the voluntary adoption of IFRS not permitted prior to this time. Australia is one of the few initial mandatory (rather than voluntary) adopters of IFRS in the developed world. It is also a common law country with a strong investor protection environment (Ball et al., 2003). Examining the impact of mandatory IFRS in such an environment minimizes the possibility that the observed effect of IFRS could be due to its poor implementation (Ball, 2006).

As IFRS adoption was mandatory for all Australian firms from 1 January 2005 with no early adoption allowed, there is no self-selection bias of the type which impacts studies examining firms that voluntarily adopt IFRS (such as Barth et al. 2008)[5]. In short, Australia provides a desirable setting to examine the impact of IFRS on accounting attributes because it provides a natural control for factors such as firms' reporting incentives, countries' enforcement regimes, IFRS implementation issues, and self-selection bias that may otherwise be reflected in our results (Byard et al., 2011; Ball, 2006).

[3] We are agnostic as to the relative importance of relevance and reliability. Our primary motivation is the relative absence of research examining reliability effects of mandatory IFRS.
[4] See for example, Daske et al. (2008), Byard et al. (2011) and Landsman et al. (2012).
[5] Australia is also a country with a strong level of enforcement of accounting standards (Brown et al. 2009). In contrast, there is significant variation in the levels of enforcement environments for the states of European Union, member countries of which are frequently the focus of studies identifying benefits of mandatory IFRS (Pope and McLeay 2011).

We follow Richardson et al. (2005) and use the differential persistence of accruals over cash flow as our measure of accrual reliability.[6] Earnings are the result of underlying economic determinants and the accounting system that imperfectly measures them (Dechow et al., 2010). Earnings persistence is driven by these factors, so changes in persistence can be due to changes in either or both factors. The differential persistence of accruals over cash flow controls for the persistence in underlying fundamentals through the persistence of cash flow into earnings. We believe this differential persistence measure is superior to a simple earnings persistence measure in capturing accrual reliability.[7]

Our primary finding is that accrual reliability significantly decreased after mandatory IFRS implementation. This result is robust to controls for the economic determinants of earnings persistence including firm size, cash flow volatility, sales volatility, losses, abnormal items, goodwill investment, and industry concentration. Following Richardson et al. (2005), we also decompose accruals into three sub-components to further investigate whether the change in reliability of total accruals is due to working capital accruals, non-current operating accruals, and/or financing accruals. Careful analysis of actual differences between IFRS and AGAAP (see section 2) shows that the key changes mainly lie in the areas of goodwill, intangibles, asset impairment, restoration provision, share-based payments, leases, income taxes, revenue recognition, financial instruments, property, plant, and equipment, and investment property. These differences affect all three accrual components. Indeed, our results show that working capital accruals, non-current operating accruals, and financing accruals all contribute to the decline in accrual reliability post-IFRS.

[6] We follow numerous IFRS studies and conduct regression analysis with an IFRS dummy to compare accrual reliability before and after IFRS adoption. We acknowledge that this "pre-post" research design has the problem of identifying the effect of changes in accounting standards per se, given the difficulty of finding an appropriate control sample that holds other determinants constant. We use the sample during the pre-IFRS period as the control sample. We acknowledge that financial reporting quality such as accrual reliability depends on a firm's reporting incentives and the country-level institutional framework (Leuz and Wysocki, 2008). Our choice of Australian data enables us to hold the institutional framework constant. We also conduct further analysis that includes firm-level determinants of earnings persistence as additional controls, and find similar results. Another approach, effectively the "same firm year" research design, can also mitigate the identification problem and help isolate the IFRS effect (see e.g., Hung and Subramanyam, 2007; Clarkson et al., 2011). Unfortunately, the "same firm year" approach is not appropriate to our setting, as our tests require data for two consecutive years to compute the persistence of accruals and accrual components.

[7] Our hypothesis tests do not require a direct measure of accrual reliability. Instead, they only require a comparison of the relative reliability of accruals across groups of sample firms and across time. By comparing accruals coefficients across subsets of firms based on time, we examine for differences in accrual reliability due to IFRS adoption.

We also conjecture that Big four auditors attenuate this post-IFRS decline in accrual reliability. IFRS standards have been argued to have introduced considerable sophistication in financial reporting, and audit quality could greatly influence firms' accounting choices and reporting activities (Brown and Tarca, 2005).[8] A fundamental function of auditing is to enforce the application of appropriate accounting standards, such that the attributes of audited financial statements could be said to reflect the joint product of management representations and the audit process. Compared with their non-Big four peers, Big four audit firms are expected to be more competent (due to greater investments into IFRS related resources) and to have more incentives (due to greater reputational risk) to ensure compliance with new standards (DeAngelo, 1981).[9] Consistent with expectations, our results indicate that Big four auditors attenuate the decline in accrual reliability in the post-IFRS period, and such an effect is concentrated on working capital and non-current operating accruals. This supports the role of Big four auditors in verifying and assuring accrual reliability after mandatory IFRS adoption.

Our paper makes a number of significant contributions. First, we identify a possible cost associated with the mandatory switch to IFRS that has not previously been recognized by proponents of IFRS. The rapid adoption of mandatory IFRS by more than 100 countries worldwide, including the European Union, Australia, Canada, Singapore, Malaysia, Hong Kong, Russia, and Brazil, surely represents the biggest upheaval in accounting regulation to date. Existing research overwhelmingly documents benefits such as increased value relevance, lower cost of capital, and greater analyst following. Yet, as Christensen (2012) notes, once instances of voluntary IFRS adoption which merely anticipate their mandatory adoption are excluded, extant studies actually suggest that voluntary adoption of IFRS is quite low. Assuming rational managers make such decisions, this suggests that the benefits of IFRS are overstated and/or there are costs associated with switching to IFRS which have not been identified. Our evidence suggests that reduced accrual reliability is one such potential cost.

Our research also contributes via our focus on an under-researched earnings attribute, namely (accrual) reliability. Even though it is defined as the third most important qualitative

[8] This viewpoint could also be inferred from the International Auditing and Assurance Standards Board (IAASB)'s objective of serving the public interest by facilitating the convergence of international and national standards.

[9] This viewpoint is supported by a large number of IFRS-related publications by the international accounting firms (Big four) around IFRS implementation. See, for example, various publications from KPMG's "IFRS Institute" (www.kpmginstitutes.com/ifrs-institute/).

characteristic of financial statements after relevance and materiality (see the IASB Conceptual Framework), reliability has received relatively little attention in accounting research, especially in relation to the impact of IFRS adoption. Our research therefore complements existing studies that have examined the effect of IFRS on earnings quality as characterized by measures of value relevance and comparability.

A third contribution occurs via our investigation of auditor effects on the documented decline in accrual reliability. Prior research examines many attributes of accounting data and their link to measures of audit quality (Francis, 2011) but we are unaware of any prior evidence linking measures of audit quality and accrual reliability in the IFRS setting. Such evidence also confirms the view that accounting quality is not just a reflection of variation in accounting standards, but also reflects methods of implementation including the audit process (i.e., the joint product hypothesis). While implementation aspects have been argued to play a critical role in the benefits which arise from mandatory IFRS (Christensen et al., 2012), we are unaware of any studies which explicitly consider the role of audit quality in influencing such outcomes.[10]

The study continues as follows. Section 2 gives some background on mandatory IFRS for Australian firms and develops our hypotheses. Section 3 summarizes our research design, including the method suggested by Richardson et al. (2005) for identifying accrual reliability. Section 4 describes data items, the sample selection, and empirical results. Section 5 discusses robustness tests, while section 6 concludes.

2. Background and Hypotheses

2.1 Background

For annual reporting periods beginning on or after 1st January 2005, Australian companies were required to comply with IFRS. The accounting policy differences between IFRS and AGAAP mainly lie in the areas of goodwill, intangibles, asset impairment, restoration provisions, share-based payments, leases, income taxes, revenue recognition, financial instruments, property, plant, and equipment, and investment property. Table 1 provides a summary of some of the most obvious differences between IFRS and AGAAP and outlines the accrual items most affected.

[10] The closest analogy of which we are aware is the argument by Brown et al. (2013) that "learning effects' play an important role in the extent of gains from mandatory IFRS adoption.

Insert Table 1 here

From Table 1, differences between IFRS and AGAAP can be seen to affect working capital, non-current operating, and financial accruals. In other words, the potential spread of effects through the entire accrual accounting system is substantial. However, the extent of the overall effect on accrual reliability is ultimately an empirical question. On one hand, many of the changes introduced via IFRS would likely result in increased accrual reliability by providing greater clarification about the treatment of various accounting items relative to AGAAP. On the other hand, there are several instances where the use of fair value accounting is required, which tends to introduce measurement errors and (we would expect) decrease accrual reliability. The net effect of these two effects is an empirical question that we address.

According to the Financial Reporting Council (2002), mandatory IFRS adoption was expected to enhance "the overall quality of financial reporting in Australia".[11] This claim is not unanimously supported in Australia; the empirical evidence to date has been mixed as to whether IFRS-based accounting information is of a different quality to that reported under AGAAP. Like most international evidence, Australian analysis has focussed primarily on the alleged benefits associated with greater "value relevance" or increased timeliness of information.[12] However, as we have noted such evidence is potentially biased in favour of finding improvements via IFRS, given the apparent focus on such attributes reflected in the standards themselves.

Using a sample of 1,065 listed firms with their retrospective reconciliations between AGAAP and IFRS, Goodwin et al. (2008) find no evidence that the IFRS earnings and book value are more value relevant than those under AGAAP. There is weak evidence that aggregate changes for earnings and equity are incrementally value relevant to those under AGAAP. While goodwill adjustments improve the value relevance of intangibles, provisions adjustments weaken it. These findings are consistent with Chalmers et al. (2008), who find that IFRS generally conveys incremental useful information to investors about goodwill and AGAAP provides incremental information to investors in relation to identifiable intangibles.

[11] The Financial Reporting Council was established by the Australian government in part to oversee the introduction of IFRS by the Australian Accounting Standards Board.
[12] See Brown (2011) for a summary of much of the "benefits" literature.

Chalmers et al. (2012) further investigate whether the IFRS adoption is associated with a loss of potentially useful information about intangible assets. They find that the impairment approach to goodwill conveys more useful information than the AGAAP amortization method. However, there is evidence of a loss of useful information in the sub-sample of firms that report lower intangibles under IFRS relative to AGAAP. Using a longitudinal study that covers pre-IFRS and post-IFRS periods during 1990-2008, Chalmers et al. (2011) find that earnings became more value-relevant and persistent whereas the book value of equity has not become more relevant. While the finding of greater earnings persistence is noteworthy as offering a possible explanation for enhanced value relevance, we note that Chalmers et al. make no attempt to understand how accrual reliability (persistence) varies relative to cash flows.

Of note also are several international studies which suggest that earnings quality generally increases after IFRS adoption.[13] For instance, Barth et al. (2008) document that IAS firms from 21 international countries report more value relevant accounting amounts than matched firms using domestic standards. Aharony et al. (2010) and Morais and Curto (2009) also find that the value relevance of financial information among European firms has increased following mandatory IFRS adoption. With respect to accounting comparability, Barth et al. (2012) and Yip and Young (2012) show that IFRS adoption has significantly improved information comparability. However, focusing on firms in Europe and Australia, Clarkson et al. (2011) fail to find any observed change in value relevance of book value and earnings after IFRS adoption. Ahmed et al. (2012) find evidence of a significant increase in income smoothing and accrual aggressiveness as well as a decrease in timeliness of loss recognition for firms in IFRS adopting countries relative to benchmark firms. In contrast to prior studies, they conclude accounting quality has declined after mandatory IFRS adoption.

Aside from earnings quality, studies have also examined the direct capital market consequences of IFRS. Daske et al. (2008) finds that IFRS has led to an increase in market liquidity, a decrease in cost of capital, and an increase in equity valuations. However, such benefits only occur in countries where firms have incentives to be transparent and where legal enforcement is strong. Examining European firms, Byard et al. (2011) find a decline in

[13] Several of these studies are discussed by Pope and McLeay (2011).

analysts' forecast errors and reduced forecast dispersion for mandatory adopters relative to early adopters, in countries with strong enforcement regimes and domestic accounting standards that differ significantly from IFRS. These studies underscore the importance of firms' reporting incentives and countries' enforcement regimes. Using analyst forecasts for Australian firms, Cotter et al. (2012) find that analysts' forecast accuracy improves post-IFRS with little effect on dispersion.

Finally, only a small number of studies have examined the impact of auditing on IFRS, and most of them focus exclusively on goodwill impairment (AASB 3). For instance, Stokes and Webster (2009) find that Big four auditors are associated with larger goodwill impairment losses reported under IFRS implementation, suggesting that high quality auditors played a role in enforcing IFRS. In another study, Van de Poel et al. (2009) examine listed companies from 15 European Union countries, and find that Big four auditors put a higher constraint on firms using goodwill impairment as a tool for earnings management.

2.2 Hypotheses

In contrast to most of the IFRS studies that examine value relevance and/or timeliness, this study focuses on reliability. We are motivated by the considerable concern yet limited empirical evidence about the impact of IFRS on accrual reliability. It has been argued that a benefit of IFRS adoption is increased reliability, transparency and comparability of financial reports. For example, an EU statement issued in Brussels in 2002 includes among the expected benefits of IFRS adoption for European companies "ensuring that company accounts throughout the EU are more *reliable* and transparent".[14] On the other hand, the IFRS and the IASB are often argued as having placed less emphasis on reliability (e.g., Whittington, 2007; Ball, 2006). Fair value based accounting measures in IFRS have generated considerable reliability concerns (Cairns, 2006), especially when fair values are estimated based on numerous assumptions using non-market inputs (FASB, 2006). Given the trade-off between relevance and reliability and the documented increased value relevance of accounting information after IFRS adoption, we expect a decrease in the reliability of financial reporting in the post-IFRS adoption period. Our first hypothesis is as follows:

H1: The reliability of financial reporting is lower in the post-IFRS adoption period.

[14] See http://www.cnc.min-financas.pt/Documentos/Press_release_reg_IAS.htm (accessed 14 Jan 2011).

The second objective of this study is to examine whether and how audit quality influences these changes in accrual reliability after the IFRS adoption. We view the financial report as a joint product of managers and auditors. Managers' preparation of financial statements is subject to audit examinations, and an important function of auditing is to ensure the appropriate application of accounting policies in accounting standards such as IFRS (Tweedie and Seidenstein, 2005).

Mandatory IFRS adoption introduced considerable change to financial reporting (see Table 1) and more reliance is likely to have been placed on auditors to ensure appropriate accounting practices. A competent and independent auditor has more capability to identify and correct intentional and/or unintentional misstatements in financial reports (DeAngelo, 1981). Under the new accounting regime, firms with higher audit quality are expected to produce more reliable financial information. Given the main role of auditors is to enhance the reliability of financial reporting, we argue that audit quality is likely to be associated with increased reliability (Chambers and Payne, 2008). We expect high quality auditors to enhance the reliability of financial reporting in the post-IFRS adoption period, leading us to the following hypothesis.[15]

H2: The degree of IFRS-related decrease in the reliability of financial reporting is lower for high quality audit clients than for low quality audit clients in the post-IFRS adoption period.

3. Research Design

3.1 Accrual reliability

As earnings consist of cash flow and accruals components, we decompose ROA into these two components and regress next period's ROA on this period's ROA as follows:

$$ROA_{t+1} = \lambda_0 + \lambda_1 CF_t + \lambda_2 TACC_t + \varepsilon_t \quad (1)$$

Coefficients λ_1 and λ_2 respectively capture the persistence of cash flow and total accruals into earnings, where *CF = ROA-TACC*. As our interest is in the relative persistence of accruals

[15] High quality auditors (such as brand name auditors, or industry specialist) could have equipped with an extensive knowledge for a specific industry or a firm that enabling them to allow more relevant reporting. This argument is not incorporated in the current hypothesis of but could be considered in the future research.

over cash flow, we follow Richardson et al. (2005) and estimate equation (2) below, where we replace the cash flow component of earnings in equation (1) with earnings itself, viz:

$$ROA_{t+1} = \alpha_0 + \alpha_1 ROA_t + \alpha_2 TACC_t + \varepsilon_t \quad (2)$$

Coefficient α_1 is the same as λ_1. Coefficient α_2 captures the differential persistence of accruals over cash flow, i.e., $\alpha_2 = \lambda_2 - \lambda_1$. The above transformation enables us to test the difference (and significance) in persistence between accruals and cash flow directly. Cash flow is less subject to manipulation and estimation errors and therefore is more reliable than accruals. As persistence increases with reliability, cash flow persistence (λ_1) is expected to be higher than accruals persistence (λ_2) and α_2 is expected to be negative. More negative α_2 represents more unreliable accruals relative to cash flow and it is an inverse measure of accrual reliability (see Richardson et al., 2005).

To test whether accrual reliability has changed between pre- and post-IFRS periods, an IFRS dummy is interacted with all the variables in the above regression:

$$ROA_{t+1} = \alpha_0 + \alpha_1 ROA_t + \alpha_2 TACC_t + (\alpha_3 + \alpha_4 ROA_t + \alpha_5 TACC_t) \cdot IFRS_t + \varepsilon_t \quad (3)$$

IFRS is a dummy variable equal to 1 if a firm is in the post-IFRS period and 0 otherwise. The coefficient of interest is α_5; it measures the change in differential persistence between pre and post-IFRS. A negative α_5 signifies a decrease in reliability of total accruals post-IFRS while a positive α_5 signifies an increase in reliability.

Earnings and their persistence are driven by economic determinants and accounting standards. Their changes can be due to changes in either or both of these drivers. This is the reason why we use the differential persistence of accruals over cash flow, rather than the persistence of accruals alone in capturing reliability. The former measure controls for the persistence of underlying fundamentals through the persistence of cash flow. When investigating the change in reliability between pre- and post-IFRS periods, the change in the differential persistence coefficient provides a stronger test than the change in accruals persistence coefficient alone.

We further decompose total accruals into working capital accruals (ΔWC), non-current operating accruals (ΔNCO), and financing accruals (ΔFIN) to examine how IFRS adoption

affects the reliability of each of these accrual components. We modify regression (3) into the following:

$$ROA_{t+1} = \beta_0 + \beta_1 ROA_t + \beta_2 \Delta WC_t + \beta_3 \Delta NCO_t + \beta_4 \Delta FIN_t + \left(\beta_5 + \beta_6 ROA_t + \beta_7 \Delta WC_t + \beta_8 \Delta NCO_t + \beta_9 \Delta FIN_t\right) \cdot IFRS_t + \varepsilon_t \quad (4)$$

In this model, β_2, β_3, and β_4 respectively capture the differential persistence of working capital accruals, non-current operating accruals, and financing accruals over cash flow. Coefficients close to zero signify that these accruals are as persistent as cash flow, while negative coefficients suggest that these accruals are less persistent than cash flow. Since cash flow is more reliable than accruals, it is expected to have higher persistence than accruals, and all β_2, β_3, and β_4 are expected to be negative. These coefficients are inverse reliability measures for working capital accruals, non-current operating accruals, and financing accruals repectively, with less negative coefficients suggesting more reliable accruals.

Our coefficients of interest are β_7, β_8, and β_9. They capture the increment in differential persistence of working capital, non-operating, and financing accruals post-IFRS. Negative β_7, β_8, and β_9 would suggest that they have become less reliable post-IFRS, while positive coefficients would suggest increased reliability. As argued in the previous section, we expect accrual reliability to decrease post-IFRS. Since changes in IFRS affect all three categories of accruals (as illustrated in Table 1), we expect the reliability of all three sub-components of accruals to decrease. However, we do not have a prior as to which sub-component will have the biggest decline in reliability and which will have the smallest decline. It is an empirical question that we seek to explore.

3.2 Interaction with audit quality

Due to the role of auditors in enhancing reporting reliability, we expect audit quality to attenuate any decrease in accrual reliability post-IFRS. While accrual reliability may have decreased post-IFRS, firms with high quality auditors may be able to attenuate this effect. We first investigate this proposition using total accruals by interacting audit quality measures with each of the variables in model (3) as follows:

$$ROA_{t+1} = \alpha_0 + \alpha_1 ROA_t + \alpha_2 TACC_t + \left(\alpha_3 + \alpha_4 ROA_t + \alpha_5 TACC_t\right) \cdot IFRS_t + \varepsilon_t + AQ_t \cdot \left(\alpha_0^A + \alpha_1^A ROA_t + \alpha_2^A TACC_t + \left(\alpha_3^A + \alpha_4^A ROA_t + \alpha_5^A TACC_t\right) \cdot IFRS_t\right) \quad (5)$$

AQ represents the audit quality measure. The coefficient of interest is α_5^A, which captures the interaction effect between audit quality and accrual reliability post-IFRS, and so needs to be interpreted along with α_5 to gain a meaningful interpretation. This is akin to the argument that financial reporting is a joint product of both managers and auditors. Positive α_5 and α_5^A would suggest that accrual reliability has increased post-IFRS, and high quality auditors further enhance this improvement. Both negative coefficients would suggest a decline in accrual reliability in post-IFRS, and this decline is exacerbated by high quality auditors. A positive α_5 and a negative α_5^A would suggest that accrual reliability has increased post-IFRS, but high quality auditors tend to tarnish this improvement. Finally, a negative α_5 and a positive α_5^A would suggest that accrual reliability has declined post-IFRS but high quality auditors are able to attenuate this decline.

We further investigate the role of auditors in the sub-components of accruals by interacting audit quality measures with each of the variables in model (4) as follows:

$$\begin{aligned} ROA_{t+1} = {} & \beta_0 + \beta_1 ROA_t + \beta_2 \Delta WC_t + \beta_3 \Delta NCO_t + \beta_4 \Delta FIN_t + \\ & \left(\beta_5 + \beta_6 ROA_t + \beta_7 \Delta WC_t + \beta_8 \Delta NCO_t + \beta_9 \Delta FIN_t\right) \cdot IFRS_t + \\ & AQ_t \cdot \left(\beta_0^A + \beta_1^A ROA_t + \beta_2^A \Delta WC_t + \beta_3^A \Delta NCO_t + \beta_4^A \Delta FIN_t\right) + \\ & AQ_t \cdot \left(\beta_5^A + \beta_6^A ROA_t + \beta_7^A \Delta WC_t + \beta_8^A \Delta NCO_t + \beta_9^A \Delta FIN_t\right) \cdot IFRS_t + \varepsilon_t \end{aligned} \quad (6)$$

Our coefficients of interest are β_6^A, β_7^A, and β_8^A which respectively capture how audit quality interacts with working capital, non-operating, and financing accruals. Similar to α_5^A, these three coefficients need to be interpreted along with β_6, β_7, and β_8 respectively. The interpretations are only meaningful by looking at the pairs of coefficients (β_6^A, β_6), (β_7^A, β_7), and (β_8^A, β_8). If coefficients within a particular pair are both positive, this suggests that reliability of that particular accruals has increased post-IFRS, and high quality auditors further enhance this improvement. If coefficients within a particular pair are both negative, this suggests that accrual reliability of that accruals has declined post-IFRS, and high quality auditors exacerbate this decline. Positive accrual reliability coefficients (β_6, β_7, and β_8) and negative audit coefficients (β_6^A, β_7^A and β_8^A) would suggest that the reliability of the

particular accruals has increased post-IFRS, but high quality auditors tend to reduce this improvement. The opposite would suggest that accrual reliability has declined post-IFRS but high quality auditors are able to attenuate this decline.

In this study, we adopt the auditor size dichotomy (BIG) as our measure of audit quality. This audit quality measure is also consistent with the previous literature (e.g., Simunic, 1980; Francis, 1984; Francis and Stokes, 1986; Palmrose, 1986; Craswell et al., 1995). Larger auditors have more investments in their brand name and reputation capital to perform extensive audit procedures (Simunic and Stein, 1990; Francis and Wilson, 1988; Beatty, 1989). Ceteris paribus, accounting information audited by larger auditors are more precise (implying greater *audit competence*). With more reputation capital at stake, large auditors have fewer incentives to not disclose a discovered breach in exchange for retaining any one client (implying greater *audit independence*). Perhaps more importantly in the context of IFRS, large auditors tend to have more investment in research and practice in relation to IFRS implementation, as signified by the extensive worldwide publications issued by them around the time of IFRS implementation. Hence, we expect that the Big four audit firms are more likely to be capable of comprehending IFRS standards and providing professional guidance on implementation issues, and thus delivering higher quality audits.

3.3 Controls for the economic determinants of persistence

To conduct a more convincing test, we further control for economic factors that are found to drive the underlying persistence of earnings. In particular, each of the control variables is interacted with all the variables in our models, rather than accrual variables alone. Take model (5) for example. Incorporating control variables yields:

$$\begin{aligned} ROA_{t+1} = {} & \alpha_0 + \alpha_1 ROA_t + \alpha_2 TACC_t + \left(\alpha_3 + \alpha_4 ROA_t + \alpha_5 TACC_t\right) \cdot IFRS_t + \\ & AQ_t \cdot \left(\alpha_0^A + \alpha_1^A ROA_t + \alpha_2^A TACC_t + \left(\alpha_3^A + \alpha_4^A ROA_t + \alpha_5^A TACC_t\right) \cdot IFRS_t\right) + \\ & \sum_{k=1}^{6} CV_k \cdot \left(\alpha_0^k + \alpha_1^k ROA_t + \alpha_2^k TACC_t + \alpha_3^k IFRS_t + \alpha_4^k BIG_t\right) + \varepsilon_t \end{aligned} \quad (7)$$

where CV represents the set of control variables. After controlling for the economic determinants of persistence, our coefficients of interest remain the same as before. For example, our coefficients of interest in model (7) are still α_5 and α_5^A. We include the following six control variables – firm size, sales (cash flow) volatility, loss reporting

instances, abnormal earnings components, industry concentration and the extent of the investment in intangible assets, including goodwill.

Large firms tend to have more stable and predictable operations due to their ability to diversify. Earnings are likely to be more persistent for firms that are stable than those that are not. Singh and Davidson (2003) argue that firm size could capture business diversification in large firms such that their asset utilization and relationship with total accruals might differ due to economies of scales. Following the prior literature (e.g., DeFond and Park, 1997; Becker et al., 1998), we expect a positive relationship between accruals persistence and firm size.

Highly uncertain operating environments likely reflect higher volatility in sales and cash flow. It reflects the change in "excessive" earnings opportunities that could affect competition and firms' profitability overtime (Beaver et al., 1970). As earnings are likely to be more persistent when the operating environment is less uncertain, we expect a negative relationship between earnings persistence and our volatility measures.

Earnings losses tend to be more mean reverting or less persistent (Frankel and Litov, 2009). Loss firms could recognize a series of future loss transactions into a single transitory loss and liquidate assets generating the loss (Hayn, 1995). Compared with gradually recognized gains, immediate loss recognition implies losses would be less likely to recur into the future and consequently result in lower earnings persistence. This argument is also consistent with prior evidence that the performance of profitable companies reverts more slowly toward the mean than loss firms. Abnormal items are by definition non-recurring in nature, so we expect earnings that consist of larger abnormal earnings items to be less persistent.

To capture industry concentration we use the Herfindahl index, which is a measure of industry concentration that ranges between 0 and 1. An index closer to 0 indicates more competition in the industry. The competitive position of a firm in an industry relates to factors such as economies of scale, capital requirements, and ultimately industry-level profitability (Schmalensee, 1989). Ceteris paribus, one would expect the earnings of firms that encounter less competition to have more recurring economic transactions. This leads to more persistent earnings, and vice versa.

Highly valuable intangible assets could contribute to future earnings via their value enhancing effects such as first-mover, network advantages and strengthened innovation capabilities (Rajgopal et al., 2003). Other empirical studies (e.g, Asthana and Zhang, 2006) also find that greater investments in intangible assets such as R&D investments lead to incremental earnings persistence by mitigating competition. A positive relationship between the intensity of intangible and goodwill investments and earnings persistence is expected.

4. Data and sample

The initial sample consists of all firm-years for firms listed on the Australian Stock Exchange (ASX) between 1998 and 2008. We start our analysis in 1998 because this is when the auditing data became available in the financial report and we end our analysis in 2008 so that our results are not driven by the aftermath of the global financial crisis (which bottomed in March 2009). The financial statement data is from Aspect Financial Analysis, and the auditing data is from the CMCRC-UTS Audit database. Audit quality measures are estimated based on all listed companies available in the Capital Markets CRC – UTS audit database.[16] In Australia, IFRS pronouncements replaced previous Australian Generally Accepted Accounting Principles (AGAAP) from annual reporting periods beginning on or after 1 January 2005, and the first June year-end report prepared under IFRS-equivalent standards starts from 30 June 2006. Therefore, we eliminate the 2005 observations to exclude possible transitional effects.[17] In order to meet the requirement of non-missing values for every control variable, the final sample size is reduced to 7,509 firm-year observations.

We construct our variables from the ASPECT database as follows. ROA is calculated as earnings before interest and tax [#8012] divided by average total assets [#5090]. Total accruals (TACC) is calculated via the balance sheet approach, and is equal to the sum of working capital accruals, non-current operating accruals, and financing accruals (as defined below). Each of these three accruals can be further decomposed into seven sub-components as follows. First, current operating assets (COA) are calculated as total current assets [#5020] – (total short term investments [#5010] + cash and cash equivalents [#4990]), while current operating liabilities (COL) are calculated as total current liabilities [#6010] – current debt

[16] For instance, industry specialist measures for a given year are based on the whole audit market rather than the sample of 7,509 firm-years.

[17] We conduct a separate test by regressing ROA_t and $TACC_t$ on ROA_{t+1} for 2005 firm-year observations. The model has a much lower explanatory power, and the results suggest that both earnings and accruals are less persistent compared with the other years. The results are available upon request.

[#6000]. Second, non-current operating assets (NCOA) are calculated as total assets [#5090] – total current assets [#5020] – total long term investments [#5040], while non-current operating liabilities (NCOL) are calculated as total liabilities [#6040] – total current liabilities [#6010] – non-current debt [#6020].

Third, short term investments (STI) are calculated as total short term investments [#5010]+ cash equivalents (equal to cash and cash equivalents [#4990]- cash [#9370]), long-term investments (LTI) are simply item #5040, and financing liabilities (FINL) are equal to non-current debt [#6020] + current debt [#6000]+ preference shares [#201]. Fourth, working capital accruals (WC) are calculated as the change in the difference between COA and COL, non-current operating accruals (NCO) are calculated as the change in the difference between NCOA and NCOL, while financing accruals (FIN) are calculated as the change in the difference between financing assets (STI + LTI) and financing liabilities (FINL). All of these accrual variables are deflated by average total assets. Finally, IFRS is a dummy variable equal to 1 if a firm-year is in the post-IFRS period and 0 otherwise. BIG is an audit quality measure which equals 1 if a firm is audited by a Big four audit firm, and 0 otherwise.

For control variables, we use the square root of total assets [#5090] as the proxy for firm size (Size). [18] Sales volatility (SaleVol) is calculated as the absolute change in sales [#7090]. Cash flow volatility is defined as the absolute change in non-equity cash flow ([#9370] + [#9217] + [#1154] – [#9205]). Loss firm (Loss) is defined as a dummy variable equal to 1 if EBIT is negative and 0 otherwise. We define abnormal earnings items as the difference between net profit after abnormal items [#8036] and net profit before abnormal items [#8020], divided by average total assets. The Herfindahl index is defined as the sum of squares of the market capitalization of a particular GICS sector. Lastly, the extent of investment in intangibles and goodwill is calculated as goodwill [#5043] plus intangibles [#5045] divided by total assets.

5. Results

5.1 Descriptive statistics

Table 2 displays the descriptive statistics and Pearson correlation matrix for the pre-IFRS and

[18] Oei et al. (2008) include the natural log of the book value of year-end total assets to control for the possible firm size effect. However, we find that our model suffers severe multicollinearity problem with this variable. Therefore, we use the square-root transformation instead. We find that the different transformations do not alter our conclusions. The results are qualitatively the same and are available upon request.

post-IFRS samples. Panel A shows that mean values of ROA_{t+1} and ROA_t are all negative.[19] The mean differences between pre- and post-IFRS ROA_{t+1} and ROA_t are all significantly positive, indicating that profitability generally decreased post-IFRS.[20] Total accruals (TACC) increase from the pre-IFRS mean (median) of 0.035 (0.026) to the post-IFRS mean (median) of 0.109 (0.067). This increase is mainly attributable to a significant increase in non-current operating assets (ΔNCO). Working capital (ΔWC) and financial asset (ΔFIN) accruals are not significantly different between pre- and post-IFRS. Similar to Richardson et al. (2005), ΔWC and ΔNCO have positive means while ΔFIN has a negative mean. This suggests that net operating assets are growing, and such growth is supported by reducing financial assets or increasing debt. Furthermore, ΔWC has the lowest standard deviation (0.146 for pre-IFRS, and 0.134 for post-IFRS), followed by ΔFIN (0.207 for pre-IFRS, and 0.183 for post-IFRS) and ΔNCO (0.295 for pre-IFRS, and 0.278 for post-IFRS).[21]

Panel A of Table 2 also reports the descriptive statistics of the audit quality measure (BIG) and the seven control variables. 64 percent of our sample firms are audited by Big four auditors in the pre-IFRS period, whereas this proportion decreased to 50.7 percent in the post-IFRS period. These statistics are in line with more firms being audited by non-Big four auditors after the IFRS adoption.[22] Finally, firms have become larger (Size), experience lower sales volatility (SaleVol), are more likely to report losses (Loss), invest more in intangible and goodwill assets (TII), and report less abnormal earnings post-IFRS.

The Pearson correlation matrix is displayed in Panel B of Table 2. ROA_t and ROA_{t+1} are positively correlated (0.8178), indicating that ROA is relatively persistent in our sample. Out of the three accruals components, ΔNCO correlates the most with TACC (0.7276), followed

[19] The negative mean value of ROA is consistent with Goodwin et al. (2008) and Lai et al. (2013). Goodwin et al. (2008) report an average ROA of -15% for Australian firms in 2005. Lai et al. (2013) document that the mean ROA of Australian companies is ranging from -14.5% to -10.8% during 1998-2008, though they measure ROA by using after tax profits rather than EBIT in this study.

[20] The decreasing profitability (measured by ROA) is in line with Chalmers et al. (2011) and Lai et al. (2013). In particular, Lai et al. (2013) show that Australian firms ROA declines by 0.6% every year over 1993-2009 and the percentage of loss firms increases from 47.5% in 1998 to 56.8% in 2008. Chalmers et al. (2011) find that more than 50% of their sample firms report losses in each of the years 2005 to 2008. The percentage of firms reporting losses during 1990–2004 is significantly lower, with only five out of 15 years being higher than 50%.

[21] ΔNCO in our study has much larger standard deviations (0.295 for pre-IFRS, and 0.278 for post-IFRS) than that reported in Richardson et al. (2005) (0.151). The extended decomposition results show that these larger standard deviations are attributable to the large standard deviations of ΔNCOA (0.303 for pre-IFRS, and 0.289 for post-IFRS).

[22] A separate test shows that among 12,637 firm-years for the period of 1998 to 2008 (firms for financial year 2005 are excluded), there are 62.56% of firms engaged with Big auditors in the pre-IFRS period, whereas the percentage is reduces to 47.81% in the post-IFRS period.

by ΔWC (0.2179) and ΔFIN (0.1821). This correlation is different from the U.S. data, where Richardson et al. (2005, p. 455) document similar magnitudes of correlation for ΔWC (0.392), ΔNCO (0.423) and ΔFIN (0.418). Our correlations are close to those in Oei et al. (2008) who document Pearson correlations of 0.248, 0.544 and 0.312 for ΔWC, ΔNCO, and ΔFIN. For Australian firms, accounting accruals are mainly attributable to non-current operating accruals.[23] Both ΔWC (-0.2720) and ΔNCO (-0.3756) are negatively correlated with ΔFIN, suggesting that firms tend to finance growth in net operating assets through financing liabilities. In contrast to results reported by Richardson et al. (2005) (but consistent with Oei et al. 2008), ΔWC is negatively correlated with ΔNCO (-0.0941), suggesting Australian firms are less likely to grow their current and non-current operating activities in tandem. Among the three accrual components, ΔWC and ΔNCO are positively correlated with both ROA_t and ROA_{t+1}., while ΔFIN is not significantly correlated with ROA.[24]

Insert Table 2 here

5.2 Regression analysis

5.2.1 Total accrual reliability

Panel A of Table 3 reports the regression results for model (3). Negative coefficients for the intercept (α_0) and IFRS dummy (α_3) are consistent with the descriptive statistics reported in Table 1. On average Australian companies reported a loss during the pre-IFRS period, and reported profitability generally decreased post-IFRS. The coefficient on lagged ROA (α_1) indicates that 76.84% of cash flow tends to persist into next period's earnings in the pre-IFRS period. The differential persistence of accruals over cash flow (α_2) is negative (-0.0200) with a significant *t*-statistics of -3.06.[25] Accrual persistence during the pre-IFRS period is 0.7484, about 3% lower than the persistence of cash flow (0.7684). This suggests that accruals are less persistent, and as a consequence, less reliable than cash flow in the pre-IFRS period. However, the incremental persistence of post-IFRS cash flow relative to pre-IFRS cash flow (α_4) is insignificant, indicating that, as expected, the persistence of cash flow did not change after the IFRS implementation.

[23] A separate test shows that the correlation between ΔNCO and TACC is 0.7219 in the pre-IFRS period and 0.6090 in the post-IFRS period.

[24] A further test shows that ΔFIN is not significantly correlated with ROA_t or ROA_{t+1} in the pre- and post-IFRS subsample. Our findings are also different from Oei et al. (2008), in which none of three accrual components is significantly correlated with ROA_{t+1}.

[25] For comparison, Richardson et al. (2005) report an estimated coefficient of -0.082 for the differential persistence of accruals over cash flow (α_2).

Our coefficient of interest in this model is α_5, which measures the change in differential persistence of accruals over cash flow between the pre- and post-IFRS periods. Consistent with our first hypothesis, the coefficient is negative and statistically significant (-0.0509, t=-4.28) suggesting a decrease in accrual reliability in the post-IFRS period. Accrual persistence reduced by about 7%, compared to the pre-IFRS period.[26] This decrease is likely due to the introduction of new accounting standards rather than any change in the persistence of underlying fundamentals, given the absence of any reduction in cash flow persistence.

Insert Table 3 here

5.2.2 Accrual components reliability

Panel B of Table 3 reports the regression for Model (4) for the three sub-components of accruals. The explanatory power of this regression is almost unchanged from the results using total accruals reported in Panel A. Coefficients β_1, β_2, and β_3 respectively represent the differential persistence of ΔWC, ΔNCO, and ΔFIN relative to cash flow. All of them are negative and statistically significant, indicating that they are less persistent and hence less reliable than cash flow in the pre-IFRS period. As Richardson et al. (2005) categorize the degree of reliability of ΔNCO, ΔWC, and ΔFIN respectively as low/median, median, and high, we would expect ΔNCO to have the most negative coefficient, followed by ΔWC, and ΔFIN. However, we find that ΔWC has the most negative coefficient (-0.0346, t=-2.05), followed by ΔFIN (-0.0265, t=-2.27) and ΔNCO (-0.0168, t=-2.43). Our results are similar to those in Oei et al. (2008), suggesting that ΔNCO is more persistent in Australia and hence more reliable than ΔFIN and ΔWC. One explanation provided by Oei et al. (2008) is that non-current asset revaluations permitted under AGAAP could be more relevant in predicting future earnings than other accrual adjustments.

Our coefficients of interest in this regression are β_6, β_7, and β_8, which capture the incremental differential persistence of ΔWC, ΔNCO, and ΔFIN post-IFRS. All of the coefficients are negative and statistically significant, suggesting that these accrual components have all become less reliable post-IFRS. This lends further support to hypothesis 1 in that all three accrual components have decreased post-IFRS. The most significantly affected accrual

[26] The calculation is based on the estimated coefficient of α_5 (-0.0509) and accrual persistence during the pre-IFRS period (0.7484). We assume that α_4 is equal to zero, given its lack of statistical significance.

components are working capital (-0.0674, t=-2.23) and financing accruals (-0.0715, t=-3.02), followed by non-current operating accruals (-0.0452, t=-3.59). As differences between IFRS and AGAAP affect all three accrual components (see Table 1), our results generally support the widely raised reliability concern in regards to IFRS.

5.2.3 Interaction with audit quality

Table 4 reports the regressions that examine how audit quality could impact changes in accrual reliability following mandatory IFRS adoption. Panel A of Table 4 shows the regression for model (5) where total accruals (TACC) are interacted with a brand name auditor dummy (BIG). Adding the audit quality variable in the model slightly increases the explanatory power of the model to 0.6747. Our coefficients of interest are α_5 and α_5^A. The significantly negative α_5 (-0.0682, t=-3.98) indicates a decline in accrual reliability post-IFRS for low quality audit clients. Accrual persistence during the post-IFRS period is 0.6858, reducing by about 9% compared to the pre-IFRS period.[27] On the other hand, the positively significant coefficient for α_5^A (0.0486, t=2.17) suggests the degree of IFRS-related decrease in accrual reliability post-IFRS is lower for high quality audit clients. The sum of α_5 and α_5^A is still negative (-0.0682+0.0486=-0.0196), indicating that Big four auditors are able to attenuate the decline in accrual reliability post-IFRS. Thus, Big four auditors enhance the reliability of accounting numbers during the post-IFRS period and our second hypothesis is supported.

Insert Table 4 here

Panel B of Table 4 extends our analysis of auditor effects by examining the interaction effect between the three accrual components (ΔWC, ΔNCO, and ΔFIN) and the BIG dummy variable (i.e., model (6)). As discussed earlier, interpretation of this model is only meaningful by looking at the following coefficient pairs β_7 and β_7^A, β_8 and β_8^A, and β_9 and β_9^A. For ΔWC and ΔNCO, β_7 (-0.1086, t=-2.56) and β_8 (-0.0618, t=-3.49) are both significantly negative, while β_7^A (0.1104, t=1.85) and β_8^A (0.0438, t=1.81) are both significantly positive.

[27] The calculation is based on the estimated coefficient of α_5 (-0.0682) and accrual persistence during the pre-IFRS period (0.7540). We assume that all estimated coefficients that are not statistically significant are equal to zero.

For financing accruals, β_9 is significantly negative but β_9^A is insignificantly positive. These results indicate that reliability of working capital accruals, non-current operating accruals, and financing accruals has decreased post-IFRS. Brand name auditors are able to attenuate this decline in accrual reliability fully for working capital accruals and partly for non-current operating accruals, but they have no significant impact on the decline of financing accrual reliability.

An additional point worth noting for the regression for Model (5) is that the coefficient (α_2^A) for the interaction term Big*TACC is significantly negative (-0.0307, t=-2.38), while the coefficient on α_2 is insignificant. The negative α_2^A is mainly driven by β_3^A (-0.0313, t=-2.27) for BIG*ΔNCO, as β_2^A for BIG*ΔWC and β_4^A for BIG*ΔFIN are both negative but insignificant. Thus, clients of Big four auditors are more likely to report less reliable accruals pre-IFRS, and such effect is mainly due to the less reliable non-current operating accruals.[28] A possible explanation is that under AGAAP firms had greater flexibility in recognizing, depreciating, and amortizing non-current operating assets (including PPE, goodwill and intangibles - see Table 1). More competent Big four auditors might have permitted the reporting of more relevant information about non-current operating assets which could potentially impair accrual reliability, due to the trade-off between relevance and reliability.

5.2.4 Controlling for economic determinants of persistence

We repeat all of the previous tests by controlling for economic factors that are found to determine the underlying persistence of earnings (and earnings components). To maximize the power of our test, each of the control variables is interacted with all the main variables, rather than the accrual variables alone. This approach tends to over-control for the change in persistence and bias us *against* finding results. For brevity, we only report the results of the regressions with audit quality interactions in Table 6.

All regressions models have a slight increase in their explanatory powers. First, with control variables included in the regression, α_5 remains significantly negative with a similar coefficient of -0.0682 (t=-3.97), supporting our first hypothesis. Consistent with our second

[28] The additional test of extended accrual decompositions reported in section 6.1 further shows that the lower reliability of non-current operating accruals for Big four clients is attributable to a lower degree of reliability of non-current operating assets.

hypothesis, the magnitude of the positive coefficient α_5^A (0.0526) is slightly higher than that without the fundamental controls reported in Table 4 (0.0486). Results of accrual components are reported in Panel B. Coefficients of accrual components remain significantly negative with only marginal changes in their magnitudes. Overall, after controlling for economic determinants of persistence, we still find that accrual reliability has decreased and brand name auditors are able to at least partially attenuate the decline in reliability of working capital and non-current operating accruals

Insert Table 5 here

6. Additional tests

6.1 Extended accrual decompositions

Following Richardson et al. (2005), we further decompose accruals into seven sub-components – current operating asset accruals (ΔCOA), current operating liability accruals (ΔCOL), non-current operating asset accruals (ΔNCOA), non-current operating liability accruals (ΔNCOL), short term investment accruals (ΔSTI), long-term investment accruals (ΔLTI), and financing liability accruals (ΔFINL). This accrual decomposition test potentially deepens our understanding about the impact of IFRS adoption on accrual reliability. The definitions of these variables are provided in section 4.2.

Descriptive statistics for the seven sub-components of accruals (untabulated) shows that they have all significantly increased in the post-IFRS period. Significant changes in ΔCOA (mean difference of -0.015) and ΔCOL (mean difference of -0.010) after IFRS adoption offset each other and result in a stable ΔWC. In contrast, a significant increase in ΔNCO post-IFRS is attributable to a much larger increase in ΔNCOA (mean difference of -0.075) than ΔNCOL (mean difference of -0.008). ΔFIN is the difference between changes in financial assets (ΔSTI+ΔLTI) and financial liabilities (ΔFINL). All these financial accrual subcomponents have increased significantly post-IFRS, and their aggregate effect on ΔFIN is neutral.

Table 6 reports multivariate test results for the impact of IFRS adoption on sub-accrual components with audit quality interactions. Among the seven sub-components of accruals, the estimated coefficients for IFRS*ΔCOL (δ_{12}=0.1246, t=2.37), IFRS*ΔNCOA (δ_{13}=-0.0568, t=-2.86), IFRS*ΔSTI (δ_{15}=-0.1937, t=-2.73) are statistically significant. The results are

consistent with our first hypothesis, suggesting that the reliability of current operating liability accruals, non-current operating asset accruals and short-term investment accruals has declined after the IFRS adoption for low quality audit clients. However, the decline in the reliability of sub-accrual components has been largely attenuated for firms with big four auditors. Consistently, the estimated coefficient for IFRS*ΔNCOA*BIG is positive and significant (δ_{13}^{A}=0.0452, t=1.74), while the estimated coefficients for IFRS*ΔCOL*BIG (δ_{12}^{A}=-0.1159) and IFRS*ΔSTI*BIG (δ_{15}^{A}=0.1278) are marginally significant.

Insert Table 6 here

6.2 Alternative measures of audit quality

In addition to auditor size, it is widely recognized that client industry expertise is likely to be associated with higher audit quality (Craswell et al., 1995). In this study, we measure audit industry specialisation using a proxy for city leader. It is defined as an audit firm that possesses the largest (audit fees based) market share in a given GICS industry city wide. We adopt this measure consistent with the well-documented Australian evidence (Ferguson et al., 2003; Ferguson et al., 2006) that industry leaders at the city level (as distinct from the national level) charge fee premiums and deliver higher quality of audit services.

We re-estimate models (5) and (6) with a city leader dummy instead of BIG. The results (untabulated) show that the coefficient of ΔWC*CityLeader is significantly positive, indicating that the reliability of working capital accruals is higher for city leader clients. We also find a significantly negative coefficient for IFRS*ΔWC and a significantly positive coefficient for IFRS*ΔWC*CityLeader, suggesting that city leader auditors attenuates the reduction in accrual reliability. However, such effect disappears after controlling for the Big four auditors effect in the model. In summary, there is only marginal evidence that city leaders enhance working capital accrual reliability, but it does not have any effect on the reliability of total accruals after mandatory IFRS adoption. An explanation is that an auditor's prior industry-specific knowledge and experience may not be as helpful in implementing IFRS as deep knowledge of the IFRS standards generally.

Our second test examines whether audit effort (captured by excessive large audit fees) affects accrual reliability around the IFRS implementation. This proposition is motivated by recent

research (e.g., Caramanis and Lennox, 2007; Zhao, 2010) showing that greater audit effort is associated with higher earnings quality.[29] We measure audit effort with a ratio of actual to expected audit fees (UnexpAF), where the expected fee is the anti-log of the fitted value of the audit fee model adopted from Ferguson et al. (2006). We also capture excessive audit effort by constructing a dummy variable (LrgUnexpAF) coded as 1 if an audit firm has its unexpected audit fees in the top decile of firms in a given year or 0 otherwise.[30] This is consistent with recent Australian studies (e.g., Hamilton et al., 2008) that show that excessive audit fees improve the perceived quality of total accruals.

We re-estimate models (5) and (6) by replacing BIG by UnexpAF and LrgUnexpAF respectively. There is no significant result for any of these audit effort variables. Therefore, contrary to our proposition, large and excessive audit fees do not affect accrual reliability around the IFRS implementation. A further test is conducted to examine whether excessive audit fees have an impact on accrual reliability when they are conditional on auditor size. This design is motivated by Tennander and Olsson (2010)'s finding that the impact of differential audit firm size on reporting quality could hinge on the relative amount of audit fee payment as a mechanism of capturing auditor effort input. In our test, the excessive audit effort measure (LrgUnexpAF) is interacted with brand name audits (BIG).

The coefficients of all accrual components remain unchanged. The coefficient on the four-way interaction term of IFRS*TACC*BIG*LrgUnexpAF is positive and statistically significant (0.105, t=2.11). This result is in addition to a significant Big four audit effect (IFRS*TACC*BIG) in attenuating the decrease in accrual reliability post-IFRS. Similarly, the coefficient of the four way interaction term of IFRS*ΔNCO*BIG*LrgUnexpAF is positive and marginally significant (0.106, t=1.70), while the coefficient of IFRS*ΔWC*BIG*LrgUnexpAF remains significantly positive (0.115, t=1.90). These results are consistent with our finding that Big four auditors attenuate the decrease in the reliability of working capital accruals post-IFRS. This effect is conditional upon excessive audit fees as an indication of audit effort inputs. In other words, excessive audit effort inputs are able to

[29] In particular, Zhao (2010) associates total accrual persistence with audit fees and demonstrates that accrual persistence increases with enhanced audit effort. His results support that auditors with greater audit effort are more likely to detect material misstatements as manifested into less reliable accruals.

[30] We also repeat the tests with LarUnexpAF defined as an audit firm has its unexpected audit fees in the top quintile of the firms in a given year. No significant result is found.

mitigate the decline in the reliability of working capital and non-current operating accruals for Big four audit firms during the post IFRS period.

6.3 Alternative earnings definitions

In this section, we examine whether our results are sensitive to alternative definitions of earnings. First, we repeat our major tests by replacing EBIT with earnings after interest and tax. The explanatory power of the regressions with after tax earnings reduce slightly (with adjusted R^2 of around 60%). The results are generally consistent with those reported above.

Second, we replicate our major tests by using comprehensive income instead of EBIT. Comprehensive income is defined as cash flow from non-equity sources plus accruals. Not surprisingly, the regressions using comprehensive income have significantly lower explanatory power with adjusted R^2 of around 10%. The persistence coefficient for comprehensive income is positive (around 42%) but substantially lower than the other income measures we examine. Although the coefficient of total accruals (TACC) is significantly negative (-0.270, t=-7.82), we do not find any incremental decline post-IFRS. However, these results could be due to the fact that comprehensive income includes dirty surplus items such as foreign currency translation and asset revaluation reserve that are not persistent in nature, and this lack of persistence in both sub-periods dominates any reduction in the persistence of operating accruals.

7. Conclusions

We investigate the impact of IFRS on accrual reliability among Australian firms. The switch from AGAAP to IFRS was one of the most fundamental changes in accounting regulation ever to have occurred in Australia, yet for the most part we have relatively little evidence on the effects beyond assessment of the characteristic most often claimed as a benefit of IFRS (i.e., increased value relevance). Indeed, the evidence on IFRS effects globally also appears to be dominated by assessments of value relevance. In contrast to prior research, we explicitly recognize that there can be a trade-off between relevance and reliability, and provide an empirical examination of one potential measure of reliability to identify potential costs of the mandatory switch to IFRS.

Our results indicate that accrual reliability declined significantly after the mandatory adoption of IFRS. Working capital, non-current operating, and financing accruals all contribute to this

decline. Our use of a method that differentiates cash flow and accrual persistence increases our confidence that the apparent decline in accrual reliability is not merely a reflection of a decrease in the persistence of fundamentals. However, we also find that brand name audit firms are able to attenuate the decrease in accrual reliability during the post IFRS period, and that there is no apparent evidence of market-leader effects once use of a Big four audit firm is controlled for. This result reinforces the view that investments in IFRS technology and implementation expertise likely formed an important dimension of audit quality, at least as represented in our measure of accrual reliability.

Combining the existing evidence of increased value relevance post-IFRS with our evidence of decreased reliability post-IFRS, we can infer that fair value oriented IFRS may have enhanced the relevance of accounting information at the expense of reliability. This inference is consistent with the inherent trade-off between reliability and relevance. Of course, there are still many unanswered research questions. For instance, there are nearly 40 policy differences between IFRS and AGAAP. Which of them is the major contributor to the decline in reliability? Also, does the decline in reliability attributable to a specific accounting policy difference directly yield the benefit of increased relevance? If the answer is yes, is the improvement in relevance enough to justify the decline in reliability? Also, how does the capital market react to this decline in reliability? Are there any capital market consequences such as higher funding cost or higher information risk premium? We leave these questions to future research.

Table 1 – This table summarizes some key difference between IFRS and AGAAP.

	IFRS	AGAAP	Accruals Affected
Goodwill	No amortisation; annual impairment testing	Must be amortised	ΔNCO
Intangibles	Internally generated goodwill, brands, mastheads, publishing titles, customer lists and similar items may not be recognised. Research costs must stay expensed Revaluation permitted for active market Intangible with finite useful life are amortized and annual impairment testing for intangible with indefinite useful life	Can be recognised. Can be deferred Revaluation allowed if reliably determinable No specific guidance	ΔNCO
Impairment	Non-current assets must be written down to recoverable amount (the higher of fair value less costs to sell and value in use). Detailed guidance on the allocation of impairment loss to cash generating unit (goodwill first to go, then pro-rata basis to other non-current assets in the CGU) Impairment losses can be reversed is come circumstances	Recoverable amount is defined as the net amount expected to be recovered through cash inflows and outflows from the continued use and subsequent disposal of an asset. No guidance on allocation of impairment loss to CGU and its reversal.	ΔNCO
PPE	Cost of an asset to include the cost of dismantling and removing an asset and restoring the site on which the asset was created. Revaluation is accounted on an asset-by-asset basis (i.e., revaluation cannot be netted off within the same class)	Not specifically addressed. Revaluation is accounted on an asset class basis	ΔNCO
Restructuring provision	Where an operation is to be sold, a demonstrable commitment for the restructure arises when there is a binding sale agreement.	A demonstrable commitment can exist before a binding sale agreement has been entered into	ΔNCO and/or ΔWC
Share-based payment	For equity settled transaction, recognise fair value of share options as an expense over vesting period, based on fair value at grant date. For cash settled transaction, use fair value of liabilities at each reporting date with changes in value included in the income statement.	No standard	ΔWC and/or ΔNCO
Income Tax	Balance sheet approach	Income statement approach	ΔWC and/or ΔNCO
Leases	For finance lease, record assets and liabilities at the lower of present value of minimum lease payment and fair value Operating lease payments should be recognised as an expense/revenue on a straight line basis over the lease term	Use present value of minimum lease payment Operating lease payment expensed as incurred.	ΔFIN and/or ΔNCO

Revenue Recognition	Based on transfer of risk and reward	Based on control	ΔWC, and/or ΔNCO
Financial Instruments	Requirement to recognise all financial assets, liabilities on balance sheet, including derivative. Measurement and recognition of changes in the value of financial assets will depend on its classification. The four classifications are: (i) assets available for sale; (ii) loans or receivables; (iii) held to maturity; and (iv) financial assets at fair value through profit or loss. Measure financial liabilities held for trading at fair value with changes in fair value recognised through profit and loss. All other financial liabilities are recognised at amortised cost. For hedge accounting, there are three types of hedge relationships: (i) fair value hedge; (ii) cash flow hedge; and (iii) hedge of net investments.	No specific guidance	ΔFIN
Investment property	Permits the use of the cost or fair value model. If fair value model is adopted, changes in fair value are taken through profit and loss, not reserve.	No specific guidance.	ΔFIN

Source: Deloitte

Table 2 Descriptive statistics and correlations for total accruals and accrual decomposition. The sample consists of 4,716 pre-IFRS firm-year observations from 1998 to 2004 and 2,478 post-IFRS firm-year observations from 2006 to 2008.

Panel A Descriptive statistics

	N	Mean	Std. Dev	25%	Median	75%	N	Mean	Std. Dev	25%	Median	75%	Mean Diff^.	
ROA_{t+1}	4,716	-0.058	0.233	-0.165	0.003	0.089	2,478	-0.105	0.318	-0.218	-0.036	0.098	0.047	***
ROA_t	4,716	-0.058	0.248	-0.152	0.007	0.091	2,478	-0.095	0.333	-0.212	-0.026	0.109	0.037	***
$TACC_t$	4,716	0.035	0.287	-0.063	0.026	0.128	2,478	0.109	0.256	-0.020	0.067	0.222	-0.075	***
ΔWC_t	4,716	0.001	0.146	-0.039	0.001	0.042	2,478	0.006	0.134	-0.037	0.001	0.042	-0.005	
ΔNCO_t	4,716	0.051	0.295	-0.043	0.014	0.117	2,478	0.119	0.278	-0.008	0.057	0.216	-0.067	***
ΔFIN_t	4,716	-0.182	0.207	-0.066	0.000	0.035	2,478	-0.016	0.183	-0.048	0.000	0.027	-0.002	
BIG	4,716	0.640	0.480	0	1	1	2,478	0.507	0.500	0	1	1	0.133	***
Size	4,716	11618	19853	2868	5175	11349	2,478	14110	25469	3237	5890	12958	-2,491	***
SaleVol	4,716	0.263	0.494	0.029	0.112	0.295	2,478	0.213	0.384	0.017	0.084	0.257	0.050	***
ΔCF	4,716	0.183	0.255	0.036	0.095	0.229	2,478	0.193	0.268	0.040	0.107	0.254	-0.010	
Loss	4,716	0.488	0.500	0	0	1	2,478	0.531	0.499	0	1	1	-0.043	***
Hindex	4,716	0.238	0.168	0.138	0.160	0.265	2,478	0.246	0.177	0.157	0.188	0.251	-0.008	*
TII	4,716	0.107	0.191	0.000	0.004	0.129	2,478	0.140	0.214	0.000	0.007	0.219	-0.033	***
Abnormal	4716	1.184	7.067	0.000	0.000	0.272	2,478	0.241	2.151	0.000	0.000	0.000	0.943	***

*** p<0.01, ** p<0.05, * p<0.1 (two-tailed)

^ Two-sample t test with unequal variances.

ROA = earnings before interest and tax [#8012] divided by average total assets [#5090].

TACC = the sum of working capital accruals, non-current operating accruals, and financing accruals.

WC (working capital accruals) = the change in difference between COA and COL divided by average total assets, net operating accruals, where COA (Current operating assets) = total current assets [#5020] – total short term investments [#5010] + cash and cash equivalents [#4990], and COL (Current operating liabilities) = total current liabilities [#6010] – current debt [#6000].
NCO (Non-current operating accruals) = the change in difference between NCOA and NCOL divided by average total assets, where NCOA (Non-current operating assets) = total assets [#5090] – total current assets [#5020] – total long term investments [#5040], and NCOL (Non-current operating liabilities) = total Liabilities [#6040] – total current liabilities [#6010] – non-current debt [#6020].
FIN (while financing accruals) = the change in difference between financing assets (STI + LTI) and financing liabilities (FINL) divided by average total assets, where STI (short term investments) = total short term investments [#5010]+ cash equivalent, which is equal to cash and cash equivalents [#4990]- cash [#9370], LTI (Long-term investments) = item [#5040], and FINL (financing liabilities) = non-current debt [#6020] + current debt [#6000]+ preference shares [#201].
IFRS = 1 if a firm-year is in the post-IFRS period and 0 otherwise.
BIG = 1 if a firm is audited by the Big n audit firms, and 0 otherwise.
Size = the square root of the book value of year-end total assets [#5090]
SaleVol = the absolute change in sales [#7090].
ΔCF = the absolute change in non-equity cash flow ([#9370] + [#9217] + [#1154] – [#9205]).
Loss = equals 1 if EBIT is negative and 0 otherwise.
Hindex = defined as the sum of squares of the market capitalization of a particular GICS sector.
TII = goodwill [#5043] plus intangibles [#5045] divided by total assets.
Abnormal = net profit after abnormal items [#8036] – net profit before abnormal items [#8020] divided by average total assets.

Panel B Pearson correlation matrix

	ROA_{t+1}	ROA_t	$TACC_t$	ΔWC_t	ΔNCO_t	ΔFIN_t	BIG	Size	SaleVol	ΔCF	Loss	Hindex	TII
ROA_t	0.8178*	1											
	0.0000												
$TACC_t$	0.1022*	0.1739*	1										
	0.0000	0.0000											
ΔWC_t	0.0622*	0.0980*	0.2179*	1									
	0.0000	0.0000	0.0000										
ΔNCO_t	0.0807*	0.1221*	0.7276*	-0.0941*	1								
	0.0000	0.0000	0.0000	0.0000									
ΔFIN_t	-0.0191	-0.0049	0.1821*	-0.2720*	-0.3756*	1							
	0.1044	0.6805	0.0000	0.0000	0.0000								
BIG	0.2365*	0.2170*	-0.0420*	0.0061	-0.0343*	-0.0132	1						
	0.0000	0.0000	0.0004	0.6059	0.0037	0.2638							
Size	0.2736*	0.2682*	0.0087	0.0106	0.0333*	-0.0442*	0.2690*	1					
	0.0000	0.0000	0.4631	0.3697	0.0048	0.0002	0.0000						
SaleVol	0.0952*	0.1046*	0.0249*	0.0825*	0.0115	-0.0410*	0.0074	-0.0420*	1				
	0.0000	0.0000	0.0348	0.0000	0.3286	0.0005	0.5302	0.0004					
ΔCF	-0.2399*	-0.2721*	0.0903*	0.0150	0.0679*	0.0166	-0.0642*	-0.1529*	0.1413*	1			
	0.0000	0.0000	0.0000	0.2029	0.0000	0.1591	0.0000	0.0000	0.0000				
Loss	-0.6253*	-0.6795*	-0.0608*	-0.0936*	-0.0255*	0.019	-0.2467*	-0.3625*	-0.1146*	0.2184*	1		
	0.0000	0.0000	0.0000	0.0000	0.0307	0.1074	0.0000	0.0000	0.0000	0.0000			
Hindex	0.0420*	0.0453*	-0.0131	0.0305*	-0.0116	-0.0232*	0.0609*	0.0955*	0.0665*	-0.0333*	-0.1203*	1	
	0.0004	0.0001	0.2657	0.0098	0.3255	0.0487	0.0000	0.0000	0.0000	0.0048	0.0000		
TII	0.0808*	0.0986*	0.0865*	-0.0037	0.1553*	-0.1033*	0.0496*	0.1177*	0.0255*	-0.0532*	-0.1606*	0.2295*	1
	0.0000	0.0000	0.0000	0.7558	0.0000	0.0000	0.0000	0.0000	0.0303	0.0000	0.0000	0.0000	
Abnormal	0.0142	0.0246*	-0.1298*	-0.0126	-0.1034*	-0.0217	0.0281*	-0.0279*	0.01	0.0016	0.0173	-0.005	-0.0103
	0.2287	0.0371	0.0000	0.2846	0.0000	0.0652	0.0173	0.0178	0.3949	0.8909	0.1432	0.6706	0.3842

* $p<0.05$ (two-tailed)

(see Panel A for variable definitions)

Table 3 Tests for differential reliability of accrual and accrual components in the pre- and post-IFRS period

Panel A: Regression using total accruals

$$ROA_{t+1} = \alpha_0 + \alpha_1 ROA_t + \alpha_2 TACC_t + (\alpha_3 + \alpha_4 ROA_t + \alpha_5 TACC_t) \cdot IFRS_t + \varepsilon_t$$

	Constant (α_0)	ROA_t (α_1)	$TACC_t$ (α_2)	IFRS (α_3)	IFRS*ROA_t (α_4)	IFRS*$TACC_t$ (α_5)	
Coefficient	-0.0126***	0.7684***	-0.0200***	-0.0095**	0.0273	-0.0509***	Adjusted R^2
t-statistic	(-6.94)	(64.76)	(-3.06)	(-2.55)	(1.36)	(-4.28)	0.6716
							F-statistic
							1341.76***

*** p<0.01, ** p<0.05, * p<0.1 (two-tailed)
(see Table 2 for variable definitions)

Panel B: Regression using accrual decompositions

$$ROA_{t+1} = \beta_0 + \beta_1 ROA_t + \beta_2 \Delta WC_t + \beta_3 \Delta NCO_t + \beta_4 \Delta FIN_t + (\beta_5 + \beta_6 ROA_t + \beta_7 \Delta WC_t + \beta_8 \Delta NCO_t + \beta_9 \Delta FIN_t) \cdot IFRS_t + \varepsilon_t$$

	Constant (β_0)	ROA_t (β_1)	ΔWC_t (β_2)	ΔNCO_t (β_3)	ΔFIN_t (β_4)	IFRS (β_5)	IFRS* ROA_t (β_6)	IFRS* ΔWC_t (β_7)	IFRS* ΔNCO_t (β_8)	IFRS* ΔFIN_t (β_9)	
Coefficient	-0.0129***	0.7690***	-0.0346**	-0.0168**	-0.0265**	-0.0106***	0.0263	-0.0674**	-0.0452***	-0.0715***	Adjusted R^2
t-statistic	(-6.97)	(64.33)	(-2.05)	(-2.43)	(-2.27)	(-2.75)	(1.31)	(-2.23)	(-3.59)	(-3.02)	0.6717
											F-statistic
											747.03***

*** p<0.01, ** p<0.05, * p<0.1 (two-tailed)
(see Table 2 for variable definitions)

Table 4 Tests for audit quality effects on differential reliability of accrual and accrual components in the pre- and post-IFRS period

Panel A: Regression using total accruals

$$ROA_{t+1} = \alpha_0 + \alpha_1 ROA_t + \alpha_2 TACC_t + (\alpha_3 + \alpha_4 ROA_t + \alpha_5 TACC_t) \cdot IFRS_t + \varepsilon_t +$$
$$AQ_t \cdot (\alpha_0^A + \alpha_1^A ROA_t + \alpha_2^A TACC_t + (\alpha_3^A + \alpha_4^A ROA_t + \alpha_5^A TACC_t) \cdot IFRS_t)$$

	Constant (α_0)	ROA_t (α_1)	$TACC_t$ (α_2)	IFRS (α_3)	IFRS*ROA_t (α_4)	IFRS*$TACC_t$ (α_5)	
Coefficient	-0.0303***	0.7540***	0.0001	-0.0163**	0.0130	-0.0682***	
t-statistic	(-8.76)	(42.44)	(0.01)	(-2.36)	(0.46)	(-3.98)	
	BIG (α_0^A)	BIG*IFRS (α_3^A)	BIG*ROA_t (α_1^A)	BIG*$TACC_t$ (α_2^A)	BIG*IFRS *ROA_t (α_4^A)	BIG*IFRS *$TACC_t$ (α_5^A)	
Coefficient	0.0264***	0.0142*	0.0098	-0.0307**	0.0200	0.0486**	Adjusted R^2 0.6747
t-statistic	(6.47)	(1.73)	(0.41)	(-2.38)	(0.50)	(2.17)	F-statistic 667.94***

*** p<0.01, ** p<0.05, * p<0.1 (two-tailed)
(see Table 2 for variable definitions)

Panel B: Regression using accrual decompositions

$$ROA_{t+1} = \beta_0 + \beta_1 ROA_t + \beta_2 \Delta WC_t + \beta_3 \Delta NCO_t + \beta_4 \Delta FIN_t + (\beta_5 + \beta_6 ROA_t + \beta_7 \Delta WC_t + \beta_8 \Delta NCO_t + \beta_9 \Delta FIN_t) \cdot IFRS_t +$$
$$AQ_t \cdot (\beta_0^A + \beta_1^A ROA_t + \beta_2^A \Delta WC_t + \beta_3^A \Delta NCO_t + \beta_4^A \Delta FIN_t) + AQ_t \cdot (\beta_5^A + \beta_6^A ROA_t + \beta_7^A \Delta WC_t + \beta_8^A \Delta NCO_t + \beta_9^A \Delta FIN_t) \cdot IFRS_t + \varepsilon_t$$

	Constant (β_0)	ROA_t (β_1)	ΔWC_t (β_2)	ΔNCO_t (β_3)	ΔFIN_t (β_4)	IFRS (β_5)	IFRS *ROA_t (β_6)	IFRS *ΔWC_t (β_7)	IFRS *ΔNCO_t (β_8)	IFRS *ΔFIN_t (β_9)	
Coefficient	-0.0307***	0.7541***	-0.0085	0.0037	-0.0135	-0.0169**	0.0129	-0.1086**	-0.0618***	-0.0624*	
t-statistic	(-8.78)	(42.41)	(-0.32)	(0.37)	(-0.76)	(-2.38)	(0.46)	(-2.56)	(-3.30)	(-1.74)	
	BIG (β_0^A)	BIG *ROA_t (β_1^A)	BIG *ΔWC_t (β_2^A)	BIG *ΔNCO_t (β_3^A)	BIG *ΔFIN_t (β_4^A)	BIG*IFRS (β_5^A)	BIG*IFRS *ROA_t (β_6^A)	BIG*IFRS *ΔWC_t (β_7^A)	BIG*IFRS *ΔNCO_t (β_8^A)	BIG*IFRS *ΔFIN_t (β_9^A)	
Coefficient	0.0268***	0.0104	-0.0397	-0.0313**	-0.0199	0.0133	0.0192	0.1104*	0.0438*	-0.0063	Adj. R^2 0.6748
t-statistic	(6.47)	(0.43)	(-1.15)	(-2.27)	(-0.84)	(1.57)	(0.48)	(1.85)	(1.81)	(-0.14)	F-statistic 390.76***

*** p<0.01, ** p<0.05, * p<0.1 (two-tailed)
(see Table 2 for variable definitions)

Table 5 Tests for audit quality effect on differential reliability of accrual and accrual components in the pre- and post-IFRS period with control variables

Panel A: Regression using total accruals

$$ROA_{t+1} = \alpha_0 + \alpha_1 ROA_t + \alpha_2 TACC_t + (\alpha_3 + \alpha_4 ROA_t + \alpha_5 TACC_t) \cdot IFRS_t +$$
$$AQ_t \cdot (\alpha_0^A + \alpha_1^A ROA_t + \alpha_2^A TACC_t + (\alpha_3^A + \alpha_4^A ROA_t + \alpha_5^A TACC_t) \cdot IFRS_t) +$$
$$\sum_{k=1}^{6} CV_k \cdot (\alpha_0^k + \alpha_1^k ROA_t + \alpha_2^k TACC_t + \alpha_3^k IFRS_t + \alpha_4^k BIG_t) + \varepsilon_t$$

	Constant (α_0)	ROA_t (α_1)	$TACC_t$ (α_2)	IFRS (α_3)	IFRS*ROA_t (α_4)	IFRS*$TACC_t$ (α_5)		
Coefficient	-0.0022	0.6745***	-0.0108	-0.0296***	0.0558*	-0.0683***		
t-statistic	(-0.25)	(17.37)	(-0.66)	(-2.75)	(1.78)	(-3.97)		
	BIG (α_0^A)	BIG*ROA_t (α_1^A)	BIG*$TACC_t$ (α_2^A)	BIG*IFRS (α_3^A)	BIG*IFRS *ROA_t (α_4^A)	BIG*IFRS *$TACC_t$ (α_5^A)	Control Var.	
Coefficient	0.0147	-0.0063	-0.0338**	0.0155*	0.0119	0.0526**	omitted	Adjusted R^2=0.6862
t-statistic	(1.52)	(-0.21)	(-2.57)	(1.83)	(0.30)	(2.41)	omitted	F-stat=264.82***

*** p<0.01, ** p<0.05, * p<0.1 (two-tailed)
(see Table 2 for variable definitions)

Panel B: Regression using accrual decompositions

$$ROA_{t+1} = \beta_0 + \beta_1 ROA_t + \beta_2 \Delta WC_t + \beta_3 \Delta NCO_t + \beta_4 \Delta FIN_t + (\beta_5 + \beta_6 ROA_t + \beta_7 \Delta WC_t + \beta_8 \Delta NCO_t + \beta_9 \Delta FIN_t) \cdot IFRS_t +$$
$$AQ_t \cdot (\beta_0^A + \beta_1^A ROA_t + \beta_2^A \Delta WC_t + \beta_3^A \Delta NCO_t + \beta_4^A \Delta FIN_t) + AQ_t \cdot (\beta_5^A + \beta_6^A ROA_t + \beta_7^A \Delta WC_t + \beta_8^A \Delta NCO_t + \beta_9^A \Delta FIN_t) \cdot IFRS_t$$
$$\sum_{k=1}^{6} CV_k (\beta_0^k + \beta_1^k ROA_t + \beta_2^k \Delta WC_t + \beta_3^k \Delta NCO_t + \beta_4^k \Delta FIN_t + \beta_5^k IFRS_t + \beta_6^k BIG_t) + \varepsilon_t$$

	Constant (β_0)	ROA_t (β_1)	ΔWC_t (β_2)	ΔNCO_t (β_3)	ΔFIN_t (β_4)	IFRS (β_5)	IFRS *ROA_t (β_6)	IFRS *ΔWC_t (β_7)	IFRS *ΔNCO_t (β_8)	IFRS *ΔFIN_t (β_9)	Control Var.
Coefficient	-0.0033	0.6761***	-0.0212	-0.0062	-0.0365	-0.0297***	0.0548*	-0.1107**	-0.0620***	-0.0615*	Omitted
t-statistic	(-0.38)	(17.53)	(-0.59)	(-0.32)	(-1.38)	(-2.74)	(1.74)	(-2.50)	(-3.30)	(-1.76)	Omitted
	BIG (β_0^A)	BIG *ROA_t (β_1^A)	BIG *ΔWC_t (β_2^A)	BIG *ΔNCO_t (β_3^A)	BIG *ΔFIN_t (β_4^A)	BIG*IFRS (β_5^A)	BIG*IFRS *ROA_t (β_6^A)	BIG*IFRS *ΔWC_t (β_7^A)	BIG*IFRS *ΔNCO_t (β_8^A)	BIG*IFRS *ΔFIN_t (β_9^A)	
Coefficient	0.0147	-0.0068	-0.0403	-0.0369***	-0.0275	0.0138	0.0131	0.1169*	0.0466*	-0.0125	Adj. R^2 0.6867
t-statistic	(1.54)	(-0.22)	(-1.18)	(-2.59)	(-1.15)	(1.58)	(0.33)	(1.88)	(1.95)	(-0.29)	F-stat 181.56***

*** p<0.01, ** p<0.05, * p<0.1 (two-tailed)
(see Table 2 for variable definitions)

Table 6 Tests for differential reliability of extended accrual decompositions in the pre- and post-IFRS period

$$ROA_{t+1} = \delta_0 + \delta_1 ROA_t + \delta_2 \Delta COA_t + \delta_3 \Delta COL_t + \delta_4 \Delta NCOA_t + \delta_5 \Delta NCOL_t + \delta_6 \Delta STI_t + \delta_7 \Delta LTI_t + \delta_8 \Delta FINL_t$$
$$+ \left(\delta_9 + \delta_{10} ROA_t + \delta_{11} \Delta COA_t + \delta_{12} \Delta COL_t + \delta_{13} \Delta NCOA_t + \delta_{14} \Delta NCOL_t + \delta_{15} \Delta STI_t + \delta_{16} \Delta LTI_t + \delta_{17} \Delta FINL_t\right) \cdot IFRS_t$$
$$\left(\delta_0^A + \delta_1^A ROA_t + \delta_2^A \Delta COA_t + \delta_3^A \Delta COL_t + \delta_4^A \Delta NCOA_t + \delta_5^A \Delta NCOL_t + \delta_6^A \Delta STI_t + \delta_7^A \Delta LTI_t + \delta_8^A \Delta FINL_t\right) AQ_t$$
$$+ \left(\delta_9^A + \delta_{10}^A ROA_t + \delta_{11}^A \Delta COA_t + \delta_{12}^A \Delta COL_t + \delta_{13}^A \Delta NCOA_t + \delta_{14}^A \Delta NCOL_t + \delta_{15}^A \Delta STI_t + \delta_{16}^A \Delta LTI_t + \delta_{17}^A \Delta FINL_t\right) \cdot IFRS_t \cdot AQ_t + \varepsilon_t$$

Low quality audit clients: Differential persistence of accruals over cash flow during the post-IFRS period

	IFRS *ROA_t ($\boldsymbol{\delta_{10}}$)	IFRS *ΔCOA_t ($\boldsymbol{\delta_{11}}$)	IFRS *ΔCOL_t ($\boldsymbol{\delta_{12}}$)	IFRS *$\Delta NCOA_t$ ($\boldsymbol{\delta_{13}}$)	IFRS *$\Delta NCOL_t$ ($\boldsymbol{\delta_{14}}$)	IFRS *ΔSTI_t ($\boldsymbol{\delta_{15}}$)	IFRS *ΔLTI_t ($\boldsymbol{\delta_{16}}$)	IFRS *$\Delta FINL_t$ ($\boldsymbol{\delta_{17}}$)
Coefficient	0.0134	-0.0816	0.1246**	-0.0568***	0.0803	-0.1937***	-0.0257	0.0149
t-statistic	(0.47)	(-1.60)	(2.37)	(-2.86)	(0.78)	(-2.73)	(-0.42)	(0.32)

Firms with big four auditors: Differential persistence of accruals over cash flow during the post-IFRS period

	BIG *IFRS *ROA_t (δ_{10}^A)	BIG *IFRS *ΔCOA_t (δ_{11}^A)	BIG *IFRS *ΔCOL_t (δ_{12}^A)	BIG *IFRS *$\Delta NCOA_t$ (δ_{13}^A)	BIG *IFRS *$\Delta NCOL_t$ (δ_{14}^A)	BIG *IFRS *ΔSTI_t (δ_{15}^A)	BIG *IFRS *ΔLTI_t (δ_{16}^A)	BIG *IFRS *$\Delta FINL_t$ (δ_{17}^A)	
Coefficient	0.0180	0.0786	-0.1159	0.0452*	-0.0544	0.1278	-0.0644	0.0168	Adj. R^2=0.6756
t-statistic	(0.45)	(1.16)	(-1.50)	(1.74)	(-0.47)	(1.32)	(-0.84)	(0.29)	F-stat=219.35***

*** p<0.01, ** p<0.05, * p<0.1 (two-tailed)
(see Table 2 for variable definitions)

Reference

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