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Further evidence of the relationship between accruals and future cash flows

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Abstract

Focusing only on operating accruals in accrual-based studies results in a loss of information and noisy measures of both accrual and cash flow components of earnings. Thus, we examine the relative importance of working capital accruals, non-current operating accruals, and financing accruals with regard to future cash flows from operations (CFO). Using Australian data, we provide evidence that both working capital and non-current operating accruals are important for explaining future CFO but that the contribution of financing accruals is not significant. Moreover, the asset component of accruals plays a more important role in explaining future CFO than the liability component.

Key words: Accruals; Earnings; Future Cash Flows; Australia

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1. Introduction

We provide further evidence of the relationship between accruals and future CFO in the Australian context. Our contribution to the accounting literature stems from linking accruals related to operating, investing and financing activities – as well as their underlying asset and liability components – directly with future CFO. Linking accruals with future CFO is important for assessing the relevance of accruals for firm valuation. Thus, unlike previous studies that have focused on the reliability of accruals (e.g. Richardson *et al*., 2005; Oei *et al*., 2008; Lai *et al*., 2013a), we focus on the relevance of accruals in explaining CFO.

A few previous studies (e.g. Barth *et al*., 2001; Cheng and Hollie, 2008; Farshadfar and Monem, 2013) have investigated the relative relevance of total operating accruals and the individual components of operating accruals with

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regard to explaining future CFO.[1] However, Richardson *et al*. (2005) showed that ignoring investing and financing accruals in accrual-based research results in a loss of information and noisy measures of both the accrual and cash flow components of earnings. Hence, they called for future research to employ a broader definition and categorisation of accruals that incorporates accruals related to investing and financing activities. Providing further evidence of the usefulness of accruals thus categorised is important and timely, given the joint project between the International Accounting Standards Board (IASB) and the Financial Accounting Standard Board (FASB) that proposes the classification of all financial statement items into operating, investing and financing categories. The boards claimed that this separation could result in information that is more useful in decision-making than the information currently provided.[2,3] However, this claim has yet to be tested empirically.

Accordingly, we investigate a single but important research question: Does the categorisation of accruals into working capital, non-current operating and financing components enhance the ability of total accruals – and thus of earnings – to explain future CFO? According to Richardson *et al*.'s (2005) notation, these accrual components relate to the operating, investing and financing activities of a firm.

We test our research question in the Australian setting because Australia has a well-developed capital market with a high level of investor protection, and it also has strict enforcement mechanisms (e.g. Leuz *et al*., 2003; Clarkson *et al*., 2011; Clinch *et al*., 2012). Given these factors, the quality of financial reporting is high in Australia (e.g. Cheung *et al*., 2010). Furthermore, Australia was an early adopter of IFRS. The comprehensive adoption of IFRS in Australia on 1 January 2005 has arguably given rise to the assumption that all preparers and users are familiar with the measurement bases and disclosure requirements under IFRS. More specifically, Australia has had cash flow reporting standards that are in keeping with the UK and the evolving International Standards. Therefore, the Australian setting reduces the possibility that the results of our study are affected by a poor-quality reporting regime or a weak regulatory environment.[4]

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[1] Individual components of operating accruals refer to changes in accounts receivable, changes in inventory, changes in accounts payable, depreciation and amortisation, and other operating accruals (see Barth *et al*., 2001).

[2] See paragraphs 2.27–2.79 of *Discussion Paper: Preliminary Views on Financial Statement Presentation*, issued by the IASB in October 2008.

[3] This project is in progress. However, the issuance of an exposure draft has been postponed until the IASB and FASB can find the necessary capacity (International Financial Reporting Standards [IFRS] Foundation and FASB, 2011).

[4] Previous studies (e.g. Ball *et al*., 2000; Leuz *et al*., 2003) have documented that country-level institutional factors, including legal systems, investor protection and the enforcement of accounting standards, can have direct impacts on the quality of reported earnings.

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To address our research question, we analyse a sample of 17,153 firm-year observations related to 2,261 unique Australian firms over the 1992–2011 period. We adopt the measures of total accruals and the three main categories of accruals (i.e. working capital accruals, non-current operating accruals and financing accruals) developed by Richardson *et al.* (2005). We find that both working capital accruals and non-current operating accruals are important for explaining future CFO, but we also find that the contribution of financing accruals is not significant. We further decompose working capital accruals, non-current operating accruals and financing accruals into their underlying asset and liability components to identify the source of their explanatory power. We find that asset accruals play a more important role in enhancing the explanatory power of accruals than liability accruals do. Our results are consistent when we control for industry membership, the length of the operating cash cycle, price-to-book ratio, asset turnover, firm profitability, firm size, negative CFO, and pre- and post-IFRS periods. Our results are also robust when we increase the test horizon from 1 to 4 years.

We make several important contributions to the literature on the relationship between accruals and future CFO. First, our study is the first to consider a comprehensive balance sheet categorisation of accruals to explain future CFO. We respond to the call by Richardson *et al.* (2005) for the use of broader measurements of accruals in accounting research. Second, we assess the information content of the asset and liability components of accruals underlying these three categories of accruals to identify the sources of information that they provide with regard to future CFO. Third, we conduct separate analyses to explore the impacts of different firm characteristics, such as the length of the operating cash cycle, industry membership, price-to-book ratio and asset turnover, on the relative usefulness of balance sheet accrual categories in explaining future CFO.

Our study also relates to previous studies examining the relative usefulness of working capital accruals, non-current operating accruals and financing accruals in explaining future earnings and stock returns (e.g. Richardson *et al.*, 2005; Oei *et al.*, 2008). We expand on this emerging literature by focusing directly on future CFO rather than future stock returns or future earnings. We believe that this focus is important because estimates of the future CFO of a firm are essential to its valuation (e.g. Barth *et al.*, 2001). Accounting standard setters have also asserted that one of the primary objectives of financial reporting is to help investors and lenders in assessing the prospective future net cash inflows to a firm.[5] Furthermore, Sloan (1996), Xie (2001), Richardson *et al.* (2005) and others have documented that the differential persistence of the accrual and cash

[5] See *Conceptual Framework for Financial Reporting* (International Financial Reporting Standards (IFRS) Foundation, 2010, para. OB3); Statement of Financial Accounting Concepts No. 1, *Objectives of Financial Reporting by Business Enterprises* (FASB, 1978, paras 37–39).

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flow components of earnings is not properly priced by the market. This evidence calls into question the use of stock returns as a surrogate for future CFO in assessing the relevance of accounting information. Bandyopadhyay *et al.* (2010) also argued that while the ability of accounting measures to predict future earnings reflects their reliability, the ability of accounting information to predict future CFO reflects its relevance, which is the focus of this study.

The remainder of this study proceeds as follows. Section 2 provides the background and literature review for our study. Section 3 proposes the empirical models and presents the research design. Section 4 discusses the data and reports descriptive statistics. Section 5 presents our empirical results. Section 6 discusses further analyses and several sensitivity tests. Section 7 concludes the study.

2. Background and literature review

Richardson *et al.* (2005) broadly defined total accruals as the changes in all assets and liabilities excluding cash because in the absence of accrual accounting, the only accounts that are presented on the balance sheet are cash and owners' equity. They decompose total accruals into working capital accruals, non-current operating accruals and financing accruals, based on the underlying business activities involved: operating, investing and financing, respectively.[6]

Working capital accruals are driven by activities related to revenue generation, and they include items such as changes in accounts receivable, changes in inventory and changes in accounts payable. These activities arise to mitigate the timing and matching problems in CFO over a short interval and typically reverse within 1 year (e.g. Barth *et al.*, 2001; Guay and Sidhu, 2001). Non-current operating accruals are generated by a firm's investing activities, which relate to the acquisition and disposal of a firm's non-current assets. These accruals adjust CFO for timing differences of more than 1 year – such as long-term warranty provisions and loss provisions for long-term receivables – as well as for reversing accruals such as depreciation from investments in long-term operating assets like plants and equipment (e.g. Guay and Sidhu, 2001). Financing accruals relate to financing activities, such as paying dividends, issuing shares and bonds or paying off debts. They are established to match the costs of borrowing and equity investments with their corresponding revenues. Therefore, their ultimate reversals might not have a direct impact on a firm's operating activities (Richardson *et al.*, 2001, 2005). Due to the differential nature and cash flow implications of accruals related to operating, investing and financing activities, the extended decomposition of accruals is likely to improve accruals' explanatory power for future CFO.

[6] Accruals can also be partitioned into discretionary and non-discretionary accruals (Dechow *et al.*, 1995), growth and efficiency accruals (Richardson *et al.*, 2001, 2005, 2006), accruals related to balance sheet items (e.g. Thomas and Zhang, 2002) and accruals associated with the cash flows of the prior and subsequent periods (Govinder and Wells, 2014; Barth *et al.*, 2015)

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Several papers have linked accruals with future earnings, stock returns or CFO (e.g. Loftus and Sin, 1997; Guay and Sidhu, 2001; Richardson *et al*., 2005; Oei *et al*., 2008; Farshadfar and Monem, 2013). In the interest of brevity, we discuss only the key studies related to this study and summarise the others in Table 1.

Table 1
Summary of studies of the usefulness of working capital, non-current operating and financing accruals. Panel A: Studies of the association of accruals with future earnings or stock returns. Panel B: Studies of the association between operating accrual components and future CFO

Study, sample period, data source	Findings
(A)	
Dechow (1994), 1960–1989, United States	Working capital accruals are more important than long-term operating accruals in improving the value relevance of earnings
Cotter (1996), 1975–1985, Australia	Over long intervals (5–10 years), working capital accruals, long-term operating accruals and non-operating accruals are useful for explaining stock returns. However, over short intervals (1–2 years), only working capital accruals are value relevant
Chia *et al*. (1997), 1985–1990, Australia	Disaggregating earnings into CFO, working capital accruals and long-term operating accruals provides more explanatory power for stock returns than does using aggregate earnings
Loftus and Sin (1997), 1985–1990, Australia	Long-term operating accruals play an important role in enhancing the explanatory power of earnings for stock returns. However, therole of working capital accruals in this regard is negligible
Guay and Sidhu (2001), 1962–1995, United States	Both working capital accruals and long-term operating accruals are useful in explaining stock returns. However, the contribution of working capital accruals is greater. Additionally, the usefulness of long-term operating accruals in improving earnings as a performance measurement increases as the measurement intervals increase
Richardson, Sloan, Soliman, and Tuna (2005), 1962–2001, United States	Working capital and non-current operating accruals are less persistent in predicting future earnings, and thus less reliable, than financing accruals. Consistent with the naïve investor hypothesis, the associations of working capital accruals, non-current operating accruals and financing accruals with stock returns are significant and negative. Disaggregating the initial categorisation of accruals into their underlying assets and liabilities confirms that accruals with the least reliability are the most mispriced
Oei *et al*. (2008), 2001–2003, Australia	Working capital and financing accruals are less persistent in predicting future earnings and thus are less informative than non-current operating accruals in the Australian context. This finding stands in contrast to those of

(continued)

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Table 1 (continued)

Study, sample period, data source	Findings
	Richardson *et al.* (2005). The results are attributed to the differences between the Australian GAAP and the U.S. GAAP regarding non-current assets
Lai *et al.* (2013a), 1998–2008, Australia	The persistence, and thus the reliability, of working capital, non-current operating and financing accruals has decreased in Australia since the adoption of IFRSs
(B)	
Barth *et al.* (2001), 1987–1996, United States	Disaggregating the accrual component of earnings into six major components (i.e. changes in accounts receivable, changes in inventory, changes in accounts payable, depreciation and amortisation, and other operating accruals) enhances the ability of total accruals, and thus earnings, in explaining future CFO
Cheng and Hollie (2008), 1988–2004, United States	Disaggregating the cash flow component of earnings into core and non-core cash flows in Barth *et al.* (2001) model improves the predictive ability of earnings for future CFO
Farshadfar and Monem (2013), 1992–2004, Australia	Accrual components, as per Barth *et al.* (2001), and operating cash flow components, as reported under the direct method of the statement of cash flows, together enhance the forecasting of future CFO

Richardson *et al.* (2005) were the first authors to investigate comprehensively the usefulness of working capital, non-current operating and financing accruals – as well as their underlying asset and liability components – in terms of their relationships with future earnings and stock returns. They found that the associations of working capital and non-current operating accruals with future earnings are negative and significant, while those of financing accruals and future earnings are positive and significant. Therefore, they concluded that working capital and non-current operating accruals are less reliable than financing accruals. They also found that their initial accruals decomposition significantly and negatively relates to future stock returns, which was consistent with the naïve investor hypothesis. Using their extended accruals decomposition, they showed that the mispricing of accruals is driven by the accrual components with the least reliability.

Following Richardson *et al.* (2005), two Australian studies re-examined the association of accrual components with future earnings. In contrast to Richardson *et al.* (2005), Oei *et al.* (2008) found that non-current operating accruals are more persistent in predicting future earnings, and thus more reliable, than working capital and financing accruals. They attributed these results to the differences between the Australian GAAP and the U.S. GAAP in relation to non-current assets. In contrast, Lai *et al.* (2013b) reported that the

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reliability of working capital accruals, non-current operating accruals and financing accruals has decreased in Australia in the post-IFRS period. However, working capital accruals and financing accruals have been affected more than non-current operating accruals (Lai *et al*., 2013b). One inference drawn from the above findings is that accruals categorised by business activities relate to future earnings or stock returns as a proxy for future CFO.

We extend the literature in this area by focusing directly on future CFO rather than future stock returns or future earnings. We investigate the relative importance of working capital accruals, non-current operating accruals and financing accruals in explaining future CFO. We also link the underlying asset and liability components of these accrual categories to future CFO. Furthermore, we investigate the effects of various firm-specific characteristics on the relative usefulness of these accrual categories in explaining future CFO.

3. Research methodology

To test whether the ability of total accruals, and thus of earnings, improves the explanation of future CFO when total accruals are categorised into working capital, non-current operating and financing accruals, we estimate the following regression models:

$$CFO_{it+j} = \alpha_0 + \alpha_1 EARN_{it} + \varepsilon_{it}. \quad (1)$$

$$CFO_{it+j} = \beta_0 + \beta_1 CFO_{it} + \beta_2 TAC_{it} + \varepsilon_{it}. \quad (2)$$

$$CFO_{it+j} = \gamma_0 + \gamma_1 CFO_{it} + \gamma_2 \Delta WC_{it} + \gamma_3 \Delta NCO_{it} + \gamma_4 \Delta FIN_{it} + \varepsilon_{it}. \quad (3)$$

where i and t denote firm and year, and j ranges from 1 to 2; CFO is the net cash flow from operations, as disclosed in the statement of cash flows; $EARN$ is the net income before extraordinary items and discontinued operations, as reported in the income statement; TAC is total accruals; ΔWC is working capital accruals; ΔNCO is non-current operating accruals; and ΔFIN is financing accruals.

Consistent with Richardson *et al*. (2005) and Oei *et al*. (2008), we measure TAC, ΔWC, ΔNCO, and ΔFIN as follows:[7,8]

$$TAC = \Delta WC + \Delta NCO + \Delta FIN. \quad (4)$$

where $\Delta WC = WC_{it} - WC_{it-1}$; WC = current operating assets (COA) – current operating liabilities (COL); COA = current assets – cash – current investments;

[7] The item names are from the Aspect Fin Analysis database, following Oei *et al*. (2008). Thus, they might differ from those reported in Richardson *et al*. (2005).

[8] Following Richardson *et al*. (2005), we use the balance sheet approach to measure our accruals. This approach is subject to measurement error (see Hribar and Collins, 2002), constituting a limitation of our research.

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COL = current liabilities – short-term debt; $\Delta NCO = NCO_{it} - NCO_{it-1}$; NCO = non-current operating assets ($NCOA$) – non-current operating liabilities ($NCOL$); $NCOA$ = total non-current assets – non-current investments; $NCOL$ = non-current liabilities – long-term debt; $\Delta FIN = FIN_{it} - FIN_{it-1}$; FIN = financial assets ($FINA$) – financial liabilities ($FINL$); $FINA$ = current investments + non-current investments; and $FINL$ = long-term debt + short-term debt + convertible equity.[9]

We predict that working capital, non-current operating and financing accruals reflect different types of information with regard to future CFO. As described in Section 2, working capital accruals are generated by a company's operating activities, and they convert to CFO over a 1-year period (e.g. Barth *et al*., 2001; Guay and Sidhu, 2001). Therefore, we posit that working capital accruals provide direct information about future CFO and thus are more relevant than other accrual components. Non-current operating accruals are also associated with a firm's operating activities. However, they are different from working capital accruals because they involve expenditures related to long-term investments (e.g. the purchase of property, plants and equipment) rather than expenditures related to sales-driven activities.

Long-term investments are expected to provide productive capacity and thereby higher CFO over multiple future periods (e.g. Barth *et al*., 2001; Guay and Sidhu, 2001; Richardson *et al*., 2001, 2005). Therefore, while non-current operating accruals might still be relevant, their contributions to the ability of earnings to explain future CFO might be less observable than those of working capital accruals, at least over short measurement intervals (e.g. 1 year). Compared to the role of working capital accruals and non-operating accruals, the role of financing accruals in explaining future CFO is less clear. Financing accruals mainly involve activities related to raising capital and repaying investors. The ultimate reversal of these accruals might not cause an increase or decrease in future CFO (Richardson *et al*., 2001, 2005), suggesting less relevance for financing accruals than for both working capital accruals and non-current operating accruals.

To gain additional insight into the sources of information about future CFO in ΔWC, ΔNCO and ΔFIN, we disaggregate them into their respective asset and liability components, as per Richardson *et al*. (2005). We then construct Equation (5):

$$CFO_{it+j} = \delta_0 + \delta_1 CFO_{it} + \delta_2 \Delta COA_{it} + \delta_3 \Delta COL_{it} + \delta_4 \Delta NCOA_{it} + \delta_5 \Delta NCOL_{it} + \delta_6 \Delta FINA_{it} + \delta_7 \Delta FINL_{it} + \varepsilon_{it}. \quad (5)$$

where ΔCOA is the annual change in current operating assets (current assets – cash – current investments) during that year; ΔCOL is the annual change in current operating liabilities (current liabilities – short-term debt); $\Delta NCOA$ is

[9] Richardson *et al*. (2005) included preference capital in their formula. However, we employ convertible equity, which is the closest alternative in the Aspect Fin Analysis database, following Oei *et al*. (2008).

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the annual change in non-current operating assets (total non-current assets – non-current investments); $\Delta NCOL$ is the annual change in non-current operating liabilities (non-current liabilities – long-term debt); $\Delta FINA$ is the annual change in financial assets (short-term investments + non-current investments); and $\Delta FINL$ is the annual change in financial liabilities (long-term debt + short-term debt + convertible equity).

We predict that the accruals related to assets persist differently from accruals related to liabilities with regard to future CFO. Asset accruals – such as changes in accounts receivable, changes in inventory and changes in property, plants and equipment – represent a firm's probable future economic benefits, which are expected to affect a firm's operating performance directly or indirectly. They are associated with cost allocations, estimations, valuations and revaluations, enabling accounting users to anticipate future benefits better (e.g. Dechow, 1994; Richardson *et al*., 2001, 2005). Liability accruals, however, represent a firm's current obligations that are expected to result in an outflow of economic benefits (IFRS Foundation, 2010). They are dominated by financial obligations, such as accounts payable, debt and taxes payable, which are mostly fixed and are reported at their face value. In addition, recording an allowance for the expected non-payment of liabilities is not allowed (Richardson *et al*., 2001, 2005). These factors might suggest that liability accruals are less relevant and might provide less information about a firm's future CFO than asset accruals.

We utilise a panel data set. We estimate our regression models employing the time random-effects method, which is an econometric technique for panel data. Our econometric technique selection is guided by Taylor (1980) and is based on the results of the Hausman (1978) test. In our case, the use of the panel data technique potentially allows us to control for differences in credit policies, investments and financing practices across firms and over time.[10] It also potentially allows us to control for the effects of Australia's adoption of IFRS on accrual levels. In addition, due to an increase in the number of data points in our sample, the collinearity among independent variables is decreased; thus, the efficiency of our regression estimates is enhanced (Gujarati, 2003).[11,12] Moreover, to control for

[10] Differences in credit policies and investment and financing practices across firms are likely to affect accruals and, thus, cash flows.

[11] The fixed-effects method is another well-accepted panel data approach. However, in this study, we focus on a random-effects method rather than the fixed-effects method for two reasons. First, to choose between the two methods, the number of time-series data (T), the number of cross-sectional units (N) and the number of regressors (K) are considered, as per Taylor (1980). If $T > 3$ and $(N-K) > 9$, a random-effects method is preferred. The specifications of our sample are in agreement with these conditions. Second, we apply the Hausman (1978) test to detect a more appropriate panel data approach for our study (see Greene, 2000; Gujarati, 2003). The Hausman test results (unreported) indicate that a random-effects method is the more appropriate option.

[12] To consider firm-specific differences, we re-estimate our regression models using the firm random-effects method. The (unreported) results are qualitatively similar.

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heteroscedasticity and possible residual dependence, we use firm-level clustered standard errors for all of our regression models (Petersen, 2009).

We use the chi-squared test (hereafter, χ^2 test) of coefficient equality to evaluate whether current CFO and accrual components convey distinct information about future CFO. The signs and magnitudes of all of the estimated coefficients in the forecasting models are also considered. To test the explanatory power of the models, we compare the adjusted R^2 of Equations (1)–(3) and (5). The adjusted R^2 in this context determines the extent to which our proposed regression models can explain the total variation of future CFO.

4. Data

4.1. Sample selection

The sample comprises companies listed on the Australian Securities Exchange (ASX) for the 1992–2011 period. The related data are derived from the Aspect Fin Analysis database. Our data set begins in 1992 because this was the year in which Australian firms were first mandated by the Australian Accounting Standards Board (AASB) to report their statement of cash flows. The sample is not limited to any specific company size or year-end date. As in Richardson *et al.* (2005), the variables are scaled by average total assets. Our sample excludes firms in the financial sector[13] due to the different accounting regulations and disclosure requirements in this sector. Firms with less than three consecutive years of data are also excluded. In addition, we eliminate firm-year observations that do not possess sufficient data to calculate ΔWC, ΔNCO or ΔFIN. For each variable, we also eliminate observations that are within the extreme upper and lower 1 percent of their related distributions. Based on these criteria, the sample consists of 17,153 firm-year observations related to 2,261 unique firms over the 1992–2011 period. The specific data items obtained from the Aspect Fin Analysis database for computing the variables used in this study are reported in Appendix I.

4.2. Sample characteristics

Table 2, Panel A, reports summary statistics of the sample firms using alternative proxies for firm size. The sample mean value (median, standard deviation) of market capitalisation, sales and total assets in millions of dollars are \$878.340 (\$31.141, \$7,731.730), \$602.387 (\$21.437, \$3,392.564) and \$788.762 (\$33.732, \$4,542.190), respectively.[14] Clearly, the means are much

[13] The term 'sector' refers to the first tier of the Global Industry Classification Standard (GICS) structure. GICS uses four categorisation levels: economic sector, industry group, industry and subindustry.

[14] All financial figures in this study are in Australian dollars, unless otherwise specified.

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Table 2
Summary statistics of sample by firm size and industry composition. Panel A: Sample characteristics by firm size (millions of dollars, Australian). Panel B: Sample composition by industry sector

Panel A

	Market capitalisation	Sales	Total assets
Mean	878.340	602.387	788.762
Median	31.141	21.437	33.732
SD	7731.730	3392.564	4542.190

Panel B

Industry sector	Number of firms	Sample composition by industry sector, %	Market composition by industry sector, %
Energy	281	12.43	11.36
Materials	844	37.33	36.41
Industrials	294	13.00	13.49
Consumer Discretionary	274	12.12	11.43
Consumer Staples	114	5.04	3.99
Health Care	190	8.40	10.43
Information Technology	172	7.61	8.57
Telecommunication	42	1.86	1.68
Utilities	50	2.21	2.64
Total Sample	2,261	100.00	100.00

The total sample comprises 17,153 firm-year observations over the 1992–2011 period. Firms in the financial sector are excluded. Market composition is based on the number of firms listed on the ASX capital market at the end of 1992. The data have been obtained from the Aspect Fin Analysis database.

smaller than the respective standard deviations. This outcome suggests a substantial variation with regard to firm size within the sample, indicating that our sample is not dominated by large firms. Our sample, however, contains a small number of very large firms, as indicated by a mean larger than the median in each measure. Panel B of Table 2 reports the composition of the sample by industry sector. A comparison between our sample and the market indicates that the sample composition by industry sector closely follows the ASX market, which is based on the number of listed firms in each industry sector.

In Table 3, Panel A reports the descriptive statistics of the variables. The mean (median) value of −0.167 (−0.043) for *EARN* is smaller than that of *CFO*, which is −0.061 (−0.011), mainly because non-cash expenses (e.g. depreciation expenses) are included in earnings. The standard deviation of *EARN* (0.359) is larger than that of *CFO* (0.247). The mean (−0.023) and

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Table 3
Summary statistics and correlations (17,153 firm-year observations, 1992–2011). Panel A: Descriptive statistics for earnings, CFO and accruals. Panel B: Pearson's correlation matrix among earnings, CFO, total accruals and the primary accruals categories. Panel C: Pearson's correlation matrix among earnings, CFO, total accruals and the extended accruals categories

Panel A

Variable	Mean	25%	Median	75%	SD
EARN	−0.167	−0.275	−0.043	0.054	0.359
TAC	−0.023	−0.142	−0.009	0.095	0.302
Δ*WC*	−0.003	−0.043	−0.001	0.038	0.131
Δ*NCO*	−0.004	−0.082	−0.002	0.071	0.225
Δ*FIN*	−0.016	−0.133	−0.007	0.101	0.285
Δ*COA*	−0.001	−0.030	−0.000	0.030	0.125
Δ*COL*	0.003	−0.082	0.000	0.071	0.118
Δ*NCOA*	−0.003	−0.084	−0.002	0.075	0.231
Δ*NCOL*	0.001	−0.002	0.000	0.002	0.064
Δ*FINA*	−0.008	−0.089	−0.003	0.064	0.251
Δ*FINL*	0.004	−0.023	0.000	0.018	0.144
CFO	−0.061	−0.271	−0.011	0.091	0.247

Panel B

Variables	*EARN*	*TAC*	Δ*WC*	Δ*NCO*	Δ*FIN*	*CFO*
EARN	–					
TAC	0.205 (0.000)	–				
Δ*WC*	0.129 (0.000)	0.198 (0.000)	–			
Δ*NCO*	0.094 (0.000)	0.401 (0.000)	−0.125 (0.000)	–		
Δ*FIN*	0.084 (0.000)	0.649 (0.000)	−0.148 (0.000)	−0.308 (0.000)	–	
CFO	0.681 (0.000)	−0.428 (0.000)	−0.011 (0.117)	−0.161 (0.000)	−0.324 (0.000)	–

(continued)

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Table 3 (continued)

Panel C

Variables	*EARN*	*TAC*	Δ*COA*	Δ*COL*	Δ*NCOA*	Δ*NCOL*	Δ*FINA*	Δ*FINL*	*CFO*
EARN	–								
TAC	0.205 (0.000)	–							
Δ*COA*	−0.016 (0.000)	0.089 (0.000)	–						
Δ*COL*	−0.159 (0.000)	−0.124 (0.000)	0.424 (0.000)	–					
Δ*NCOA*	0.090 (0.000)	0.379 (0.000)	0.003 (0.598)	0.143 (0.000)	–				
Δ*NCOL*	−0.005 (0.000)	−0.047 (0.000)	0.033 (0.000)	0.048 (0.000)	0.217 (0.000)	–			
Δ*FINA*	0.024 (0.000)	0.585 (0.000)	−0.111 (0.000)	0.035 (0.000)	−0.227 (0.000)	−0.014 (0.050)	–		
Δ*FINL*	−0.125 (0.000)	−0.270 (0.000)	0.129 (0.000)	0.078 (0.000)	0.201 (0.000)	−0.030 (0.000)	0.026 (0.000)	–	
CFO	0.681 (0.000)	−0.428 (0.000)	−0.070 (0.000)	−0.070 (0.000)	−0.151 (0.000)	0.024 (0.001)	−0.339 (0.000)	0.051 (0.000)	–

Variable definitions: CFO is the firm's net cash flow from operations, as disclosed in the statement of cash flows. *EARN* is the firm's earnings before extraordinary and discontinuing items. *TAC* is the firm's total accruals, calculated as the sum of working capital accruals (Δ*WC*), non-current operating accruals (Δ*NCO*) and financing accruals (Δ*FIN*). $\Delta WC = \Delta WC_{it} - \Delta WC_{it-1}$, where *WC* = Current Operating Assets (*COA*) – Current Operating Liabilities (*COL*). *COA* = current assets – cash – current investments, while *COL* = current liabilities – short-term debt. $\Delta NCO = \Delta NCO_{it} - \Delta NCO_{it-1}$, where *NCO* = Non-Current Operating Assets (*NCOA*) – Non-Current Operating Liabilities (*NCOL*). *NCOA* = total non-current assets – non-current investments, while *NCOL* = non-current liabilities – long-term debt. $\Delta FIN = \Delta FIN_{it} - \Delta FIN_{it-1}$, where *FIN* = Financial Assets (*FINA*) – Financial Liabilities (*FINL*). *FINA* = short-term investments + non-current investments, while *FINL* = long-term debt + short-term debt + convertible equity. Δ*COA* is the change in current operating assets (current assets – cash – current investments) over 1 year. Δ*COL* is the change in current operating liabilities (current liabilities – short-term debt) over 1 year. Δ*NCOA* is the change in non-current operating assets (total non-current assets – non-current investments) over 1 year. Δ*NCOL* is the change in non-current operating liabilities (non-current liabilities – long-term debt) over 1 year. Δ*FINA* is the change in financial assets (short-term investments + non-current investments) over 1 year. Δ*FINL* is the change in financial liabilities (long-term debt + short-term debt + convertible equity) over 1 year. All variables are scaled by average total assets. The numbers in parentheses represent the *p*-values of *t*-statistics.

median (−0.009) of *TAC* are negative and possibly indicative of conservatism (e.g. Givoly and Hayn, 2000; Lai *et al*., 2013b). These results are broadly in agreement with those obtained in previous Australian studies (e.g. Clinch *et al*., 2012; Lai *et al*., 2013a). *EARN* and *CFO* both have negative means and medians, possibly because of high-frequency loss reporting in Australia (see Balkrishna *et al*., 2007; Lai *et al*., 2013b).[15]

In Panel A, Table 3, the means (medians) of ΔWC and ΔNCO are −0.003 (−0.001) and −0.004 (−0.002), respectively. These results are in contrast to those of Richardson *et al*. (2005), who reported positive means and medians for both ΔWC and ΔNCO. The difference can be attributed to the significant proportion of loss-making firms with small asset bases in the ASX (Balkrishna *et al*., 2007).[16] However, consistent with Richardson *et al*. (2005), ΔFIN has a negative mean (−0.016) and median (−0.007). The standard deviations of ΔNCO (0.225) and ΔFIN (0.285) are larger than the standard deviation of ΔWC (0.131). This outcome suggests that the variation in *TAC* would be influenced considerably by ΔNCO and ΔFIN. Descriptive statistics for the extended accruals categorisation show negative means and medians for ΔCOA (−0.001, −0.000), $\Delta NCOA$ (−0.003, −0.002) and $\Delta FINA$ (−0.008, −0.003). However, the means and medians of ΔCOL, $\Delta NCOL$ and $\Delta FINL$ are positive. The standard deviations of ΔCOA, $\Delta NCOA$ and $\Delta FINA$ are 0.125, 0.231 and 0.251, respectively. These values are larger in magnitude than the standard deviations of ΔCOL, $\Delta NCOL$ and $\Delta FINL$, which are 0.118, 0.064 and 0.144, respectively. Thus, the variations in ΔWC, ΔNCO and ΔFIN are mostly attributable to accruals related to assets rather than accruals related to liabilities.

In Table 3, Panel B reports Pearson's correlation coefficients for *EARN*, *TAC*, ΔWC, ΔNCO, ΔFIN and *CFO*. *EARN* is positively and significantly associated with *CFO* (0.681), *TAC* (0.205), ΔWC (0.129), ΔNCO (0.094) and ΔFIN (0.084) at the 0.01 level. The correlation coefficient between ΔWC and *CFO* is not significant at any conventional level. However, ΔWC, ΔNCO and ΔFIN are significantly and negatively correlated with each other at the 0.01 level. Panel C of Table 3 presents Pearson's correlations for *EARN*, *CFO* and *TAC* and the extended accruals categorisation. *CFO* is significantly and positively correlated with $\Delta NCOL$ and $\Delta FINL$ but significantly and negatively correlated with *TAC*, ΔCOA, ΔCOL, $\Delta NCOA$ and $\Delta FINA$ at the 0.01 level.

[15] Balkrishna *et al*. (2007) and Lai *et al*. (2013b) document not only that loss reporting in Australia has increased over time but that reported losses are also large in magnitude.

[16] In addition, approximately 40 percent of our sample firms are involved in the exploration and development of metals and industrial minerals and thus potentially rely heavily on external financing to pursue their exploration projects (see Taylor *et al*., 2012). Moreover, firms within this industry make various accounting choices to measure preproduction costs and mineral reserves that can significantly affect their reported assets on the balance sheet. For example, firms in this industry have options to expense or capitalise exploration and evaluation costs (IASB, 2004).

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Accrual components are also significantly correlated with each other at either the 0.05 or 0.01 level, with the exception of ΔCOA and $\Delta NCOA$. In particular, ΔCOA and $\Delta NCOA$ are positively related to ΔCOL and $\Delta NCOL$, as $\Delta FINA$ is to $\Delta FINL$. These results are consistent with those of Richardson *et al.* (2005) and suggest that accruals related to an asset and a liability category have offsetting effects on total accruals (see Richardson *et al.*, 2005).

5. Empirical results

5.1. The primary accruals categorisation and future CFO

In Table 4, Panel A reports the results of regressing 1-year-ahead *CFO* on current *EARN* (Eqn 1); on current *CFO* and *TAC* (Eqn 2); and on current *CFO*, ΔWC, ΔNCO and ΔFIN (Eqn 3). The coefficient on *EARN* (0.395) in Equation (1) is positive and significant (*t*-statistic = 40.799) at the 0.01 level. In Equation (2), the coefficients on *CFO* (0.751) and *TAC* (0.045) are positive and significant (*t*-statistic = 76.612 and 6.733, respectively) at the 0.01 level. The null hypotheses that the coefficients of *CFO* and *TAC* are equal and that both are equal to zero are rejected at the 0.01 level (χ^2 statistic = 3346.389 and 5973.930, respectively). These results suggest that *TAC* has incremental information content over *CFO* and that *CFO* and *TAC* together provide a significantly greater explanation for the variation in CFO_{t+1} than does *EARN* alone.

In Equation (3), the coefficients on *CFO*, ΔWC and ΔNCO are positive and significant at the 0.01 level; the coefficient on ΔFIN is positive and marginally significant at the 0.10 level. Similar to the results of Equation (2), the coefficient on *CFO* (0.759) is greater than those on the accrual components of earnings, that is ΔWC (0.216), ΔNCO (0.064) and ΔFIN (0.014). The null hypothesis on the equality of the coefficient estimates of *CFO*, ΔWC, ΔNCO and ΔFIN is also rejected at the 0.01 level (χ^2 statistic = 3677.634). Moreover, the null hypothesis that the coefficients of ΔWC, ΔNCO and ΔFIN are equal to zero is rejected at the 0.01 level (χ^2 statistic = 161.516). The coefficient estimates on ΔWC, ΔNCO and ΔFIN also significantly differ (χ^2 statistic = 147.641) from each other at the 0.01 level. These findings are consistent with our expectations. ΔFIN has less explanatory power with regard to future *CFO* than ΔWC and ΔNCO, as demonstrated by the magnitudes of their slope coefficients. This finding is consistent with the argument that the financing activities of a firm might not directly affect its operating performance (Richardson *et al.*, 2001, 2005). Between ΔWC and ΔNCO, ΔWC shows greater persistence in explaining future *CFO*. This outcome is expected because working capital accruals are more closely related to a firm's income-producing and core operating activities compared to ΔNCO. However, ΔNCO has greater explanatory power than ΔFIN for future *CFO* because while there is a distinction between the operating and investing activities of a firm, the eventual reversals of accruals related to

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Table 4
The primary accruals categories and future CFO (17,153 firm-year observations, 1992–2011). Panel A: Explaining 1-year-ahead CFO with current earnings, CFO, total accruals and the primary categories of accruals. Panel B: Explaining 2-year-ahead CFO with current earnings, CFO, total accruals and the primary categories of accruals

Panel A

	Equation (1)		Equation (2)		Equation (3)	
Variable	Coefficient	*t*-statistic	Coefficient	*t*-statistic	Coefficient	*t*-statistic
Intercept	−0.002	−0.337	−0.013	−6.665***	−0.011	−5.774***
EARN	0.395	40.799***				
CFO			0.751	76.612***	0.759	77.098***
TAC			0.045	6.733***		
Δ*WC*					0.216	11.297***
Δ*NCO*					0.064	6.985***
Δ*FIN*					0.014	1.798*
Adjusted R^2	0.365		0.542		0.563	

Null hypothesis	χ^2 statistic	*p*-value
$\beta_1 = \beta_2$	3346.389	0.000
$\beta_1 = \beta_2 = 0$	5973.930	0.000
$\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4$	3677.634	0.000
$\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = 0$	6029.566	0.000
$\gamma_2 = \gamma_3 = \gamma_4 = 0$	161.516	0.000
$\gamma_2 = \gamma_3 = \gamma_4$	147.641	0.000

Panel B

	Equation (1)		Equation (2)		Equation (3)	
Variable	Coefficient	*t*-statistic	Coefficient	*t*-statistic	Coefficient	*t*-statistic
Intercept	−0.011	−1.721*	−0.018	−5.140***	−0.016	−4.439
EARN	0.323	31.170***				
CFO			0.645	46.429***	0.657	47.614***
TAC			0.032	4.709***		
Δ*WC*					0.108	5.962***
Δ*NCO*					0.058	5.819***
Δ*FIN*					0.006	0.684
Adjusted R^2	0.247		0.386		0.398	

Null hypothesis	χ^2 statistic	*p*-value
$\beta_1 = \beta_2$	1406.947	0.000
$\beta_1 = \beta_2 = 0$	2271.695	0.000
$\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4$	1439.170	0.000

(continued)

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Table 4 (continued)

Null hypothesis	χ^2 statistic	*p*-value
$\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = 0$	2344.808	0.000
$\gamma_2 = \gamma_3 = \gamma_4 = 0$	66.427	0.000
$\gamma_2 = \gamma_3 = \gamma_4$	47.560	0.000

Variable definitions: CFO is the firm's net cash flow from operations, as disclosed in the statement of cash flows. *EARN* is the firm's earnings before extraordinary and discontinuing items. *TAC* is the firm's total accruals, calculated as the sum of working capital accruals (ΔWC), non-current operating accruals (ΔNCO) and financing accruals (ΔFIN). $\Delta WC = \Delta WC_{it} - \Delta WC_{it-1}$, where *WC* = Current Operating Assets (*COA*) – Current Operating Liabilities (*COL*). *COA* = current assets – cash – current investments, while *COL* = current liabilities – short-term debt. $\Delta NCO = \Delta NCO_{it} - \Delta NCO_{it-1}$, where *NCO* = Non-Current Operating Assets (*NCOA*) – Non-Current Operating Liabilities (*NCOL*). *NCOA* = total non-current assets – non-current investments, while *NCOL* = non-current liabilities – long-term debt. $\Delta FIN = \Delta FIN_{it} - \Delta FIN_{it-1}$, where *FIN* = Financial Assets (*FINA*) – Financial Liabilities (*FINL*). *FINA* = short-term investments + non-current investments, while *FINL* = long-term debt + short-term debt + convertible equity. All variables are scaled by average total assets. The time random-effects method is used for estimating Equations (1)–(3). The *t*-statistic is based on the standard errors clustered by firm. This table reports the estimates of the following regression equations:

$$CFO_{it+j} = \alpha_0 + \alpha_1 EARN_{it} + \varepsilon_{it}. \quad (1)$$

$$CFO_{it+j} = \beta_0 + \beta_1 CFO_{it} + \beta_2 TAC_{it} + \varepsilon_{it}. \quad (2)$$

$$CFO_{it+j} = \gamma_0 + \gamma_1 CFO_{it} + \gamma_2 \Delta WC_{it} + \gamma_3 \Delta NCO_{it} + \gamma_4 \Delta FIN_{it} + \varepsilon_{it}. \quad (3)$$

where *i* and *t* denote firm and year, respectively, and *j* ranges from 1 to 2. *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

investing activities are mostly categorised as operating activities, such as depreciation or amortisation (e.g. Barth *et al*., 2001; Richardson *et al*., 2001, 2005).

A comparison between the adjusted R^2*s* of Equations (1) and (2) (0.365 and 0.542, respectively) suggests that disaggregating *EARN* into *CFO* and *TAC* significantly improves the explanatory power of *EARN* for future CFO. In addition, decomposing *TAC* into ΔWC, ΔNCO and ΔFIN improves the ability of *TAC* and thus of *EARN* to explain future CFO. This finding is evidenced by the higher adjusted R^2 of Equation (3) (0.563) compared to that of Equation (2) (0.542). The results of estimating Equations (1)–(3) using 2-year-ahead *CFO*, as reported in Panel B (Table 4), confirm the aforementioned findings. Specifically, Equation (3) consistently outperforms Equations (1) and (2). That is, the accrual components of our primary accruals categorisation, with the exception of ΔFIN, individually explain future *CFO*, while using

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aggregate accruals only masks their information content. In an unreported analysis, as expected, the explanatory power of each model decays as the forecast horizon increases.[17]

In summary, the disaggregation of total accruals into working capital, non-current operating and financing accruals conveys useful information with regard to explaining future CFO. However, this information is masked by total accruals and, in turn, by earnings. Furthermore, the contribution of non-current operating and financing accruals to the ability of earnings to explain future CFO is not as great as that of working capital accruals. The above conclusion supports the findings of Guay and Sidhu (2001), who showed that while both current and non-current accruals are value relevant, current accruals are more value relevant than non-current accruals. In addition, our results complement Richardson *et al*.'s (2005) findings, indicating that the three broad categories of accruals contain information about earnings quality.

5.2. The extended accruals categorisation and future CFO

Table 5 presents the results of regressing of 1-year-ahead *CFO* (Panel A) and 2-year-ahead *CFO* (Panel B) on the current accrual components of the extended accruals categorisation (Eqn 5). Moreover, adjusted R^2s of Equations (1)–(3) are presented. Panel A shows that the coefficient on *CFO* (0.748) is positive and highly significant (*t*-statistic = 76.723). The coefficients on ΔCOA (0.153), $\Delta NCOA$ (0.071) and $\Delta FINA$ (0.021) are all positive, suggesting that all of these asset components of accruals are correlated positively with future *CFO*. In contrast, the coefficients of ΔCOL (−0.126), $\Delta NCOL$ (−0.039) and $\Delta FINL$ (−0.006) are all negative. These results are expected because asset accruals relate to future economic benefits and thus to future cash inflows. However, liability accruals represent future obligations and thus are related to future cash outflows. All of the asset accruals are significant at the 0.01 level, but two of the liability accruals ($\Delta NCOL$ and $\Delta FINL$) are not significant at any conventional level. In addition, the coefficients of ΔCOA, $\Delta NCOA$ and $\Delta FINA$ are greater than those of ΔCOL, $\Delta NCOL$ and $\Delta FINL$, respectively. The null hypotheses that accrual components are all equal to each other and that they are all equal to zero are rejected at the 0.01 level. The results from the tests of coefficient restrictions also demonstrate that ΔCOA and ΔCOL, as the main components of ΔWC, as well as $\Delta NCOA$ and $\Delta NCOL$, as the main components of ΔNCO, differ from each other at the 0.01 level. However, the components of ΔFIN – that is $\Delta FINA$ and $\Delta FINL$ – are marginally different from each other at the 0.10 level (χ^2 statistic = 2.921).

These results, as expected, suggest that the asset components of ΔWC, ΔNCO and ΔFIN make greater contributions to explaining the variation of future

[17] Our results for Equations (1)–(3) are qualitatively similar when the forecast horizon increases up to 4 years (unreported).

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Table 5
The extended accrual categories and future CFO (17,153 firm-year observations, 1992–2011). Panel A: Explaining 1-year-ahead CFO with current CFO and the extended accrual categories. Panel B: Explaining 2-year-ahead CFO with current CFO and the extended accrual categories

Panel A

	Equation (5)	
Variable	Coefficient	*t*-statistic
Intercept	−0.014	−6.259***
CFO	0.748	76.723***
Δ*COA*	0.153	9.051***
Δ*COL*	−0.126	−5.938***
Δ*NCOA*	0.071	8.389***
Δ*NCOL*	−0.039	−1.371
Δ*FINA*	0.021	2.812***
Δ*FINL*	−0.006	−0.441
Adjusted R^2	0.542	
Adjusted R^2 – Equation (1)	0.365	
Adjusted R^2 – Equation (2)	0.542	
Adjusted R^2 – Equation (3)	0.563	

Tests of coefficient restrictions

Null hypothesis	χ^2 statistic	*p*-value
$\delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7 = 0$	6077.184	0.000
$\delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7$	4478.178	0.000
$\delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7 = 0$	154.132	0.000
$\delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7$	110.826	0.000
$\delta_2 = \delta_3$	75.441	0.000
$\delta_4 = \delta_5$	12.022	0.000
$\delta_6 = \delta_7$	2.921	0.087

Panel B

	Equation (5)	
Variable	Coefficient	*t*-statistic
Intercept	−0.019	−4.875***
CFO	0.641	47.222***
Δ*COA*	0.086	5.207***
Δ*COL*	−0.071	−3.651***
Δ*NCOA*	0.052	6.842***
Δ*NCOL*	0.001	0.056
Δ*FINA*	0.017	2.128**
Δ*FINL*	0.037	2.825***
Adjusted R^2	0.384	

(continued)

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Table 5 (continued)

Panel B

Variable	Equation (5)	
	Coefficient	*t*-statistic
Adjusted R^2 – Equation (1)	0.247	
Adjusted R^2 – Equation (2)	0.386	
Adjusted R^2 – Equation (3)	0.398	

Tests of coefficient restrictions

Null hypothesis	χ^2 statistic	*p*-value
$\delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7 = 0$	2357.842	0.000
$\delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7$	1907.530	0.000
$\delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7 = 0$	87.392	0.000
$\delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7$	45.248	0.000
$\delta_2 = \delta_3$	6.553	0.010
$\delta_4 = \delta_5$	18.940	0.000
$\delta_6 = \delta_7$	1.457	0.227

Variable definitions: CFO is the firm's net cash flow from operations, as disclosed in the statement of cash flows. *EARN* is the firm's earnings before extraordinary and discontinuing items. *TAC* is the firm's total accruals, calculated as the sum of working capital accruals (ΔWC), non-current operating accruals (ΔNCO) and financing accruals (ΔFIN). $\Delta WC = \Delta WC_{it} - \Delta WC_{it-1}$, where *WC* = Current Operating Assets (*COA*) – Current Operating Liabilities (*COL*). *COA* = current assets – cash – current investments, while *COL* = current liabilities – short-term debt. $\Delta NCO = \Delta NCO_{it} - \Delta NCO_{it-1}$, where *NCO* = Non-Current Operating Assets (*NCOA*) – Non-Current Operating Liabilities (*NCOL*). *NCOA* = total non-current assets – non-current investments, while *NCOL* = non-current liabilities – long-term debt. $\Delta FIN = \Delta FIN_{it} - \Delta FIN_{it-1}$, where *FIN* = Financial Assets (*FINA*) – Financial Liabilities (*FINL*). *FINA* = short-term investments + non-current investments, while *FINL* = long-term debt + short-term debt + convertible equity. ΔCOA is the change in current operating assets (current assets – cash – current investments) over 1 year. ΔCOL is the change in current operating liabilities (current liabilities – short-term debt) over 1 year. $\Delta NCOA$ is the change in non-current operating assets (total non-current assets – non-current investments) over 1 year. $\Delta NCOL$ is the change in non-current operating liabilities (non-current liabilities – long-term debt) over 1 year. $\Delta FINA$ is the change in financial assets (short-term investments + non-current investments) over 1 year. $\Delta FINL$ is the change in financial liabilities (long-term debt + short-term debt + convertible equity) over 1 year. All variables are scaled by average total assets. Equations (1)–(3) and (5) are estimated using the time random-effects method. The *t*-statistic is calculated based on the standard errors clustered by firm.
This table reports the estimates of the following regression equation:

$$CFO_{it+j} = \delta_0 + \delta_1 CFO_{it} + \delta_2 \Delta COA_{it} + \delta_3 \Delta COL_{it} + \delta_4 \Delta NCOA_{it} + \delta_5 \Delta NCOL_{it} + \delta_6 \Delta FINA_{it} + \delta_7 \Delta FINL_{it} + \varepsilon_{it}. \quad (5)$$

where *i* and *t* denote firm and year, respectively, and *j* ranges from 1 to 2. *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

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CFO than do their liability components. These findings also confirm that the asset and liability components of ΔFIN have less persistence than those of ΔWC and ΔNCO in explaining future *CFO*. Furthermore, these results indicate that the liability components of ΔNCO and ΔFIN might not contain information about a firm's future *CFO*. One potential explanation for this outcome is that $\Delta NCOL$ and $\Delta FINL$ are dominated by liability accruals related to investing and financing activities that might not affect a firm's operating performance, at least in the short term. These accruals might thus dampen any association between $\Delta NCOL$ and $\Delta FINL$ and future *CFO*.

In Table 5 (Panel A), a comparison between the adjusted R^2 of Equations (5) and (3) (0.542 and 0.563, respectively) suggests that disaggregating *EARN* into *CFO* and the extended accruals categorisation does not provide greater explanatory power for future *CFO* than do *CFO* and the primary accruals categorisation. This finding could suggest that offsetting asset accruals with liability accruals, as we did in our primary accruals categorisation, is more informative in forecasting future CFO than individual subsets of assets and liability accruals. The above conclusion remains unchanged when CFO_{t+2} is used as the dependent variable (see Panel B of Table 5).[18]

6. Additional analyses

6.1. Industry membership

The economic conditions of companies and the accounting policies that they adopt are generally industry specific. The mix and types of accruals are likely to differ across industries (e.g. Barth *et al*., 2001, 2005). Given these factors, Equation (3) is re-estimated for firms grouped by industry, which is based on a two-digit GICS code,[19] and is reported in Table 6. In our analysis, each industry sector is represented by at least ten firms per year. The results of the χ^2 test of coefficient restrictions and adjusted R^2s for Equations (1) through (3) are also presented. The results support the view that the disaggregation of *TAC* into ΔWC, ΔNCO and ΔFIN augments the model's explanatory power relative to that of *EARN* (Eqn 1) or *EARN* disaggregated into *CFO* and *TAC* (Eqn 2). In addition, the coefficients on ΔNCO and ΔFIN are less than the coefficient on ΔWC when all of them are statistically significant at conventional levels. Therefore, ΔWC plays a more important role in enhancing the ability of earnings to explain future CFO.

While the above findings are similar to those from the total sample, one finding is notable. The χ^2 tests indicate that the coefficient estimates on ΔWC,

[18] We also re-run Equation (5) using CFO_{t+3} and CFO_{t+4} as the dependent variables. The results, not reported here, are qualitatively similar.

[19] The GICS sectors for our sample companies have not changed over the sample period.

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Table 6
The primary accruals categories and future CFO, firms grouped by industry sector

Variable	Energy	Materials	Industrials	Consumer discretionary	Consumer staples	Health care	Information technology	Utilities
Intercept	−0.003	0.006*	0.015***	0.010***	0.023***	−0.01***	0.016*	0.005
CFO	0.719***	0.684***	0.649***	0.691***	0.568***	0.828***	0.800***	0.684***
Δ*WC*	0.186***	0.077***	0.247***	0.117***	0.176***	0.139**	−0.067	0.121**
Δ*NCO*	0.118***	−0.037**	−0.006	−0.008	0.072***	0.069**	0.009	0.033
Δ*FIN*	0.010	−0.005***	−0.016	−0.046***	−0.041	0.017	−0.016	−0.011
Adjusted R^2	0.419	0.471	0.413	0.433	0.341	0.705	0.673	0.501
Adjusted R^2 – Equation (1)	0.202	0.250	0.326	0.228	0.142	0.494	0.281	0.337
Adjusted R^2 – Equation (2)	0.399	0.462	0.376	0.413	0.308	0.699	0.660	0.495

(continued)

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Table 6 (continued)

Variable	Energy	Materials	Industrials	Consumer discretionary	Consumer staples	Health care	Information technology	Utilities
Tests of Coefficients Restrictions								
Null hypothesis	χ^2 statistic	χ^2 statistic	χ^2 statistic	χ^2 statistic	χ^2 statistic	χ^2 statistic	χ^2 statistic	χ^2 statistic
$\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = 0$	199.380***	1356.690***	215.993***	349.391***	386.827***	1059.886***	201.302***	56.965***
$\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4$	177.878***	1349.497***	155.834***	341.469***	189.897***	573.636***	187.258***	43.873***
$\gamma_2 = \gamma_3 = \gamma_4 = 0$	20.770***	42.504***	40.332***	24.384***	45.442***	7.469*	0.751	8.314**
$\gamma_2 = \gamma_3 = \gamma_4$	12.235***	23.956***	39.650***	22.275***	38.817***	4.332	0.639	6.732**
N	2,654	7,585	3,072	2,754	876	1,667	383	365

Variable definitions: CFO is the firm's net cash flow from operations, as disclosed in the statement of cash flows. *EARN* is the firm's earnings before extraordinary and discontinuing items. *TAC* is the firm's total accruals, calculated as the sum of working capital accruals (ΔWC), non-current operating accruals (ΔNCO) and financing accruals (ΔFIN). $\Delta WC = \Delta WC_{it} - \Delta WC_{it-1}$, where *WC* = Current Operating Assets (*COA*) – Current Operating Liabilities (*COL*). *COA* = current assets – cash – current investments, while *COL* = current liabilities – short-term debt. $\Delta NCO = \Delta NCO_{it} - \Delta NCO_{it-1}$, where *NCO* = Non-Current Operating Assets (*NCOA*) – Non-Current Operating Liabilities (*NCOL*). *NCOA* = total non-current assets – non-current investments, while *NCOL* = non-current liabilities – long-term debt. $\Delta FIN = \Delta FIN_{it} - \Delta FIN_{it-1}$, where *FIN* = Financial Assets (*FINA*) – Financial Liabilities (*FINL*). *FINA* = short-term investments + non-current investments, while *FINL* = long-term debt + short-term debt + convertible equity. The two-digit GICS code for each industry sector is as follows: Energy (10), Materials (15), Industrials (20), Consumer Discretionary (25), Consumer Staples (30), Health Care (35), Information Technology (45) and Utilities (55). All variables are scaled by average total assets. The time random-effects method is used to estimate Equations (1)–(3). The *t*-statistic is based on the standard errors clustered by firm. *N* is the number of firm-year observations.

This table reports the estimates of the following regression equation:

$$CFO_{it+j} = \gamma_0 + \gamma_1 CFO_{it} + \gamma_2 \Delta WC_{it} + \gamma_3 \Delta NCO_{it} + \gamma_4 \Delta FIN_{it} + \varepsilon_{it}. \quad (3)$$

where *i* and *t* denote firm and year, respectively. *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

ΔNCO and ΔFIN do not significantly differ from each other statistically at any conventional level for firms in the Health Care and Information Technology subsamples (χ^2 statistic = 4.332 and 0.639, respectively). Therefore, ΔWC, ΔNCO and ΔFIN are not useful for explaining future *CFO* in these industries, which is in line with previous studies (e.g. Amir and Lev, 1996) and indicates that the value relevance of accrual-based earnings is low in high-tech firms.

Given the domination of the ASX by mining companies, as evidenced in Table 2, we also re-run Equations (1) through (3) after removing sample firms in the Materials and Energy sectors. Our results (untabulated) are in line with the findings drawn from the total sample. In addition, the mean and median values of total assets and sales for non-mining firms are larger than those for mining firms (unreported). Therefore, the mining firms in our sample are substantially smaller than non-mining firms, reflecting that the mining firms are mostly involved in exploration activities.

6.2. *Length of the operating cash cycle*

Prior studies (e.g. Dechow, 1994; Dechow *et al*., 1998; Barth *et al*., 2001) have suggested that the relevance of earnings, CFO and accruals for stock returns and future CFO can be affected by the length of the operating cash cycle. In particular, Barth *et al*. (2001) documented that the relative ability of CFO, earnings and the components of operating accruals to explain future CFO decreases with an increase in the length of the operating cash cycle. Thus, we investigate whether the explanatory power of working capital, non-current operating and financing accruals for future CFO is influenced by the length of the operating cash cycle. We define the operating cash cycle as the sum of days inventory plus days receivable minus days payable.[20] We classify the bottom 40 percent and the top 40 percent of the observations ranked by operating cash cycle into two groups: 'short' (cycle < 14) and 'long' (cycle > 40), respectively.[21]

Table 7 presents the results for Equation (3) as well as the adjusted R^2s for Equations (1) and (2), which are determined after dividing our sample based on the length of the operating cash cycle (short versus long). The coefficients on our main variables retain the same signs, and all are significant at conventional

[20] The data for these three ratios have been collected from the Aspect Fin Analysis database, and the ratios are calculated as follows. Days Inventory = (current inventory/operating revenue) × Number of days in financial year. Days Payable = (Accounts payable/operating revenue) × Number of days in financial year. Days Receivable = (Accounts receivable/operating revenue) × Number of days in financial year. The top and bottom 1 percent of firm-year observations with extreme values for the length of their operating cash cycle are excluded. The total number of firm-year observations is reduced to 9303 in this analysis due to the non-availability of data.

[21] This classification is consistent with Charitou (1997) and Farshadfar and Monem (2013). We also divide our ranked observations into three equal-sized groups. This grouping does not change our main inferences (untabulated).

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Table 7
The primary accruals categories and future CFO; firm years grouped by the length of the operating cash cycle

	Operating cash cycle	
Variable	Long	Short
Intercept	0.012***	−0.010***
CFO	0.752***	0.775***
Δ*WC*	0.148***	0.183***
Δ*NCO*	0.030*	0.055***
Δ*FIN*	−0.033*	0.011
Adjusted R^2	0.544	0.590
Adjusted R^2 – Equation (1)	0.304	0.437
Adjusted R^2 – Equation (2)	0.534	0.579
Tests of coefficient restrictions		
Null hypothesis	χ^2 statistic	χ^2 statistic
$\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = 0$	421.212***	1449.866***
$\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4$	346.542***	802.666***
$\gamma_2 = \gamma_3 = \gamma_4 = 0$	39.181***	27.781***
$\gamma_2 = \gamma_3 = \gamma_4$	37.274***	24.105***
N	3,305	3,291

*Variable definitions: CF*O is the firm's net cash flow from operations, as disclosed in the statement of cash flows. *EARN* is the firm's earnings before extraordinary and discontinuing items. *TAC* is the firm's total accruals, calculated as the sum of working capital accruals (Δ*WC*), non-current operating accruals (Δ*NCO*) and financing accruals (Δ*FIN*). $\Delta WC = \Delta WC_{it} - \Delta WC_{it-1}$, where *WC* = Current Operating Assets (*COA*) – Current Operating Liabilities (*COL*). *COA* = current assets – cash – current investments, while *COL* = current liabilities – short-term debt. $\Delta NCO = \Delta NCO_{it} - \Delta NCO_{it-1}$, where *NCO* = Non-Current Operating Assets (*NCOA*) – Non-Current Operating Liabilities (*NCOL*). *NCOA* = total non-current assets – non-current investments, while *NCOL* = non-current liabilities – long-term debt. $\Delta FIN = \Delta FIN_{it} - \Delta FIN_{it-1}$, where *FIN* = Financial Assets (*FINA*) – Financial Liabilities (*FINL*). *FINA* = short-term investments + non-current investments, while *FINL* = long-term debt + short-term debt + convertible equity. The operating cash cycle is measured as the sum of the day's accounts receivable and day's inventory minus day's accounts payable. The Short group comprises firm-year observations with operating cash cycles less than 14 days. The Long group comprises firm-year observations with operating cash cycles greater than 40 days. All variables are scaled by average total assets. The time random-effects method is used to estimate Equations (1)–(3). The *t*-statistic is based on the standard errors clustered by firm. *N* is the number of firm-year observations.

This table reports the estimates of the following regression equation:

$$CFO_{it+j} = \gamma_0 + \gamma_1 CFO_{it} + \gamma_2 \Delta WC_{it} + \gamma_3 \Delta NCO_{it} + \gamma_4 \Delta FIN_{it} + \varepsilon_{it}. \quad (3)$$

where *i* and *t* denote firm and year, respectively. *, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

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levels. The exception is the coefficient on ΔFIN, which is not significant for the short group and is marginally significant for the long group at the 0.10 level with a negative sign. Consistent with the total sample results, earnings disaggregated into CFO, ΔWC, ΔNCO and ΔFIN (Eqn 3) have greater power than aggregate earnings (Eqn 1) and earnings disaggregated into CFO and TAC (Eqn 2) in explaining future CFO. In addition, our findings are consistent with Barth *et al.* (2001) results that the length of the operating cash cycle is negatively associated with the explanatory power of earnings and accruals for future CFO.

6.3. Price-to-book ratio

The price-to-book ratio is a fundamental firm characteristic representing the operating and economic environment of a company (Givoly *et al.*, 2007). Prior studies have suggested that on average, high price-to-book firms are more profitable (e.g. Fama and French, 1995) with more conservative accounting (e.g. Givoly and Hayn, 2000). They tend to result in higher returns on capital and greater growth opportunities (Fama and French, 1995), making them attractive to financial analysts, institutional investors and other market intermediaries (e.g. Mohanram, 2005). They also generally raise more debt because they face cheaper borrowing costs (Chen and Zhao, 2006). Conversely, low price-to-book firms are more likely to be risky and financially distressed and are likely to show persistently low returns on equity (e.g. Fama and French, 1995). As a result, firms with low price-to-book ratios are more likely to be neglected by financial analysts (Dickinson, 2011).

The above differences between firms with high and low price-to-book ratios suggest that the financial performance of the former group is potentially better than that of the latter. Consequently, it is possible that the relative power of earnings and accruals to provide information about future CFO differs between firms with high and low price-to-book ratios. To examine this issue, we rank the firm-year observations based on price-to-book ratio[22] and assign them to two different groups: a 'high' group, comprising the top 40 percent of the ranked observations, and a 'low' group, comprising the bottom 40 percent of the ranked observations.[23] In Table 8, we present the results of re-estimating Equations (1)–(3) across the high and low groups. The analyses show that with the exception of ΔFIN in the low group, all coefficients are positive and

[22] Price-to-book ratios have been obtained from the Aspect Fin Analysis database and are measured as the closing share price on the last day of the firm's financial year, divided by the shareholders' equity per share. We exclude the top and bottom 1 percent of firm-year observations with extreme values for price-to-book ratios.

[23] We re-estimate Equations (1)–(3) after splitting the firm-year observations, ranked by the price-to-book ratios, into three equal groups. Our results (untabulated) are similar to those reported in Table 8.

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Table 8
The primary accruals categories and future CFO; firm years grouped by price-to-book ratio

	Price-to-book ratio	
Variable	High	Low
Intercept	−0.025***	−0.005***
CFO	0.777***	0.678***
Δ*WC*	0.232***	0.115***
Δ*NCO*	0.116***	0.023***
Δ*FIN*	0.034***	0.009
Adjusted R^2	0.590	0.417
Adjusted R^2 – Equation (1)	0.301	0.158
Adjusted R^2 – Equation (2)	0.574	0.393
Tests of Coefficients Restrictions		
Null hypothesis	χ^2 statistic	χ^2 statistic
$\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = 0$	3371.102***	1139.322***
$\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4$	548.346***	910.1879***
$\gamma_2 = \gamma_3 = \gamma_4 = 0$	111.627***	43.985***
$\gamma_2 = \gamma_3 = \gamma_4$	61.383***	34.056***
N	5,815	5,938

Variable definitions: CFO is the firm's net cash flow from operations, as disclosed in the statement of cash flows. *EARN* is the firm's earnings before extraordinary and discontinuing items. *TAC* is the firm's total accruals, calculated as the sum of working capital accruals (Δ*WC*), non-current operating accruals (Δ*NCO*) and financing accruals (Δ*FIN*). $\Delta WC = \Delta WC_{it} - \Delta WC_{it-1}$, where *WC* = Current Operating Assets (*COA*) – Current Operating Liabilities (*COL*). *COA* = current assets – cash – current investments, while *COL* = current liabilities – short-term debt. $\Delta NCO = \Delta NCO_{it} - \Delta NCO_{it-1}$, where *NCO* = Non-Current Operating Assets (*NCOA*) – Non-Current Operating Liabilities (*NCOL*). *NCOA* = total non-current assets – non-current investments, while *NCOL* = non-current liabilities – long-term debt. $\Delta FIN = \Delta FIN_{it} - \Delta FIN_{it-1}$, where *FIN* = Financial Assets (*FINA*) – Financial Liabilities (*FINL*). *FINA* = short-term investments + non-current investments, while *FINL* = long-term debt + short-term debt + convertible equity. The price-to-book ratio is calculated as the closing share price on the last day of the company's financial year/shareholders equity per share. The High group comprises the top 40 percent of the observations ranked based on price-to-book ratio. The Low group comprises the bottom 40 percent of the observations ranked based on price-to-book ratio. All variables are scaled by average total assets. The time random-effects method is used to estimate Equations (1)–(3). The *t*-statistic is based on the standard errors clustered by firm. *N* is the number of firm-year observations.
This table reports the estimates of the following regression equation:

$$CFO_{it+j} = \gamma_0 + \gamma_1 CFO_{it} + \gamma_2 \Delta WC_{it} + \gamma_3 \Delta NCO_{it} + \gamma_4 \Delta FIN_{it} + \varepsilon_{it}. \quad (3)$$

where *i* and *t* denote firm and year, respectively.*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

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significant at the 0.01 level for both the high and low groups. In addition, Equation (3) has greater explanatory power than Equations (1) and (2). However, as expected, the explanatory power of earnings and accruals increases with the price-to-book ratio. That is, working capital accruals, non-current operating accruals and financing accruals make greater contributions in high price-to-book firms than they do in low price-to-book firms towards explaining future CFO.

6.4. *Asset turnover*

Next, we examine whether our results are robust to controlling for asset turnover as a traditional proxy of asset efficiency. The asset turnover ratio reflects the ability of a company to produce sales from its assets. We control for asset turnover because prior studies (e.g. Fairfield and Yohn, 2001; Soliman, 2008) have documented that there is a direct link between asset turnover changes and changes in future earnings as well as stock returns. In addition, Richardson *et al.* (2001, 2006) decomposed their measure of operating accruals into sales growth and change in asset turnover. Their theoretical model and empirical evidence indicated that accruals are inversely related to asset efficiency and that the efficiency component of accruals, as measured by asset turnover, conveys information about the ability of accruals to explain future earnings and stock returns.

To examine the impact of asset efficiency on the explanatory power of working capital, non-current operating and financing accruals for future CFO, we sort the firm-year observations by asset turnover ratio and then assign them to two groups: a 'high' group, containing the top 40 percent of ranked observations, and a 'low' group, containing the lowest 40 percent of ranked observations.[24,25,26] As shown in Table 9, the coefficients on CFO, ΔWC and ΔNCO are highly significant at the 0.01 level across both the high and low groups. ΔFIN is positively and significantly correlated with future CFO in the low group but not in the high group. The explanatory power of Equation (3) is greater than that of Equations (2) and (1). However, one notable point is that the explanatory power of earnings and accruals is greater for the low group than for the high group, inconsistent with our expectations. It could be that the

[24] Asset turnover is calculated as sales divided by average total assets. We exclude observations with extreme values for asset turnover, that is the top and bottom 1 percent of these values.

[25] Consistent with Richardson *et al.* (2001, 2005, 2006), we measure asset turnover as sales divided by net operating assets. In addition, the change in asset turnover is used rather than the level of asset turnover in our analysis. Untabulated findings show that our results do not change qualitatively.

[26] Our results hold after partitioning our firm-year observations, which are sorted by asset turnover, into three equal groups (unreported).

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Table 9
The primary accruals categories and future CFO; firm years grouped by asset turnover ratio

	Asset turnover	
Variable	High	Low
Intercept	0.014***	−0.041***
CFO	0.633***	0.731***
Δ*WC*	0.281***	0.158***
Δ*NCO*	0.056***	0.092***
Δ*FIN*	−0.003	0.024**
Adjusted R^2	0.416	0.478
Adjusted R^2 – Equation (1)	0.084	0.203
Adjusted R^2 – Equation (2)	0.387	0.452
Tests of coefficient restrictions		
Null hypothesis	χ^2 statistic	χ^2 statistic
$\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = 0$	739.972***	1269.980***
$\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4$	392.511***	936.001***
$\gamma_2 = \gamma_3 = \gamma_4 = 0$	77.182***	75.268***
$\gamma_2 = \gamma_3 = \gamma_4$	72.974***	38.735***
N	5,886	5,628

Variable definitions: CFO is the firm's net cash flow from operations, as disclosed in the statement of cash flows. *EARN* is the firm's earnings before extraordinary and discontinuing items. *TAC* is the firm's total accruals, calculated as the sum of working capital accruals (Δ*WC*), non-current operating accruals (Δ*NCO*) and financing accruals (Δ*FIN*). $\Delta WC = \Delta WC_{it} - \Delta WC_{it-1}$, where *WC* = Current Operating Assets (*COA*) – Current Operating Liabilities (*COL*). *COA* = current assets – cash – current investments, while *COL* = current liabilities – short-term debt. $\Delta NCO = \Delta NCO_{it} - \Delta NCO_{it-1}$, where *NCO* = Non-Current Operating Assets (*NCOA*) – Non-Current Operating Liabilities (*NCOL*). *NCOA* = total non-current assets – non-current investments, while *NCOL* = non-current liabilities – long-term debt. $\Delta FIN = \Delta FIN_{it} - \Delta FIN_{it-1}$, where *FIN* = Financial Assets (*FINA*) – Financial Liabilities (*FINL*). *FINA* = short-term investments + non-current investments, while *FINL* = long-term debt + short-term debt + convertible equity. The asset turnover ratio is measured as sales divided by average total assets. The High group comprises the top 40 percent of the observations ranked by asset turnover ratio. The Low group comprises the bottom 40 percent of the observations ranked by asset turnover ratio. All variables are scaled by average total assets. The time random-effects method is used to estimate Equations (1)–(3). The *t*-statistic is based on the standard errors clustered by firm. *N* is the number of firm-year observations.
This table reports the estimates of the following regression equation:

$$CFO_{it+j} = \gamma_0 + \gamma_1 CFO_{it} + \gamma_2 \Delta WC_{it} + \gamma_3 \Delta NCO_{it} + \gamma_4 \Delta FIN_{it} + \varepsilon_{it}. \quad (3)$$

where *i* and *t* denote firm and year, respectively.*, **, *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

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results for the high group are influenced by firms in the early stages of their life cycles; these early-stage firms typically have high asset turnovers (Dickinson, 2011) and low value relevance of earnings and CFO (Black, 1998). The higher asset turnover of a firm in the early stage is driven by a reduced asset base due to investments in uncapitalised assets, such as research and development, as well as exploration and evaluation costs (Dickinson, 2011). In our study, this is evidenced by smaller mean and median total assets in the high group than in the low group (unreported).

We further investigate the sensitivity of our results to grouping firms by size. Firm size is a common proxy for a firm's life cycle (Dickinson, 2011). Firms in the mature stage of their life cycle are typically larger than firms in the early stages of their life cycle (e.g. Black, 1998; Dickinson, 2011). We partition our firm-year observations, sorted by total assets in ascending order, into two groups: a 'small' group, containing the top 40 percent of the sorted observations, and a 'large' group, containing the bottom 40 percent of the sorted observations. The untabulated results show that the outcomes are similar to the findings drawn from the total sample. However, as expected, the ability of earnings and accruals to explain CFO is lower in the small group than in the large group. This supports the notion that the results based on high versus low asset turnover ratio are affected by firm life cycle.

6.5. Further robustness checks

In unreported tests, we examine the robustness of our findings in Equation (3) to four additional sensitivity tests. These tests are as follows: (i) grouping firms into negative and positive CFO; (ii) grouping firms into negative and positive earnings; (iii) re-running regressions across years, as per Barth *et al.* (2001); and (iv) re-estimating our regression models across the pre- and post-IFRS adoption periods. However, the unreported results suggest that our main conclusions are not affected by incorporating these controls into our tests.

7. Conclusions

In this study, we examine an important question about the usefulness of accruals in explaining future CFO in the Australian context: Does the categorisation of accruals into working capital, non-current operating and financing components improve the ability of total accruals, and thus of earnings, to explain future CFO? We analyse a large sample of 17,153 firm-year observations related to 2,261 unique firms over the 1992–2011 period. Our regression models are estimated using a panel data approach known as the random-effects method with standard errors clustered by firms.

Our results suggest that both working capital and non-current operating accruals are relevant in explaining future CFO but that the relevance of financing accruals is not significant. In addition, working capital accruals make

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a greater contribution to earnings' ability to explain future CFO than non-current operating accruals. We decompose working capital accruals, non-current operating accruals and financing accruals into their underlying asset and liability components to identify the sources of their explanatory power. We find that the role of asset accruals is greater than that of the liability accruals in enhancing the explanatory power of accruals, and thus earnings, for future CFO. We also examine the relative importance of working capital accruals, non-current operating accruals and financing accruals in explaining future CFO after partitioning firm-year observations into groups, based on industry sector, length of operating cash cycle, price-to-book ratio, asset turnover, positive and negative earnings, and positive and negative CFO. Our main inferences remain unaltered by the battery of these sensitivity tests. Our results are also robust to estimations of our regression models across years and across pre- and post-IFRS adoption periods and when we increase the forecasting horizon from 1 to 4 years.

In summary, this study increases our knowledge of the usefulness of accruals in explaining future CFO. While previous studies of the association of accruals with future CFO have mostly focused on accruals related to operating activities (e.g. Barth *et al*., 2001), this study builds on the literature in this area by comprehensively examining the association of accruals related to operating, investing and financing activities with future CFO. These findings offer insight into the policy debate over whether accounting standards authorities should mandate the separation of financial statement items based on business activity (i.e. operating, investing and financing). Our results support the IASB and FASB proposal by showing that classifying assets and liabilities based on operating, investing and financing activities provides useful information on financial statements about future CFO.

References

Amir, E., and B. Lev, 1996, Value relevance of nonfinancial information: the wireless communications industry, *Journal of Accounting and Economics* 22, 3–30.

Balkrishna, H., J. J. Coulton, and S. L. Taylor, 2007, Accounting losses and earnings conservatism: evidence from Australian Generally Accepted Accounting Principles, *Accounting & Finance* 47, 381–400.

Ball, R., S. P. Kothari, and A. Robin, 2000, The effect of international institutional factors of properties of accounting earnings, *Journal of Accounting and Economics* 29, 1–51.

Bandyopadhyay, S., C. Chen, A. G. Huang, and R. Jha, 2010, Accounting conservatism and the temporal trends in current earnings' ability to predict future cash flows versus future earnings: evidence on the trade-off between relevance and reliability, *Contemporary Accounting Research* 27, 413–460.

Barth, M. E., D. P. Cram, and K. K. Nelson, 2001, Accruals and the prediction of future cash flows, *The Accounting Review* 76, 27–58.

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Barth, M. E., W. H. Beaver, J. R. M. Hand, and W. R. Landsman, 2005, Accruals, accounting-based valuation models, and the prediction of equity values, *Journal of Accounting, Auditing and Finance* 20, 311–345.

Barth, M. E., G. Clinch, and D. Israeli, 2015, What do accruals tell about future cash flows?, Working paper (Stanford Graduate School of Business, Stanford University).

Black, E. L., 1998, Life-cycle impacts on the incremental value-relevance of earnings and cash flow measures, *Journal of Financial Statement Analysis* 4, 40–56.

Charitou, A., 1997, The role of cash flows and accruals in explaining security returns: evidence for the UK, *The European Accounting Review* 6, 629–652.

Chen, L., and X. Zhao, 2006, On the relation between the market-to-book ratio, growth opportunity and leverage ratio, *Finance Research Letters* 3, 253–266.

Cheng, C. S. A., and D. Hollie, 2008, Do core and non-core cash flows from operations persist differentially in predicting future cash flows?, *Review of Quantitative Finance and Accounting* 31, 29–53.

Cheung, E., E. Evans, and S. Wright, 2010, An historical review of quality in financial reporting in Australia, *Pacific Accounting Review* 22, 147–169.

Chia, Y. K., R. Czernkowski, and J. Loftus, 1997, The association of aggregate and disaggregated earnings with annual stock returns, *Accounting & Finance* 37, 111–128.

Clarkson, P., J. D. Hanna, G. D. Richardson, and R. Thompson, 2011, The impact of IFRS adoption on the value relevance of book value and earnings, *Journal of Contemporary Accounting & Economics* 7, 1–7.

Clinch, G., D. Fuller, B. Govendir, and P. Wells, 2012, The accrual anomaly: Australian evidence, *Accounting & Finance* 52, 377–394.

Cotter, J., 1996, Accrual and cash flow accounting models: a comparison of the value relevance and timeliness of their components, *Accounting & Finance* 36, 127–150.

Dechow, P. M., 1994, Accounting earnings and cash flows as measures of firm performance: the role of accounting accruals, *Journal of Accounting and Economics* 18, 3–42.

Dechow, P. M., R. G. Sloan, and A. P. Sweeney, 1995, Detecting earnings management, *The Accounting Review* 70, 193–225.

Dechow, P. M., S. P. Kothari, and R. L. Watts, 1998, The relation between earnings and cash flows, *Journal of Accounting and Economics* 25, 133–168.

Dickinson, V., 2011, Cash flow patterns as a proxy for firm life cycle, *The Accounting Review* 86, 1969–1994.

Fairfield, P. M., and L. T. Yohn, 2001, Using asset turnover and profit margin to forecast changes in profitability, *Review of Accounting Studies* 6, 371–385.

Fama, E. F., and K. R. French, 1995, Size and book-to-market factors in earnings and returns, *The Journal of Finance* 50, 131–155.

Farshadfar, S., and R. Monem, 2013, The usefulness of operating cash flow and accrual components in improving the predictive ability of earnings: a re-examination and extension, *Accounting & Finance* 53, 1061–1082.

Financial Accounting Standards Board (FASB), 1978, *Statement of Financial Accounting Concepts No.1: Objectives of Financial Reporting by Business Enterprises* (FASB, Stamford, CT).

Givoly, D., and C. Hayn, 2000, The changing time-series properties of earnings, cash flows and accruals: has financial reporting become more conservative?, *Journal of Accounting and Economics* 29, 287–320.

Givoly, D., C. K. Hayn, and A. Natarajan, 2007, Measuring reporting conservatism, *The Accounting Review* 82, 65–106.

Govinder, B., and P. Wells, 2014, The influence of accruals generating process on earnings persistence, *Australian Journal of Management* 39, 593–614.

Greene, W. H., 2000, *Econometric Analysis* (Prentice Hall, Englewood Cliffs, NJ).

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Guay, W., and B. Sidhu, 2001, The usefulness of long-term accruals, *ABACUS* 37, 110–131.
Gujarati, D. N., 2003, *Basic Econometrics* (McGraw Hill, New York, NY).
Hausman, J. A., 1978, Specification tests in econometrics, *Econometrica* 46, 1251–1271.
Hribar, P., and D. Collins, 2002, Errors in estimating accruals: implications for empirical research, *Journal of Accounting Research* 40, 105–134.
International Accounting Standards Board (IASB), 2004, *International Financial Reporting Standard 6: Exploration for and Evaluation of Mineral Resources* (IASB, London).
International Accounting Standards Board (IASB), 2008, *Discussion Paper: Preliminary Views on Financial Statement Presentation* (IASB, London).
International Financial Reporting Standards (IFRS) Foundation, 2010, *Conceptual Framework for Financial Reporting* (IFRS Foundation, London).
International Financial Reporting Standards (IFRS) Foundation, and Financial Accounting Standards Board (FASB), 2011, Project Update. Available at: http://www.fasb.org/project/financial_statement_presentation.shtml.
Lai, C., Y. Li, Y. Shan, and S. Taylor, 2013a, Costs of mandatory international financial reporting standards: evidence of reduced accrual reliability, *Australian Journal of Management* 38, 491–521.
Lai, C., M. Lu, and Y. Shan, 2013b, Has Australian financial reporting become more conservative over time? *Accounting & Finance* 53, 731–761.
Leuz, C., D. Nanda, and P. D. Wysocki, 2003, Earnings management and investor protection: an international comparison, *Journal of Financial Economics* 69, 505–527.
Loftus, J. A., and S. Sin, 1997, The role of current and non-current accruals in the relation between stock returns and earnings, *Accounting & Finance* 37, 147–161.
Mohanram, P. S., 2005, Separating winners from losers among low book-to-market stocks using financial statement analysis, *Review of Accounting Studies* 10, 133–170.
Oei, R., A. Ramsay, and P. Mather, 2008, Earnings persistence, accruals and managerial share ownership, *Accounting & Finance* 48, 475–502.
Petersen, M., 2009, Estimating standard errors in finance panel data sets: comparing approaches, *Review of Financial Studies* 22, 435–480.
Richardson, S., R. Sloan, M. Soliman, and I. Tuna, 2001, Information in accruals about the quality of earnings. Available at: www.ssrn.com.
Richardson, S., R. Sloan, M. Soliman, and I. Tuna, 2005, Accrual reliability, earnings persistence and stock prices, *Journal of Accounting and Economics* 39, 437–485.
Richardson, S., R. Sloan, M. Soliman, and I. Tuna, 2006, The implications of firm growth and accounting distortions for accruals and profitability, *The Accounting Review* 81, 713–743.
Sloan, R. G., 1996, Do stock prices fully reflect information in accruals and cash flows about future earnings?, *The Accounting Review* 71, 289–315.
Soliman, M. T., 2008, The use of DuPont analysis by market participants, *The Accounting Review* 83, 823–853.
Taylor, W. E., 1980, Small sample considerations in estimation from panel data, *Journal of Econometrics* 13, 203–223.
Taylor, G., R. Grant, G. Tower, and P. Hancock, 2012, The determinants of reserves disclosure in the extractive industries: evidence from Australian firms, *Accounting & Finance* 52, 373–402.
Thomas, J., and H. Zhang, 2002, Inventory changes and future returns, *Review of Accounting Studies* 7, 163–187.
Xie, H., 2001, The mispricing of abnormal accruals, *The Accounting Review* 76, 357–373.

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Appendix I.
Data items in the Aspect Fin Analysis used in constructing variables

Balance sheet accounts used in the computation of accrual categories	Accrual categories		Data items obtained from the Aspect Fin Analysis database
	Primary	Extended	
Current assets	ΔWC	COA	Total Current Assets
Cash	ΔWC	COA	Cash
Current investments	ΔWC, ΔFIN	COA, $FINA$	Current Investments
Current liabilities	ΔWC	COL	Total Current Liabilities
Short-term debt	ΔWC, ΔFIN	COL, $FINL$	Shortterm Debt
Total non-current assets	ΔNCO	$NCOA$	Total Non-current Assets
Non-current investments	ΔNCO, ΔFIN	$NCOA$, $FINA$	Non-current Investments
Non-current liabilities	ΔNCO	$NCOL$	Total Non-current Liabilities
Long-term debt	ΔNCO, ΔFIN	$NCOL$, $FINL$	Long-term Debt
Convertible equity	ΔFIN	$FINL$	Convertible Equity

Primary denotes the primary accrual categories. Extended denotes extended accrual categories. $\Delta WC = \Delta WC_{it} - \Delta WC_{it-1}$, where WC = Current Operating Assets (COA) – Current Operating Liabilities (COL). COA = current assets – cash – current investments, while COL = current liabilities – short-term debt. $\Delta NCO = \Delta NCO_{it} - \Delta NCO_{it-1}$, where NCO = Non-Current Operating Assets ($NCOA$) – Non-Current Operating Liabilities ($NCOL$). $NCOA$ = total non-current assets – non-current investments, while $NCOL$ = non-current liabilities – long-term debt. $\Delta FIN = \Delta FIN_{it} - \Delta FIN_{it-1}$, where FIN = Financial Assets ($FINA$) – Financial Liabilities ($FINL$). $FINA$ = short-term investments + non-current investments, while $FINL$ = long-term debt + short-term debt + convertible equity. ΔCOA is the change in current operating assets (current assets – cash – current investments) over 1 year. ΔCOL is the change in current operating liabilities (current liabilities – short-term debt) over 1 year. $\Delta NCOA$ is the change in non-current operating assets (total non-current assets – non-current investments) over 1 year. $\Delta NCOL$ is the change in non-current operating liabilities (non-current liabilities – long-term debt) over 1 year. $\Delta FINA$ is the change in financial assets (short-term investments + non-current investments) over 1 year. $\Delta FINL$ is the change in financial liabilities (long-term debt + short-term debt + convertible equity) over 1 year.

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