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Abstract

In response to business needs, different types of company have followed different financial reporting rules. UK GAAP was replaced by IFRS for listed companies and by FRSSE for small companies. Recently, the IASB has issued IFRS for SMEs designed for companies that do not have public accountability, and this has prompted the UK to formally recognise its tripartite reporting system; from 2015, listed companies will follow IFRS, medium sized companies will follow IFRS for SMEs and small companies will follow the FRSSE. We investigate earnings quality across the three groups within the current regulations.

We find that medium sized companies have the lowest earnings quality. The earnings quality of listed companies and small companies are similar. Even in a sub-sample of seemingly suspicious companies, where earnings quality is lower than in the full sample, medium sized companies still have the lowest quality.

The evidence supports the less stringent reporting requirements for small companies. The lower quality of reporting observed in medium sized companies may be justifiable if the demand for their public information is sufficiently lower and the cost of supply less easily absorbed than in the case of listed companies.

Earnings quality across listed, medium-sized, and small companies in the UK

1. A three-tier system of financial reporting

In 2009, the International Accounting Standards Board (IASB) issued a new accounting standard – International Financial Reporting Standard (IFRS) for Small and Medium-sized Entities (SMEs) to exist alongside full IFRSs. The IASB suggests that IFRS for SMEs are general-purpose accounting standards regardless of size, and leave each jurisdiction to decide the size criteria to follow IFRS for SMEs. In response to the IASB’s move, the UK Accounting Standards Board issued three Financial Reporting Exposure Drafts: FRED 46, Application of Financial Reporting Requirements (draft FRS 100); FRED 47, Reduced Disclosure Framework (draft FRS 101); and FRED 48 The Financial Reporting Standard applicable in the UK and Republic of Ireland (draft FRS102). These exposure drafts proposed that companies should report under a three-tier system of financial reporting, as follows. Medium-sized companies should follow a new set of standards based on the IFRS for SMEs; publicly listed should continue to follow full IFRS and small companies should continue to follow the Financial Reporting Standard for Smaller Entities (FRSSE). After the period of consultation, the Financial Reporting Council (FRC)¹ issued FRS 100 and FRS101 in November 2012 and FRS 102 in March 2013, to be applied in accounting periods beginning on or after 1st January 2015. This system of differential reporting requirements is a formal recognition of current reporting requirements which have developed from a situation in which all UK companies reported under UK GAAP; the first divergence arose when small companies were allowed to report under the FRSSE, which was then followed by listed companies being subject to IFRS. The current exemption from audit available to small companies is to continue. IFRS for SMEs is also being considered within Europe, although its scope is not yet clear (EFRAG, 2014).

2. Consequences for earnings quality

An important question which arises is what will happen to earnings quality across the different classes of company as a result of these differential reporting standards? Will accounting statements be comparable across the different classes of company? One rationale for the tripartite system is that agency issues and complexity vary across the three tiers and that accounting regulations should therefore reflect this. Different regulations are required to deal with the fact that where there is separation of ownership from control, tighter regulation may be required to constrain opportunistic

¹The Financial Reporting Council took over the role of issuing accounting standards from the Accounting Standards Board following its reorganization in July 2012.

reporting behaviour by managers. In such a setting, the objective of the regulation system would seem to be to equalise earnings quality across the classes of company. This consequence seems to be suggested by the ASB when at the exposure draft stage, it was canvassing opinion on the merits of the proposal:

FRED 48 is a proportionate solution written specifically for smaller and medium-sized entities whilst maintaining the quality of financial reporting. ASB (2012a, p16)

In contrast to the above agency rationale for differential reporting rules, some other justifications would seem to give rise to differences in earnings quality across the different classes of company. Examples are: the need to reduce the cost burden of financial reporting on smaller companies; the differential needs of users arising from the relative complexity of the business operations of larger companies and the ability of stakeholders to obtain information outside of the annual reporting cycle to shareholders. Differences in earnings quality arising from IFRS for SMEs seem to be suggested by the IASB:

...the Board acknowledged that differences in the types and needs of users of SMEs' financial statements, as well as limitations in, and the cost of, the accounting expertise available to SMEs, suggested that a separate standard for SMEs is appropriate. IASB (2009, BC47).

This alternative viewpoint is now also taken by the FRC in FRS 102, contrasting with its exposure draft stage. The phrase "whilst maintaining the quality of financial reporting" is now missing, leaving the somewhat imprecise phrase of "proportionate to the size and complexity of the entity and users' information needs".

The FRC's overriding objective in setting accounting standards is to enable users of accounts to receive high-quality understandable financial reporting proportionate to the size and complexity of the entity and users' information needs. FRC (2013c, p3)

This view is also reiterated in the FRC's impact assessment of the new standard, FRC (2013d, section 4.9). The lack of clarity from both the FRC and the IASB as to the consequences of their regulatory stances is not surprising. Watts and Zimmerman (1979) argue that process of developing new accounting standards is a political one, a process of negotiation because regulators do not have enough understanding of how companies are going to respond. More recently, Young (2003) suggests that accounting regulators are seemingly passive, since they act as diplomats in aligning the differing needs of companies and users. They are specific only in so far it is necessary for the parties to agree, for example by engaging in rhetorical strategies to persuade users that standards are appropriate, correct and useful. Therefore, it is not surprising that the important issue of what consequences will follow from differential regulation is not discussed explicitly by the IASB and FRC. In addition, when accounting standards result from a mix of personal backgrounds, beliefs, and affiliations (Allen and

Ramanna, 2013), it is not surprising if some aspects of a standard (and particularly its likely consequences) are kept unspecified. The purpose of the paper is to examine earnings quality across the current three tier structure of listed (using IFRS), medium sized (using UK GAAP) and small companies (using the FRSSE) in the UK. This, hopefully, will inform the possible earnings quality implications of the proposed tripartite structure. The paper is structured as follows: a review of the prior literature is followed by detailed presentation of the contribution and the methods used. Sections on the data set and the results are followed by a summary and conclusions.

3. Prior literature

Much of the prior literature about earnings quality across different types of company is concerned with the discipline exerted by the equity market in stifling opportunistic reporting when the shares are publicly traded. The quality of the market discipline will then influence the type of regulation imposed by government. Although this public/private distinction is similar to our concern, it is not the same. For example, in order to assess the effect of the equity market, prior work has often sought to eliminate other factors such as (i) the size of firm, which is known to affect earnings quality (Hribar and Nichols, 2007), and (ii) the regulatory regime under which companies report. In contrast, we are concerned with the variation in earnings quality when companies report under different regimes according to factors such as having an equity quotation and company size. Therefore the concern in other papers with the elimination of other factors means that their findings may be only partially relevant to our objective.

There are three studies which hold the reporting regime constant across the sample: Beatty, Ke, and Petroni (2002); Ball and Shivakumar (2005); and Givoly, Hayn, and Katz (2010). Beatty, Ke, and Petroni (2002), find that during the period 1988-98, US public banks have superior earnings quality to private banks, as measured by a greater number of earnings increases to earnings decreases. However, since the study relates only to the banking sector, the findings may not have many implications for the current study. The Ball and Shivakumar study is the only UK study of differential reporting. All companies which have dispensed with the need for an audit are eliminated from the sample, so that all companies face the same reporting auditing requirements. They then investigate the impact of the public/private dichotomy on earnings quality. During the period 1989-99, they find that public companies have a higher earnings quality than private companies. This result is of interest since the public/private distinction is part of the rationale for the ASB's proposal; public companies should report under IFRS and private companies should report under FRS 102 or under FRSSE. The Ball and Shivakumar study may suggest that under new UK structure companies following FRS102 and FRSSE (possibly without an audit) will have poorer reporting quality than companies reporting under IFRS with the added discipline of the security market. However, the implications of the study for our

current purpose need to be cautious: the measure they use is concerned with loss recognition which is only one aspect of reporting quality; their results are based on a period of rising GDP growth (see ONS, 2014) which may not translate to the current economic climate². Furthermore, their category of private company would now be required to comply with either FRS102 or with FRSSE and consequently the policy implications of their study for the current three tier system are unclear.

Givoly, Hayn, and Katz (2010) examine the difference between companies with publicly traded equity and those with privately traded equity for the period 1978-2003. The private equity companies chosen for the study also have public debt and are therefore subject to identical SEC regulations as the public equity companies. The results are mixed. For some measures of earnings quality private equity companies are superior to those with public equity, suggesting that the market discipline is insufficient to outweigh the opportunism of corporate management. However, public equity companies appear to be superior in loss recognition tests. The waters are further muddied in that the majority (73%) of public equity companies have private debt; hence the generally poorer performance of the public equity companies may actually be driven by their private debt, where stakeholders rely less on public financial statements for the resolution of information asymmetry issues.

A number of other studies allow the reporting regime to vary across the sample and therefore might be of greater interest to the current study. Based on data from 1997-2003, Burgstahler, Hail, and Leuz (2006) investigate public and private companies across 13 European countries, including the UK. Their measure of earnings management is an aggregate of four individual measures: the incidence of small profits to small losses; the ratio of accruals to cash flows; the volatility of earnings to cash flow; and a measure of loss recognition. They find that private companies exhibit higher levels of earnings management than do public companies. This study may not have implications for the current issue since: (i) the unit of observation is the industry in a particular country, and therefore may not capture variations across companies; (ii) the findings are for the aggregate sample, and therefore may be driven by differences between countries rather than differences across companies in a given country (for example, if the ratio of public to private companies is different across countries).

The recent study of Hope, Thomas, and Vyas (2013) compares US public and private companies which reported for all the years from 2001-2009. Although the smallest of private companies are excluded, the sample is more representative of the small company sector than in prior US work; the median of total assets of private companies is \$4.27m compared with \$337m in the Givoly, Hayn, and Katz (2010) study. Hope, Thomas, and Vyas use a variety of earnings quality measures: benchmark beating; abnormal accruals; abnormal debtors; and loss recognition. All the individual tests show that

²Of course, the Ball and Shivakumar quality measure is loss recognition and therefore it might seem appropriate to an economic downturn. However, making a loss is only one circumstance which gives incentives for earnings management in a downturn, another being, for example, the potential for missing the target of last year's earnings.

public companies have higher earnings quality. However, when the tests are focussed on areas where companies are more likely to have managed earnings (because they report a small profit or a small increase in earnings), they find that the superiority of public companies disappears.

This last result exposes the weakness of many of the tests to date, i.e. that they do not condition on the incentives for earnings management. In addition, from a public policy point of view, studies which average earnings quality over a typically ten year sample period may conceal important variation over the period; users of accounts may be more interested in the quality of reporting when the economic circumstances are tough than when all is rosy in the garden.

4. Contribution and method

In order to understand the potential impact of FRSs 100, 101 and 102, we compare earnings quality of companies in the existing regulatory regimes of IFRS (for publicly listed companies), UK GAAP (for medium sized companies), and the FRSSE (for small companies). We propose no formal criteria for the desired differences between each group of companies. The sample is based on data from 2010, a time when the UK economy was very weak, with consequential incentives to manage reported earnings. Our measures of earnings quality for the three groups of company use a variety of accounting and firm characteristics that have been suggested in the prior studies and adopt a number of approaches to earnings quality. First, we measure the relative magnitude of accruals; secondly we calculate the smoothness of earnings, after adjusting for a number of economic control variables; thirdly, we conduct a loss avoidance test; finally, we identify suspicious companies from the sample that, *prima facie*, may have engaged in earnings management, and conduct the first two tests (the size of accruals and smoothness tests) for these companies. The details of the tests are given next.

4.1 The magnitude of accruals

We measure earnings quality based on the relation between the most fundamental measure of firms' performance – cash flows and earnings. Earnings quality is linked with how a firm's cash flows have been transformed into reported earnings. Accruals play a crucial role in the transformation process, because cash flows encounter timing and matching issues, which do not adequately reflect a firms' underlying financial performance. Hence, earnings quality is closely related to whether accruals are being correctly used to transform cash flows into informative reported earnings. The magnitude of accruals in relation to earnings and cash flows is a well-established measure of earnings quality (Burgstahler, Hail and Leuz, 2006, p990) with a higher magnitude of accruals being associated with poorer earnings quality.

Following the study of Dechow (1994), and taking note of there being no requirement for a cash flow statement to be prepared by SMEs, the cash flows from operations are measured as follows:

$$CFO = E + Dep - \Delta W \quad (1)$$

where: CFO is cash flow from operation for the year; E is profit after tax and extraordinary items for the year; Dep is depreciation for the year; and ΔWC is the increase in debtors plus the increase in stock minus the increase in creditors for the year. We define the ratio of cash flows from operation to earnings as $(\frac{CFO}{E})_{i,g,k}$ where: $CFO_{i,g,k}$ is cash flow from operations for company i in group g and sector k ; $E_{i,g,k}$ is profit after tax and extraordinary items for company i in group g and sector k ; i takes values from 1, ..., $n_{g,k}$; and g takes values of L (Listed), M (Medium), or S (Small); and k takes values from 1, 2, ... 10.

Despite its use in Burgstahler, Hail and Leuz, (2006), the ratio of cash flow to earnings is an imprecise measure of earnings quality. A low cash flow to earnings ratio (a high level of accruals) may indicate earnings management but may also indicate other things such as conservatism, the operating cycle, or business growth or decline. Therefore, we use it to conduct a simple broad-brush preliminary analysis by examining the distribution of the ratio and then disaggregating by sector in order to reduce the effect of extraneous factors. Although more complicated models of accruals are possible (such as those suggested by Dechow, Sloan, Sweeney, 1995; McNichols, 2002; and Kothari, Leone, and Wasley, 2005) accruals are affected by a whole host of factors, a given model may miss the factors at work in a particular sample and thereby do more harm than good; see for example Gigerenzer and Brighton (2009), Bank of England (2014), and Brown and Warner (1985).

4.2 The smoothness of earnings

Our measure of smoothness is based on Barth, Landsman and Lang (2008). The essential function of accruals is to smooth out the variability of cash flows. However, earnings may be too smooth, which may indicate that economic performance is being hidden or delayed (Dechow, Ge, and Schrand, 2010, p361). In particular, Ball and Shivakumar (2005, 2006) suggest that timely recognition of gains and losses, which is consistent with higher earnings quality, tends to increase the volatility of earnings relative to cash flows. Also Ewert and Wagenhofer (2005) show that managers with less incentive to manage earnings should exhibit higher variability in reported earnings. The incentive to smooth earnings is that this is appreciated by investors; risk aversion suggests that lower variance is preferred to higher variance and there is empirical evidence suggesting that variation is not valued by investors (Barth, Elliott and Finn, 1999; Goel and Thakor, 2003; and Myers, Myers and Skinner, 2007).

Our test for the smoothness of earnings between each group of companies (listed, medium and small companies) follows Lang, Raedy and Yetman (2003) and Barth, Landsman and Lang (2008). Firstly, we mitigate the effect of other factors by regressing the change in annual net income scaled by total assets on a number of control variables. The variance of the residuals from this regression is then used as an estimate of the smoothness of earnings for the group. Specifically, we run the following regression for each group.

$$\begin{aligned} \Delta NI_{i,g,k} = & \alpha_0 + \alpha_1 Size_{i,g,k} + \alpha_2 Growth_{i,g,k} + \alpha_3 Lev_{i,g,k} + \alpha_4 Dissue_{i,g,k} + \alpha_5 Turn_{i,g,k} \\ & + \alpha_6 CF_{i,g,k} + \varepsilon_{i,g,k} \end{aligned} \quad (2)$$

where: ΔNI is the change in net income scaled by total assets; $Size$ is the natural logarithm of end of year value of equity; $Growth$ is the percentage change in sales; Lev is the end of year total liabilities divided by end of year equity book value; $Dissue$ is the percentage change in total liabilities; $Turn$ is sales divided by end of year total assets; and CF is the annual net cash flow from operating activities divided by end of year total assets.

In order to compare the differences in earnings variability between each group of companies, following Barth et al (2008), we firstly estimate equation 2 for each of the three groups of companies. We test the empirical differences between each group of companies (i.e. listed, medium and small companies) by a bootstrap procedure, as follows. For each group, we randomly select (with replacement) 5% of the sample, estimate equation 2 again; and this procedure is repeated 1000 times to obtain the distribution of estimates; we then calculate the differences between the distribution of each group.

The second test of smoothness we carry out, again following Barth Landsman and Lang (2008), is to compare the smoothness of the change in net income with the smoothness of the change in cash flow from operations. The procedure is similar to the first test in that we estimate the variance of the residuals from equation 2 for each group of companies. The extra step in this second test is also to estimate an equation similar to the previous volatility of earnings equation, but with ΔCF as the dependent variable, as follows.

$$\begin{aligned} \Delta CF_{i,g,k} = & \alpha_0 + \alpha_1 Size_{i,g,k} + \alpha_2 Growth_{i,g,k} + \alpha_3 Lev_{i,g,k} + \alpha_4 Dissue_{i,g,k} + \alpha_5 Turn_{i,g,k} \\ & + \alpha_6 CF_{i,g,k} + v_{i,g,k} \end{aligned} \quad (3)$$

where: ΔCF is the change in cash from operations scaled by total assets. Accruals and earnings are influenced by both economic effects and accounting effects. Smoothness is calculated after adjusting for specific economic factors. These models attempt to adjust for the economic differences between companies, so that what is left can fairly be attributable to accounting policy differences. For the

smoothing tests, values of the variables below the 5th percentile and above the 95th level are winsorized to mitigate the influence of outliers, as in Barth, Landsman and Lang (2008).

4.3 The discontinuity loss avoidance test

This loss avoidance test is based on the incentives which companies may have to avoid reporting small losses. Hayn (1995), Burgstahler and Dichev (1997) and Degeorge, Patel and Zeckhauser (1999) show that the distribution of company profits is kinked around zero, with a fewer than expected number of companies reporting small losses and a greater than expected number of companies reporting small profits. This suggests that companies may have used their accounting discretion to manage earnings and to avoid reporting a small loss.

Based on the procedures followed in Burgstahler and Dichev (1997) and Degeorge, Patel and Zeckhauser (1999), we divide the distribution of earnings (scaled by lagged total assets) into bins and then identify the frequency numbers of companies lie in the regions of “just above zero earnings” and “just below zero earnings”. The optimal bin widths are derived by Scott (1992) as a positive function of the variability of the data (i.e., inter-quartile range) and a negative function of the number of observations, as follows:

$$h = 2(IQR)N^{-1/3} \quad (4)$$

where: h is the optimal bin width; IQR is the interquartile range; and N is the number of observations.

Once distribution of earnings level is obtained for three groups of companies, we test for the significance of the standardized difference between the actual frequency in a bin and the expected frequency based on the assumption of a smooth distribution. Following Burgstahler and Dichev (1997), the standardized difference is calculated as:

$$\tau = \frac{n_a - n_e}{\sigma} = \frac{n_j - \frac{n_{j-1} + n_{j+1}}{2}}{\sqrt{Np_j(1 - p_j) + 0.25N(p_{j-1} + p_{j+1})(1 - p_j - p_{j+1})}} \quad (5)$$

where: τ is measured as the difference between the actual and expected frequencies in the interval concerned, standardized by the standard deviation (σ) of this difference; n_a is the actual number of observations in the interval; n_e is the expected number of observations (the mean of the two immediately adjacent intervals); and p_j is the probability of an observation occurring in interval j .

Intuitively, under the assumption of no earnings management, the expected number of observations in any given interval is equal to the average of the number of observations in the two adjacent intervals. If companies manage earnings to report a profit, we would expect to find a shift of

observations from the bins where earnings are just below zero to the bins where earnings are just above zero. This gives rise to the distribution of company profits being kinked around zero.

4.4 Suspicious companies

Of course there may be other explanations for the kink (for example, see Dechow, Richardson, and Tuna, 2003; Durtschi and Easton, 2005; Beaver, McNichols and Nelson, 2007). Therefore, in this section, we conduct earnings quality tests for companies which report a small profit; specifically, we test the prima facie case of earnings management by conducting the level of accruals test and the smoothness test for this sub group of companies. The tests of suspicious companies are based on Hope, Thomas and Vyas (2013) and we similarly define suspicious companies as those reporting small profits, up to 1 percent of total assets. The motivation behind examining this subsample of companies is that they may have significant incentives to manage earnings. From a policy viewpoint it is important to consider differences between the different regulatory regimes when compliance has serious consequences for the company³.

The test of suspicious companies is similar to the Ball and Shivakumar (2005) accruals based test of loss recognition. Their test asks whether companies with a negative cash flow have accruals which anticipate further negative cash flows. The reason why this recognition may not take place is that companies may then have to report a loss; the test is therefore about whether companies have acted appropriately. Our suspicious companies test examines companies which report a small profit and asks whether they have acted inappropriately.

5. Data and sample selection

The main data applied in this paper is obtained from the “Financial Analysis Made Easy” (FAME) database supplied by Bureau Van Dijk. The database provides financial statement information of public and private British companies. The database is updated monthly. The main advantage of the FAME database is that it includes privately held corporations, allowing us to focus on an economically important group of firms that is relatively under-represented in much of academic accounting research.

³The relation with the previous section on the distribution loss avoidance test needs to be clarified. The loss avoidance test examines the whole sample and examines whether the distribution of companies within each group is kinked, with too few companies reporting a small loss and too many companies reporting a small profit. Whether or not these latter companies are classed as suspicious will depend on the bin size used in the loss avoidance test. Furthermore, if the bin size is very small, companies whose profits are above the bin of small profits may be regarded as suspicious for the present test.

In order to construct our sample, we obtain observations that have available data between 2008 and 2010⁴, selecting publicly listed companies, private medium companies, and private small companies, based the “accounts type” FAME classification. In the UK, sections 382 and 465 of the Companies Act 2006 define private companies as small or medium for the purpose of accounting requirements. A small company is one that satisfies at least two of the following criteria: a turnover of not more than £6.5 million; a balance sheet total of not more than £3.26 million; and does not have more than 50 employees. Medium-sized company is one that is not classified as small and satisfies at least two of following criteria: a turnover of not more than £25.9 million; a balance sheet total of not more than £12.9 million; and does not have more than 250 employees. We choose the period 2008-2010 since this is a period in which the UK economy is very weak following the collapse in 2008 (ONS, 2014). In order to inform future policy, it is important to focus on a period during which there are incentives to manage earnings.

We exclude companies that are subsidiaries (since their reporting requirements are different) and also private firms whose legal form is not the status of a corporation, such as a sole proprietorship or partnership. We exclude banks, insurance companies and other financial institutions (SIC codes 6000-6799) and also companies without a known value of total assets in the years of 2008, 2009 and 2010 in order to mitigate the data errors. In addition to accounting data, each company is allocated to one of 10 industry sectors, based on FAME’s “major sector” classification.

Table 1 summarises the number of listed, medium size and small companies in the sample disaggregated by the 10 industrial sectors and Table 2 gives the summary statistics of the accounting variables used in the study. The resulting sample comprises 46,146 observations, consisting of 2,253 listed companies, 35,596 medium size companies, and 8,297 small companies. Small companies under Companies Act generally may submit abbreviated accounts (with no profit & loss account and cash flow statement⁵) and this is probably the reason why the number of small number with sufficient data is relatively small. However, small companies included in our sample are fairly representative and comparable with other studies. For example, Table 2 shows that the mean (median) total sales for small companies is £2.81m (£2.03m), which is similar to the small companies in BIS Small Business Survey 2010 (BIS, 2010 page 22). Furthermore, Table 2 also shows that the mean (median) assets for small companies is £1.67m (£1.28m), which is similar to Hope, Thomas and Vyas (2013, p1719) who report a median of \$4.27m for their private companies. The *CFO* and *E* variables used in the magnitude of accruals tests are not winsorized, and this is evident in their relatively large standard deviations. Even for the winsorized variables used in the smoothness of earnings test

⁴The observation year for earnings is 2010. Data for other years are needed to calculate variables such as the change in working capital.

⁵Small companies are also exempt from statutory audit, although they may have one if shareholders wish.

(ΔNI , ΔCF , ..., CF) the standard deviations of medium sized companies are larger than for the listed and small companies, indicating that the medium sized group is wide ranging. The group contains some companies that are similar to listed companies and also some that are just outside the small company thresholds. Furthermore, the leverage of small companies is relatively smaller than medium-sized and listed companies, suggesting that our sample fits the nature of small companies in that they are generally given less credit.

Table 1 and Table 2 here

6. Analysis of results

6.1 The magnitude of accruals

Table 3 provides the distribution of cash flows to earnings ratio for three groups of companies. For positive earnings, Panel A indicates that accruals tend to reduce earnings for listed and medium sized companies but increase earnings for small companies, as follows. The ratio exceeds one (cash flows exceed earnings) for 68.12% of listed companies and for 67.92% of medium-sized companies, whereas the percentage for small companies is smaller at 60.75%; the ratio is between zero and one (earnings exceed cash flows) for 15.66% of listed companies and for 17.00% of medium-sized companies, whereas the percentage for small companies is larger at 24.43%.

Table 3 here

For negative earnings, Panel B of Table 3 indicates that accruals tend to decrease earnings for listed companies, relative to both small and medium sized companies, as follows. When the ratio exceeds one, this means that cash flows are negative as well but that the cash flow loss is larger than the earnings loss; accruals reduce the loss. In this case, only 23.38% of listed companies are in this position compared with 31.64% for medium sized companies and 37.52% for small companies. When ratio is between 0 and 1, this means that accruals increase the loss. For this case, listed companies have a larger percentage here (36.77%) than medium (23.31%) and small companies (27.99%).

These findings are consistent with Givoly and Hayn (2000) who find that conservatism is strong amongst large companies. The behaviour of small companies may be driven by their economics in that typically they need to give more credit to customers (and receive less credit from suppliers) than larger companies; it is also consistent with small companies managing earnings more than larger companies. The behaviour of medium sized companies is not so stable: they seem to behave like listed companies when earnings are positive and like small companies when earnings are negative. However, from this first pass analysis it is difficult to identify whether this is due to economic or accounting factors.

Table 4 here

In attempting to reduce the effect of extraneous factors, next we examine differences in the summary statistics of cash flow to earnings ratio for each group, disaggregated by sector. Table 4 gives the results when earnings are positive. A major feature of the table is that for all industries, the standard deviation of the medium sized companies is larger than that for either small or listed companies. This suggests that medium sized companies behave quite differently from the other two groups.

Table 5 here

Table 5 gives the results when earnings are negative. In this case, medium companies have the largest standard deviation in only five out of the ten industries (Manufacturing, Wholesale, Service, Transport, and Other services). Again we find that the behaviour of medium sized companies is not stable. When earnings are positive they seem to behave differently from when earnings are negative. This aspect of medium sized companies is explored more thoroughly in the next section when we make a more systematic adjustment for the non-accounting factors which may affect the relation between cash flow and earnings.

6.2 The smoothness of earnings

In this section we report the findings of the smoothness tests, equations 2 and 3, based on Barth, Landsman and Lang (2008). The smoothness of earnings is the standard deviation of the residuals from equation 2 which controls for the economic factors affecting the change in net income. The smoothness of cash flow is the standard deviation of the residuals from equation 3 which controls for the economic factors affecting the change in cash flow.

Table 6 here

Table 6 presents results of the smoothness of earnings tests for listed, medium-sized and small companies. Medium sized companies exhibit significantly lower residual variability of changes in earnings (0.0056) compared to either small companies (0.021) or listed companies (0.0073). This indicates that medium sized companies have smoother earnings than listed or small companies. Table 6 also compares the residual variability of the change in net income to the residual variability of the change in cash flow. The result is similar, namely that medium sized companies have smoother earnings than either listed or small companies. The ratio of the residual variability of earnings to the variability of cash flows is 0.311 for medium sized companies, 0.663 for listed companies and 0.42 for small companies. These results may provide an explanation for the earlier finding that medium sized companies have the largest standard deviations of the cash flow to earnings ratio (see Table 4); the accruals are unstable because they are used to smooth earnings.

6.3 The discontinuity loss avoidance test

This section examines, for each group of companies, whether earnings management has taken place in order to report a small profit rather than a small loss. The test is based on Burgstahler and Dichev (1997) and investigates if there are a smaller than expected number of small losses (represented by a significantly negative standardised difference) together with a larger than expected number of small profits (represented by a significantly positive standardised difference). The results are given for each group, by sector, in Table 7.

Table 7 here

For listed companies, taken all together, there is no evidence of this type of earnings management; and with the exception of the Education and Health sector, this is true at the sector level. For medium sized companies there are two industries (Education & Health, and Services) in which there is evidence of loss avoidance; and there are a sufficiently large number of companies involved to affect the overall group. Small companies also have two industries in which there appears to be loss avoidance (Education & Health, and Utility). However, at the group level the standardized difference of the “just-below” region is not significant (-1.02). Overall there appears to be little difference between the three groups. Although medium sized companies taken together appear to avoid losses, this is more to do with the location of companies in the Education & Health sector, which shows evidence of loss avoidance in all three groups.

6.4 Suspicious companies

The final set of tests relate to companies for which there is a prima facie case of earnings management since they report small profits, up to 1 percent of total assets. This is based on Hope, Thomas and Vyas (2013). We repeat the magnitude of accruals and smoothness tests conducted for the full sample in Tables 3, 4 & 6.

The distribution of cash flow to earnings ratio for each group of companies is shown in Table 8 (Panel A). The first point of note is that, for the listed and medium sized groups, the proportion of companies thought to be suspicious (10% and 9% respectively) is approximately twice that of small companies (5%). Secondly, the distributions are quite similar for the three groups, in contrast to the distributions of the full sample in Table 3⁶. The summary statistics of the ratio of cash flow to earnings, disaggregated by sector are given in Table 8 (Panel B). The picture is similar to that for the full sample in Table 4, namely that, in all but one sector (transport), medium sized companies have the largest standard deviation; and in all these cases the standard deviation for the suspicious companies is larger than for the full sample. Even in the transport sector where small companies have

⁶Due to the small earnings values, the distributions are fat tailed and therefore not much importance should be attached to the relatively small values elsewhere.

the largest standard deviation, the value is larger than in the full sample. This evidence suggests that the companies are indeed suspicious.

The smoothness tests are shown in Table 9. One noteworthy point is that each company group has a smaller value for residual variability than for the full sample, given in Table 6. For example, with respect to the residual variability of the change in net income (ΔNI) listed companies have a value of 0.0027 in Table 9 compared with 0.0073 in Table 6, medium sized companies have a value of 0.0015 compared with 0.0056 and small companies have a value of 0.0035 compared with 0.021; the same is true for the residual variability of ΔNI compared with the residual variability of the change in cash flow (ΔCF). This is evidence that all the three groups have poorer earnings quality than in the full sample. A second feature, which is similar to the full sample, is that medium sized companies have smallest value for residual variability of change in net income (0.0015) compared to listed and small companies. Even when the residual variability is compared to that for the change in cash flows (ΔCF), medium sized companies still have the smallest value (0.075). Overall, the suspicious companies appear to be different from the full sample, and have a lower earnings quality; within the suspicious group, medium sized companies appear to have the poorest earnings quality.

7. Summary and conclusions

For accounting periods beginning on or after 1st January 2015, a new tripartite regulatory framework for financial reporting will apply. Listed companies will follow IFRS, medium sized companies will follow IFRS for SMEs and small companies will follow the FRSSE. This is a formal recognition of the current three tier system which has grown up around UK GAAP; initially small companies were allowed to follow the FRSSE instead of UK GAAP, and then in 2005 listed companies were required to comply with IFRS. Proposals are also being considered by the EU to integrate IFRS for SME into European financial reporting. We explore the earnings quality of companies under the current IFRS/UK GAAP/FRSSE structure in order to shed some light on the new UK tripartite structure.

We investigate a single year of the current recession in which incentives for earnings management are significant and the need for informative reporting is considerable. The approach in other earnings quality studies, of averaging over several years, covers up variations in earnings quality which are important to stakeholders, particularly in an economic downturn. Furthermore, our sample for medium and small companies are fairly representative since the average value of sales is similar to BIS Small Business Survey 2010 (BIS, 2010). We undertake a number of tests of the relation between earnings and accruals for listed, medium sized and small companies: the magnitude of cash flows to accruals; the smoothness of changes in earnings relative to that of changes in cash flow; a loss

avoidance test as measured by the discontinuity of earnings; and an examination of a subsample of seemingly suspicious firms based on their reporting of small rates of return.

Overall, we find that, on average, the earnings quality of listed companies is superior to that of medium sized companies. In particular, when cash flow is negative, a greater proportion of medium sized companies use accruals to boost earnings. The earnings of listed companies in the sample are less smooth (and thereby more informative) than those of medium sized companies. In addition, we find evidence of loss avoidance only in medium sized companies. Even within the suspicious subsample, medium sized companies have the smoothest (i.e. least informative) earnings.

Small companies have much in common with listed companies. In the smoothness tests they are similar to listed companies and there is no evidence of loss avoidance. Furthermore, they have only half the proportion of suspicious companies compared with listed and medium sized companies. Their only similarity with medium sized companies is that, when cash flows are negative, they too seem to use accruals to boost earnings, although even this may reflect the economics of the small company during difficult times.

A number of policy issues arise. First, there is the issue of the FRC objectives in proposing the tripartite financial reporting regime. The first objective may have been to equalise earnings quality across all groups, with stricter rules where agency issues are the greatest. Our evidence is inconsistent with these objectives, since earnings quality in medium sized companies is generally lower than either listed or small companies. A second objective of the FRC may have been to adjust the quality of reporting in accordance with the demand for public information and the cost of supply. In this case, the earnings quality of listed companies would be expected to be greater than medium sized and small companies. Despite the wide media coverage and the availability of investment advice, it is still important for listed companies to provide detailed information through IFRS in order to maintain transparency and encourage wide share ownership. For non-listed companies, the cost of reporting under IFRS may be burdensome and informal access to the management may be easier for potential and existing shareholders. Our evidence is generally consistent with this second objective since listed companies reporting under IFRS have superior earnings quality to medium sized companies. Of course, whether the extent of the difference between the groups is justified is a matter for the regulators, the FRC. In addition, the FRC may also need to consider whether the large variation within medium sized companies, indicated in our sample, is desirable. The group covers a wide range of companies, ranging in terms of assets, sales and employment from those which are comparable with listed companies to those which are just above the small company category. In terms of policy, this is a challenge both in the UK and within the EU.

A second policy issue is whether the more relaxed approach to reporting requirements for small companies (including the exemption from audit) is associated with a major decline earnings quality.

Our findings indicate that the earnings quality of small companies is similar to that of listed companies. This evidence is probably a reflection of their lack of incentives to manage earnings. However, due to the lack of data, we have not been able to investigate those small companies which provide only abbreviated accounts and our conclusions about small companies may not transfer to them.

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Table 1: Sector Distribution of Numbers of Listed, Medium-sized and Small companies

Sectors	Description	<i>Number of Listed Companies</i>	<i>Number of Medium-sized Companies</i>	<i>Number of Small Companies</i>
Sector 1	Primary Sector (Primary)	94	675	168
Sector 2*	Manufacturing	528	7,494	367
Sector 3	Gas, Water, Electricity (Utility)	29	273	37
Sector 4	Construction	127	1,975	1,092
Sector 5	Wholesale & retail trade (Wholesale)	318	6,438	1,485
Sector 6	Hotels & restaurants (Service)	55	1,282	204
Sector 7	Transport	97	1,731	320
Sector 8	Post and telecommunications (Telecom)	39	339	111
Sector 9†	Other services	37	1,087	359
Sector 10	Education, Health	929	14,302	4,154
Total		2,253	35,596	8,297

This table displays the sectors' distribution of the listed, medium and small companies.

Listed companies are companies that are public listed companies following with International Financial Reporting Standards (IFRS). Medium companies are those following with UK GAAP. Small companies are those following with FRESSE.

The sample is constructed from the FAME database.

* This sector is the aggregation of following major sectors in FAME: Food, beverages, tobacco, Textiles, wearing apparel, leather, Wood, cork, paper, Publishing, Printing, Chemicals, Rubber, Plastics, Non-metallic products, Metals & metal products, Machinery, Equipment, Furniture, Recycling.

† This sector is the aggregation of following major sectors in FAME: Other services, and Public administration and defence.

Table 2: Summary Statistics Relating to Variables in Analyses

	<i>Listed Companies (N=2,253)</i>			<i>Medium-sized Companies (N=35,596)</i>			<i>Small Companies (N=8,297)</i>		
Variables	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation
<i>CFO</i>	56.32	0.46	790,745	5.73	0.57	159,555	0.19	0.13	1,022
<i>E</i>	20.66	0.23	209,895	3.54	0.28	151,689	0.16	0.11	1,030
ΔNI	0.09	0.01	1.47	-3.21	0.00	612	0.05	0.01	66.53
ΔCF	0.09	0.00	3.37	-3.42	0.00	622.8	-0.06	0.01	66.11
<i>Size</i>	9.03	8.72	2.27	8.47	8.28	1.75	6.07	6.28	1.48
<i>Growth</i>	2.45	0.05	76.01	2.33	0.04	197	1.36	0.06	46.45
<i>Lev</i>	128.1	1.04	2635	7.29	1.16	5958	4.68	0.7	74.51
<i>Dissue</i>	0.53	0.01	7.91	1.72	0.01	99.83	1.06	0.03	38.57
<i>Turn</i>	1.39	1.09	1.44	2.66	1.36	51.99	3.7	2.01	30.15
<i>CF</i>	0.13	0.05	3.02	-2.92	0.06	674.1	2.21	0.11	105.3
<i>Total Assets</i>	1,232	15.50	28,600,000	139.22	10.06	2,568,459	1.67	1.28	2,600
<i>Total Sales</i>	368.38	11.53	2,273,922	67.13	11.79	982,145	2.81	2.03	3,089

This table presents the descriptive statistics of variables used in analyses from the observation year of 2010. The statistics are reported separately for listed, medium-sized and small companies.

Variable Definition: *E* = Net income after interest, tax and extraordinary items for the observation year of 2010; *CFO* = Net cash flow from operation in the observation year of 2010, it is defined as Net income after interest, tax and extraordinary items for the observation year of 2010 + Depreciation – Changes in Working Capital.

ΔNI is the change in earnings, where earnings is scaled by end-of-year total assets; ΔCF is the change in cash flow from operations, where cash flow is scaled by end-of-year total assets, cash flow from operation is defined as Net income after interest, tax and extraordinary items in the observation year + Depreciation – Changes in Working Capital; *Size* is the natural logarithm of market value of equity in millions of dollars as of the end of the year; *Growth* is the percentage change in sales; *Lev* is end-of-year total liabilities divided by end-of-year book value of equity; *Dissue* is the percentage change in total liabilities; *Turn* is sales divided by end-of-year total assets; *CF* is the cash flow from operating activities, scaled by end-of-year total assets

The values of *CFO*, *E*, Total Assets, Total Sales are in millions form (except the standard deviation).

Listed companies are companies that are public listed companies following with International Financial Reporting Standards (IFRS). Medium companies are those following with UK GAAP. Small companies are those following with FRESSE.

Table 3: The distribution of $(\frac{CFO}{E})_{i,g}$ for listed, medium-sized, and small companies

Panel A: The distribution of $(\frac{CFO}{E})_{i,g}$ (Positive Earnings)

L(1,603)	3.93%	0.44%	0.62%	1.56%	2.50%	7.17%	15.66%	32.44%	13.91%	6.49%	2.93%	12.35%	68.12%
M(26,706)	3.98%	0.73%	0.91%	1.50%	2.35%	5.61%	17.00%	35.48%	11.14%	5.50%	3.33%	12.47%	67.92%
S(6,775)	3.76%	0.66%	0.77%	1.59%	2.17%	5.86%	24.43%	41.96%	7.29%	2.66%	1.74%	7.10%	60.75%
Interval	-5	-4	-3	-2	-1	0	1	2	3	4	5	Aggregate % (Ratio>1)	

Panel B: The distribution of $(\frac{CFO}{E})_{i,g}$ (Negative Earnings)

L(650)	8.15%	1.23%	3.54%	3.38%	5.08%	18.46%	36.77%	12.92%	3.38%	2.00%	0.46%	4.62%	23.38%
M(8,890)	13.18%	2.06%	2.96%	4.57%	7.47%	14.81%	23.31%	20.67%	2.80%	1.45%	1.17%	5.55%	31.64%
S(1,522)	11.50%	1.18%	2.10%	3.09%	5.12%	11.50%	27.99%	21.81%	4.40%	2.04%	1.97%	7.29%	37.51%
Interval	-5	-4	-3	-2	-1	0	1	2	3	4	5	Aggregate % (Ratio>1)	

Table 3 presents the distribution of $(\frac{CFO}{E})_{i,g}$ based on the percentage of samples across listed, medium-sized and small companies, where, $i = 1, \dots, n_g$; $g = L$ (Listed companies), M (Medium-sized companies), S (Small companies).

Variable definitions: E = Net income after interest, tax and extraordinary items for company i in group g in the observation year of 2010; CFO = Net cash flow from operation for company i in group g in the observation year of 2010, it is defined as Net income after interest, tax and extraordinary items for the observation year of 2010 + Depreciation – Changes in Working Capital.

Listed companies are companies that are public listed companies following with International Financial Reporting Standards (IFRS). Medium companies are those following with UK GAAP. Small companies are those following with FRESSE.

The percentage is calculated as the number of companies in each slot divided by the total number of each type of companies in each earnings group.

The region is defined based on the value of $(\frac{CFO}{E})_{i,g}$ from the range of -5 to 5.

Table 4: Sector Distribution and Summary Statistics for ratio of CFO to Earnings (Positive Earnings)

$$\text{Ratio of Cash Flows from Operation to Earnings} = \left(\frac{CFO}{E}\right)_{i,g,k}, \text{ where, } E > 0$$

Panel A: Listed Companies (g=L)

Sectors	Primary	Manufacturing	Utility	Construction	Wholesale	Service	Transport	Telecom	Other Service	Education&Health	All Sectors
No. of observations	27	371	25	95	265	41	73	32	28	646	1,603
Mean	1.73	2.27	2.54	3.56	2.32	3.48	5.49	3.46	2.14	8.43	5.03
Std Deviation	4.80	12.55	2.05	11.39	11.45	12.29	21.03	4.08	2.87	661.90	420.10
Min	-7.00	-139.60	0.01	-18.12	-29.00	-44.67	-15.50	-2.63	-4.93	-5,134.00	-5,134.00
Median	0.90	1.48	2.01	1.17	1.26	2.04	2.07	2.18	1.66	1.30	1.46
Max	22.67	161.00	8.81	60.80	143.80	58.13	178.00	18.00	12.25	10,817.00	10,817.00

Panel B: Medium-sized Companies (g=M)

Sectors	Primary	Manufacturing	Utility	Construction	Wholesale	Service	Transport	Telecom	Other Service	Education&Health	All Sectors
No. of observations	520	5,802	190	1,510	5,263	851	1,327	244	804	10,195	26,706
Mean	0.61	3.23	4.50	-4.58	1.39	7.32	5.84	7.25	0.54	25.93	11.27
Std Deviation	40.74	39.57	27.44	134.60	53.83	38.34	75.26	56.02	71.35	1,418.00	877.60
Min	-885.80	-909.90	-67.83	-3,932.00	-2,457.00	-58.67	-279.50	-166.20	-1,620.00	-3,405.00	-3,932.00
Median	1.46	1.32	1.62	1.28	1.24	2.03	1.66	1.18	1.43	1.05	1.23
Max	155.20	1,862.00	306.40	1,591.00	1,072.00	721.00	2,322.00	669.50	689.80	118,239.00	118,239.00

Panel C: Small Companies (g=S)

Sectors	Primary	Manufacturing	Utility	Construction	Wholesale	Service	Transport	Telecom	Other Service	Education&Health	All Sectors
No. of observations	135	316	30	870	1,173	148	269	84	296	3,454	6,775
Mean	3.70	3.00	1.68	2.75	-0.01	2.08	6.31	1.19	1.33	1.28	1.59
Std Deviation	22.61	21.27	3.52	38.27	21.68	7.70	66.19	2.58	6.04	15.65	24.56
Min	-84.43	-159.50	-1.82	-561.10	-464.00	-40.00	-44.00	-9.20	-18.50	-445.00	-561.10
Median	1.15	1.00	1.19	1.04	1.00	1.26	1.08	1.05	1.07	1.00	1.01
Max	205.00	191.00	19.13	682.00	98.00	61.50	1,076.00	18.65	91.00	327.00	1,076.00
<i>t</i> -stat (L-M) ^a	0.55	-1.16	-0.96	2.23**	0.90	-1.65	-0.11	-1.04	0.62	-0.59	-0.53
<i>t</i> -stat (L-S) ^b	-0.92	-0.54	1.13	0.46	2.46**	0.70	-0.17	2.93***	1.26	0.27	0.33
<i>t</i> -stat (M-S) ^c	-1.17	0.18	1.35	-1.98**	1.44	3.59***	-0.10	1.69*	-0.31	1.76*	0.91

Table 5: Sector Distribution and Summary Statistics for ratio of CFO to Earnings (Negative Earnings)

$$\text{Ratio of Cash Flows from Operation to Earnings} = \left(\frac{CFO}{E}\right)_{i,g,k}, \text{ where, } E < 0$$

Panel A: Listed Companies (g=L)

Sectors	Primary	Manufacturing	Utility	Construction	Wholesale	Service	Transport	Telecom	Other Service	Education&Health	All Sectors
No. of observations	67	157	4	32	53	14	24	7	9	283	650
Mean	-0.65	-0.37	-0.48	21.44	-3.10	-0.70	-7.08	-13.08	0.37	-76.66	-33.15
Std Deviation	3.88	4.99	2.42	128.00	24.47	1.49	26.31	32.09	2.04	1,281.00	846.00
Min	-21.65	-40.43	-4.07	-28.07	-170.10	-5.44	-128.20	-85.67	-1.28	-21,554.00	-21,554.00
Median	0.21	0.51	0.56	0.34	-0.09	-0.26	-0.41	-0.08	-0.17	0.20	0.26
Max	2.91	8.29	1.03	722.00	28.72	0.27	7.22	0.93	5.41	52.75	722.00

Panel B: Medium-sized Companies (g=M)

Sectors	Primary	Manufacturing	Utility	Construction	Wholesale	Service	Transport	Telecom	Other Service	Education&Health	All Sectors
No. of observations	155	1,692	83	465	1,175	431	404	95	283	4,107	8,890
Mean	-3.24	-7.51	-4.65	2.89	-5.20	-3.45	-6.24	-0.16	3.47	-2.19	-3.42
Std Deviation	15.23	204.70	19.43	105.80	84.41	15.03	57.23	19.71	117.10	424.60	305.60
Min	-98.71	-8,138.00	-142.00	-544.00	-1,842.00	-182.20	-992.00	-80.64	-254.20	-13,040.00	-13,040.00
Median	0.11	0.26	0.04	0.07	-0.09	-0.31	-0.20	0.35	-0.07	0.52	0.23
Max	33.50	1,191.00	13.55	1,882.00	743.80	16.55	274.00	149.40	1,924.00	18,349.00	18,349.00

Panel C: Small Companies (g=S)

Sectors	Primary	Manufacturing	Utility	Construction	Wholesale	Service	Transport	Telecom	Other Service	Education&Health	All Sectors
No. of observations	33	51	7	222	312	56	51	27	63	700	1,522
Mean	-9.10	0.18	-33.73	2.56	-2.56	-1.24	-7.57	-1.89	-0.26	-2.03	-1.77
Std Deviation	32.47	6.16	87.76	48.55	24.72	4.90	31.79	9.16	3.97	68.38	52.12
Min	-139.00	-23.00	-232.50	-242.00	-228.00	-18.50	-182.00	-37.00	-22.36	-1,298.00	-1,298.00
Median	-0.22	0.44	-0.32	0.38	0.53	0.49	0.59	0.60	0.64	0.83	0.68
Max	8.18	26.00	5.44	493.80	101.00	12.00	6.18	5.40	10.00	326.70	493.80
<i>t</i> -stat (L-M) ^a	1.97**	1.43	1.70*	0.80	0.50	3.33***	-0.14	-1.05	-0.44	-0.97	-0.89
<i>t</i> -stat (L-S) ^b	1.49	-0.58	1.00	0.83	-0.15	0.70	0.07	-0.91	0.75	-0.98	-1.44
<i>t</i> -stat (M-S) ^c	1.01	-1.52	0.87	0.06	-0.93	-2.27**	0.25	0.65	0.53	-0.02	-0.21

Table 4-5 present the summary statistics of $(\frac{CFO}{E})_{i,g,k}$ across different sectors for listed, medium-sized and small companies, where, $i = 1, \dots, n_{g,k}$; $g = L$ (Listed companies), M (Medium-sized companies), S (Small companies); $k = \text{Sector } 1, 2, \dots, 10$.

Variable definitions: E = Net income after interest, tax and extraordinary items for company i in group g and sector k in the observation year of 2010; CFO = Net cash flow from operation for company i in group g and sector k in the observation year of 2010, it is defined as Net income after interest, tax and extraordinary items for the observation year of 2010 + Depreciation – Changes in Working Capital.

Listed companies are companies that are public listed companies following with International Financial Reporting Standards (IFRS). Medium companies are those following with UK GAAP. Small companies are those following with FRESSE.

^a t -statistic for two-tailed of difference between listed and medium-sized companies' means.

^b t -statistic for two-tailed of difference between listed and small companies' means.

^c t -statistic for two-tailed of difference between medium-sized and small companies' means.

*, **, *** represent statistically significant different at the 0.10, 0.05 and 0.01 levels, respectively.

Table 6: Quality of Earnings Analysis of Listed, Medium and Small Companies

$$\Delta NI_{i,g,k} = \alpha_0 + \alpha_1 Size_{i,g,k} + \alpha_2 Growth_{i,g,k} + \alpha_3 Lev_{i,g,k} + \alpha_4 Dissue_{i,g,k} + \alpha_5 Turn_{i,g,k} + \alpha_6 CF_{i,g,k} + \varepsilon_{i,g,k}$$

$$\Delta CF_{i,g,k} = \alpha_0 + \alpha_1 Size_{i,g,k} + \alpha_2 Growth_{i,g,k} + \alpha_3 Lev_{i,g,k} + \alpha_4 Dissue_{i,g,k} + \alpha_5 Turn_{i,g,k} + \alpha_6 CF_{i,g,k} + \varepsilon_{i,g,k}$$

	<i>Listed Companies (N=2,253)</i>	<i>Medium Companies (N=3,5596)</i>	<i>Small Companies (N=8,297)</i>
Residual Variability of ΔNI	0.0073	0.0056*†	0.021
R-square	0.072	0.116	0.286
Residual Variability ΔCF	0.011	0.018	0.050
R-square	0.294	0.363	0.419
Residual Variability of ΔNI over ΔCF	0.663	0.311	0.42

This table presents results of regression from ΔNI and ΔCF on various control variables. We define variability of ΔNI (ΔCF) as the variance of residuals from a regression of the ΔNI (ΔCF) on the control variables, and the variability of ΔNI over ΔCF as the ratio of the Variability of ΔNI divided by the Variability of ΔCF . We compute both sets of residuals from a regression of each variable on the control variables.

Variable Definition: *Test Variables*: ΔNI is the change in earnings, where earnings is scaled by end-of-year total assets; ΔCF is the change in cash flow from operations, where cash flow is scaled by end-of-year total assets, cash flow from operation is defined as Net income after interest, tax and extraordinary items in the observation year + Depreciation – Changes in Working Capital;

Control Variables: *Size* is the natural logarithm of market value of equity in millions of dollars as of the end of the year; *Growth* is the percentage change in sales; *Lev* is end-of-year total liabilities divided by end-of-year book value of equity; *Dissue* is the percentage change in total liabilities; *Turn* is sales divided by end-of-year total assets; *CF* is the cash flow from operating activities, scaled by end-of-year total assets

Listed companies are companies that are public listed companies following with International Financial Reporting Standards (IFRS). Medium companies are those following with UK GAAP. Small companies are those following with FRESSE.

* indicates medium companies significantly different from listed companies at 5% level (one-tailed)

† indicates medium companies significantly different from small companies at 5% level (one-tailed)

Table 7: The discontinuity loss avoidance test: the frequency distribution of earnings around zero

Sectors	Interval ^a	<i>Listed Companies(N=2,253)</i>				<i>Medium Companies(N=35,596)</i>				<i>Small Companies(N=8,297)</i>			
		Actual	Expected ^b	Std Diff ^c	N	Actual	Expected	Std Diff	N	Actual	Expected	Std Diff	N
Primary	Just above zero	3	3.5	-0.24	93	46	39.5	0.84	675	21	13	1.64	168
	Just below zero	12	5	1.97*		12	22.5	-2.22**		5	8.5	-1.19	
Manufacturing	Just above zero	25	16.5	1.51	528	221	172.5	2.82***	7493	44	30	1.96*	367
	Just below zero	7	5.5	0.48		102	104	-0.16		10	13	-0.76	
Utility	Just above zero	7	4.5	0.95	29	27	17	1.77*	273	14	7	2.12**	37
	Just below zero	0	0.5	-1.02		9	12	-0.80		0	3.5	-2.94***	
Construction	Just above zero	15	7.5	1.84*	127	93	68.5	2.23**	1975	78	46	3.31***	1090
	Just below zero	3	7	-1.63		37	38.5	-0.20		17	20	-0.58	
Wholesale	Just above zero	28	23.5	0.75	318	239	168	4.03***	6437	86	71.5	1.36	1484
	Just below zero	7	9.5	-0.74		76	93.5	-1.59		33	38	-0.71	
Service	Just above zero	15	4.5	2.94***	55	47	31	2.07**	1282	15	16	-0.22	204
	Just below zero	2	0.5	1.02		16	25.5	-1.79*		6	8	-0.65	
Transport	Just above zero	22	14	1.71*	97	77	63.5	1.33	1730	33	23.5	1.51	320
	Just below zero	5	6	-0.37		36	37	-0.14		13	7	1.51	
Telecom	Just above zero	15	4.5	3.17***	39	27	16.5	1.85*	339	13	9	1.02	111
	Just below zero	1	2	-0.73		14	9.5	1.06		7	4	1.03	
Other Service	Just above zero	12	4	2.57**	37	123	79	3.68***	1087	32	28.5	0.55	358
	Just below zero	2	1.5	0.31		52	42	1.20		9	10.5	-0.41	
Education&Health	Just above zero	105	50	5.12***	929	414	331.5	3.49***	14300	247	170	4.37***	4143
	Just below zero	21	33.5	-2.08**		226	263	-1.98**		75	94	-1.75*	
All	Just above zero	181	73.5	9.78***	2252	765	613.5	4.69***	35591	368	259.5	4.99***	8282
	Just below zero	56	43	2.02**		383	445.5	-2.56**		133	147.5	-1.02	

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Table 7 presents the frequency distribution of earnings scaled by lagged assets (Earnings/Lagged Total Assets) across 10 sectors for listed, medium and small companies.

^a Following Degeorge et al. (1999), the optimal bin width for each sample is a positive function of the variability of data (i.e., inter-quartile range) and a negative function of the number of observations, the bin width is calculated as $2(IQR)N^{-1/3}$, where IQR is the sample inter-quartile range and N is the number of observations.

^b The expected frequency in the interval is computed as the average of the number of observations in the two adjacent intervals ($\frac{n_{j-1} + n_{j+1}}{2}$).

^c Following Burgstahler and Dichev (1997), the standard difference (Std Diff) is measured as the difference between the actual and expected frequencies in the interval concerned, standardized by the standard deviation of this difference. The expected frequency of each interval is assumed to be the mean of the two immediately adjacent intervals. In other words, if the number of observations in interval j is denoted by n_j , the probability of an observation occurring in interval j denoted by p_j , and the total number of observations in the sample denoted by N, the standardized difference for interval j is given by:

$$\frac{n_j - \frac{n_{j-1} + n_{j+1}}{2}}{\sqrt{Np_j(1 - p_j) + 0.25N(p_{j-1} + p_{j+1})(1 - p_j - p_{j+1})}}$$

Listed companies are companies that are public listed companies following with International Financial Reporting Standards (IFRS). Medium companies are those following with UK GAAP. Small companies are those following with FRESSE.

*, **, *** represents significant at the 0.10, 0.05 and 0.01 levels, respectively (two-tailed)

Table 8: Distribution and Summary Statistics for ratio of CFO to Earnings (Suspicious Firms)

$$\text{Ratio of Cash Flows from Operation to Earnings} = \left(\frac{CFO}{E}\right)_{i,g,k}$$

Panel A: Distribution of $\left(\frac{CFO}{E}\right)_{i,g}$ (Suspicious Firms)

	% of full sample												
<i>L</i> (215)	10%	17.67%	0.93%	1.40%	1.40%	2.79%	1.40%	2.33%	18.60%	3.26%	1.86%	1.40%	46.98%
<i>M</i> (3,349)	9%	15.13%	0.99%	1.07%	1.04%	1.43%	2.24%	4.42%	22.90%	2.66%	2.48%	2.93%	42.72%
<i>S</i> (401)	5%	24.01%	1.24%	0.99%	1.73%	0.74%	1.49%	2.48%	20.05%	3.47%	0.99%	1.49%	41.34%
Interval		-5	-4	-3	-2	-1	0	1	2	3	4	5	

Panel B: Sector Analysis (Suspicious Firms)

Listed Companies (g=L)

Sectors	Primary	Manufacturing	Utility	Construction	Wholesale	Service	Transport	Telecom	Other Service	Education&Health	All Sectors
No. of observations	4	30	1	14	18	6	11	1	2	128	215
Mean	3.256	8.910	1.00	18.13	17.92	10.81	21.26	2.485	1.38	35.33	26.44
Std Deviation	13.27	42.99	.	23.22	40.80	33.42	52.80	.	8.93	1491	1149
Min	-7	-139.6	1.00	-18.12	-29	-44.67	-15.50	2.485	-4.93	-5134	-5134
Median	-1.322	10.49	1.00	11.64	5.332	12.55	6.489	2.485	1.38	1.006	3.139
Max	22.67	161	1.00	60.80	143.8	58.13	178	2.485	7.70	10817	10817

Medium-sized Companies (g=M)

Sectors	Primary	Manufacturing	Utility	Construction	Wholesale	Service	Transport	Telecom	Other Service	Education&Health	All Sectors
No. of observations	49	514	30	226	589	137	151	20	103	1530	3349
Mean	-11.25	22.72	19.30	-37.67	2.56	34.12	33.17	69.56	-7.78	162.9	78.88
Std Deviation	133.0	124.7	67.88	346.5	160.4	91.07	221.4	188.4	199.6	3658	2477
Min	-885.8	-754	-67.83	-3932	-2457	-58.67	-279.5	-166.2	-1620	-3405	-3932
Median	2.570	5.821	5.904	1.58	4.825	8.22	7.17	18.08	4.38	1	2.25
Max	155.2	1863	306.4	1591	1072	721	2322	669.5	689.8	118239	118239

Small Companies (g=S)

Sectors	Primary	Manufacturing	Utility	Construction	Wholesale	Service	Transport	Telecom	Other Service	Education&Health	All Sectors
No. of observations	13	15	1	78	79	9	13	2	6	185	401
Mean	26.97	48.90	1.00	12.30	-12.19	10.07	109.1	-1.500	16.54	2.56	7.88
Std Deviation	70.71	86.80	.	125.9	80.35	28.28	292.6	3.536	40.68	65.03	98.88

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Table 8 (Continued)

Min	-84.43	-159.5	1.00	-561.1	-464	-40	-44	-4	-18.50	-445	-561.1
Median	9	38.17	1.00	6.156	4.64	7	36.75	-1.500	3.44	1	1.348
Max	205	191	1.00	682	98	61.50	1076	1.00	91	327	1076
t-stat (L-M) ^a	0.72	-1.44	.	2.34**	1.32	-1.48	-0.50	.	0.44	-0.79	-0.59
t-stat (L-S) ^b	-1.15	-1.68	.	0.38	2.28**	0.04	-1.06	.	-0.85	0.25	0.24
t-stat (M-S) ^c	-1.40	-1.13	.	-1.84*	1.32	1.97*	-0.91	1.68	-0.94	1.71*	1.65*

Table 8 presents the distributions and summary statistics of $(\frac{CFO}{E})_{i,g,k}$ across different sectors for listed, medium-sized and small companies, where, $i = 1, \dots, n_{g,k}$; $g = L$ (Listed companies), M (Medium-sized companies), S (Small companies); $k = \text{Sector } 1, 2, \dots, 10$.

Variable definitions: E = Net income after interest, tax and extraordinary items for company i in group g and sector k in the observation year of 2010; CFO = Net cash flow from operation for company i in group g and Sector k in the observation year of 2010, it is defined as Net income after interest, tax and extraordinary items for the observation year of 2010 + Depreciation – Changes in Working Capital.

Listed companies are companies that are public listed companies following with International Financial Reporting Standards (IFRS). Medium companies are those following with UK GAAP. Small companies are those following with FRESSE.

The suspicious firms are defined as firms report small profit (1% of lagged assets).

The percentage is calculated as the number of companies in each slot divided by the total number of each type of companies in each earnings group.

The region is defined based on the value of $(\frac{CFO}{E})_{i,g}$ from the range of -5 to 5.

^a t -statistic for two-tailed of difference between listed and medium-sized companies' means.

^b t -statistic for two-tailed of difference between listed and small companies' means.

^c t -statistic for two-tailed of difference between medium-sized and small companies' means.

*, **, *** represent statistically significant different at the 0.10, 0.05 and 0.01 levels, respectively.

Table 9: Quality of Earnings Analysis of Listed, Medium and Small Companies (Suspicious Firms)

$$\Delta NI_{i,g,k} = \alpha_0 + \alpha_1 Size_{i,g,k} + \alpha_2 Growth_{i,g,k} + \alpha_3 Lev_{i,g,k} + \alpha_4 Dissue_{i,g,k} + \alpha_5 Turn_{i,g,k} + \alpha_6 CF_{i,g,k} + \varepsilon_{i,g,k}$$

$$\Delta CF_{i,g,k} = \alpha_0 + \alpha_1 Size_{i,g,k} + \alpha_2 Growth_{i,g,k} + \alpha_3 Lev_{i,g,k} + \alpha_4 Dissue_{i,g,k} + \alpha_5 Turn_{i,g,k} + \alpha_6 CF_{i,g,k} + \varepsilon_{i,g,k}$$

	<i>Listed Companies (N=215)</i>	<i>Medium Companies (N=3,349)</i>	<i>Small Companies (N=401)</i>
Residual Variability of ΔNI	0.0027	0.0015*†	0.0035
R-square	0.079	0.040	0.092
Residual Variability ΔCF	0.0075	0.020	0.030
R-square	0.110	0.024	0.392
Residual Variability of ΔNI over ΔCF	0.36	0.075	0.117

Table 9 presents results of regression from ΔNI and ΔCF on various control variables. We base the analysis on control variables as defined in Table 6. We define variability of ΔNI (ΔCF) as the variance of residuals from a regression of the ΔNI (ΔCF) on the control variables, and the variability of ΔNI over ΔCF as the ratio of the Variability of ΔNI divided by the Variability ΔCF . We compute both sets of residuals from a regression of each variable on the control variables.

Variable Definition: *Test Variables*: ΔNI is the change in earnings, where earnings is scaled by end-of-year total assets; ΔCF is the change in cash flow from operations, where cash flow is scaled by end-of-year total assets, cash flow from operation is defined as Net income after interest, tax and extraordinary items in the observation year + Depreciation – Changes in Working Capital;

Control Variables: *Size* is the natural logarithm of market value of equity in millions of dollars as of the end of the year; *Growth* is the percentage change in sales; *Lev* is end-of-year total liabilities divided by end-of-year book value of equity; *Dissue* is the percentage change in total liabilities; *Turn* is sales divided by end-of-year total assets; *CF* is the cash flow from operating activities, scaled by end-of-year total assets

Listed companies are companies that are public listed companies following with International Financial Reporting Standards (IFRS). Medium companies are those following with UK GAAP. Small companies are those following with FRESSE.

The suspicious firms are defined as firms report small profit (1% of lagged assets).

* indicates medium companies significantly different from listed companies at 5% level (one-tailed)

† indicates medium companies significantly different from small companies at 5% level (one-tailed)