Audit Quality and Accrual Persistence

Examining the impact of auditor size and audit fees

Abstract

This paper examines the connection between auditing and the persistency of reported accruals. Accruals are documented to be subjective by its nature thus running the risk of being aggressively reported by managers with the incentives of improving companies’ earnings. Consequently, accruals are less reliable and therefore problematic for investors to interpret. Investors rely on the independent auditor to detect material misstatements caused by such less reliable accruals. We extend to the evidence presented by Krishnan (2003) suggesting an association between audit quality (measured as Big 6 auditors) and accruals where Big 6 audited firms where shown to experience higher accrual persistency than Non Big 6 audited firms. We also extend to the findings presented by Zhao (2010) indicating that higher audit fees imply higher accrual persistence. This paper investigates if a definition of audit quality as both audit size and audit fee could yield even higher accrual persistence. In particular, this paper investigates whether companies that use Big 4 auditor firms and paying higher audit fees experience higher accrual persistency than companies that use Big 4 auditor firms and paying lower auditor fee. Our results suggest that audit fees do not affect the persistency in accruals for firms audited by Big 4. For firms audited by Non Big 4 however audit fees seem to affect the persistency in accruals where higher audit fees are documented to increase the persistence accruals.
1. Introduction

Current earnings are frequently used by investors and analysts in their estimations of future earnings (Sloan 1996). Consequently the information in the accrual and cash component of current earnings are of great importance for analysts especially information about their impact on future earnings and the capital market. Sloan (1996) documented that the accrual component of current earnings have a negative effect on future earnings which is explained by the less persistency attributed to the accrual component (opposite to the cash component). He also found evidence that firms with high levels of accruals experience negative abnormal stock returns, suggesting a negative impact on the capital market.

More information about the accrual component was contributed by Xie (2001) who separated accruals into discretionary and non discretionary accruals and found that discretionary accruals are less persistent than non discretionary accruals. Accordingly, discretionary accruals are less associated with stock prices than non discretionary accruals and firms with higher levels of discretionary accruals in comparison to their levels of non discretionary accruals will experience more negative abnormal stock returns.

Krishnan (2003) extended to these findings as he investigated if there is a relation between audit quality and pricing of discretionary accruals. His findings indicated that firms audited by Big 6 auditors shows stronger association between discretionary accruals and future stock return. Thus, size of auditor positively affects the persistence in discretionary accruals. Additional, Zhao (2010) showed that audit fee is also positively associated with accrual persistence where higher audit fee implies higher persistence in accruals.

Taken together, the results from Krishnan (2003) and Zhao (2010) suggests that audit quality, measured by size and audit fee separately affects the persistency in accruals. This paper investigates if a definition of audit quality as both audit size and audit fee could yield even higher accrual persistence. In particular, this paper investigates whether companies that use Big 4 auditor firms and paying higher audit fees experience higher accrual persistence than companies that use Big 4 auditor firms and paying lower auditor fee. We investigate if companies that use non- Big 4 and paying higher audit fees experience higher
accrual persistence than companies that use non-Big 4 auditor firms and paying lower audit fees.

This will be conducted by using a quantitative approach on financial data from 913 Big 4 audited firms and 575 Non-Big 4 audited firms. Our total sample consists of 1488 firms and 8798 firm-year observations. Data will be collected from Thompsons Datastream and our research will proceeded through a series of ordinary least squares regressions measuring the persistency of accruals where two proxy’s for audit quality will be used, audit fee (High, Low) and audit firm size (Big 4, non Big 4).

Our paper proceeds as follows. Section 2 will present the theoretical background of the respective fields that this paper lies upon and will be followed by connecting these with our hypothesis. Section 3 presents the motivation and hypotheses of this paper. Section 4 presents our methodology for testing our hypotheses. Section 5 will show the results from our empirical research and section 6 will summarize our paper with conclusions and suggestions for future research.

2. Theoretical background

Accruals and the capital market

The persistence in earnings explains the degree of current earnings ability to sustain to subsequent periods. The research in this paper proceeds prior empirical evidence suggesting that earnings persistence is lower if it is attributed to the accrual component than if it is attributed to the cash flow component of earnings (Sloan 1996, Xie 2001). These conclusions were first drawn by Sloan (1996) as he documented that earnings performance ability to persist into subsequent periods depend on the relative magnitudes of the cash flow and accrual components of current earnings. These findings were followed by an investigation of the extent to which stock prices reflect the different persistency of the accrual and cash flow component. Next he aimed at providing corroborate evidence on the extent to which stock price behavior deviates from the rational expectation model. This was established by sorting
firms by the magnitude of their accrual component and then making a trading strategy taking a long (short) position in the stock of firms reporting relative low (high) levels of accruals. If stock prices showed to fail in fully reflecting the different persistency in the components of earnings the trading strategy would yield an abnormal stock return. According to his hypothesis stock prices were shown to behave as if investors fail to anticipate fully the higher persistence of earnings attributable to accrual component of earnings which consequently leads to overpricing of companies with relative high levels of the accrual component. The trading strategy generated in significant positive abnormal stock returns (10.4 % on average the first year) confirming his earlier evidence.

Xie (2001) extended to these findings by making a similar refined test of the market response to the accrual component applied by Sloan. In accordance to the findings by Sloan, Xie (2001) showed that the lower persistence in accruals tend to be overestimated by investors consequently resulting in mispricing of the accrual component. A significant difference from Sloan’s test was that Xie separated accruals into abnormal accruals (often termed discretionary accruals in prior literature) and normal accruals. This was motivated since prior investigations of the mispricing of accruals (Sloan 1996, Collins and Hribar 2000a*) did not investigate whether the mispricing was due to normal accruals, abnormal accruals or both. The results from his test showed that the mispricing of the accrual component concerns both discretionary and non discretionary accruals but however since the discretionary accruals suffer from subjective judgments to a greater extent they face a greater risk of being overestimated. Hence discretionary accruals are less reliable than non discretionary accruals.

Richardson et al (2005) also extended to the work of Sloan and documented an association between accrual persistency and accrual reliability. This was established by making an empirical test where accounting accruals were categorized and rated according to its reliability. The results from their research showed a connection between accrual persistence and accrual reliability where less reliable accruals lead to lower earnings persistence.

The link between accrual persistence and accrual reliability can also be found in the paper by Bradbury, Mak and Tan (2006). They investigated whether abnormal accruals are associated with corporate governance. This was conducted by examining if board characteristics
(corporate governance) results in higher or lower abnormal accruals. The characteristics chosen were CEO/Chair, board size and numbers of independent directors which all served as a proxy for quality of corporate governance. The results showed that these three characteristics all explain abnormal accruals where high quality of corporate governance results in lower abnormal accruals (higher reliability of financial reporting). Since abnormal accruals have been proved to be correlated with accrual persistence (Xie, 2001) and since corporate governance affect the reliability of financial reporting these findings corroborate evidence suggesting a relation between accrual persistence and accrual reliability.

Audit quality and accrual persistency

Considering the fact that accrual persistency is associated with accrual reliability and that accrual reliability is related to the reliability of financial reporting which in turn is affected by the auditor, this section will describe how previous literature have connected audit quality to accrual persistency. First however, we will present how audit quality can be defined and measured.

Audit Quality

The definition of audit quality has been hard to standardize for analysts since audit quality has a different meaning to different people. Investors may think that the purpose of audit is to ensure that there are no material misstatements or frauds in the financial statements (Wooten 2003). Accordingly, investors rely on the independent auditor to detect material misstatements caused by i.e. less reliable accruals (Zhao 2010). An auditor on the other hand may see audit in another perspective where managing business risk and minimizing client dissatisfaction besides strictly following the GAAS are very important factors (Wooten 2003). DeAngelo (1981) set the standard for addressing this issue as he developed a two divided definition of audit quality. First, material misstatements must be detected by the auditor and second, the material misstatements must be reported by the auditor. There are however many factors that affect the detection and reporting of misstatements such as the performance of the audit team that is set to do the audit. The outcome of the audit performance by the audit team depends in turn on the independence, resources and control processes of the auditor firm. One factor that has often served as a substitute for these audit team and audit firm factors is size of auditor and since the outcome of audit quality is not
immediately observable thus problematic to measure, size of auditor is one of the most used surrogates for audit quality (Wooten 2003).

Additional papers around audit quality have also measured quality of audit on a size basis (Francis et al, 2009). The reason for this is according to the documented association between audit quality and size of audit firms (De Angelo, 1981). The association was built on the underlying premise that clients of big audit firms are equally important and big audit firms have a reputation to protect in a greater extent than small audit firms. Therefore big audit firms are more prone to reporting errors in the financial statements consequently providing higher quality of audit. Smaller audit firms on the other hand have fewer amounts of clients and a stronger dependency to their clients thus they have more incentive to behave opportunistically rather than reporting errors. The results from De Angelo’s study showed that larger audit firms in general yield higher audit quality yet his results suggest that there is no guarantee that big audit firms have high audit quality.

In a similar vein, Teoh and Wong (1993) investigated whether auditor size is correlated with quality of auditor. The authors used perceived credibility of earnings reports as a definition of auditor quality. The test was carried out by comparing the earnings response coefficient (ERC) among Big 8 (today’s Big 4) and non-Big 8 auditor firms. The results showed that ERCs of Big 8 clients are higher than for non-Big 8 clients consequently indicating that size of auditor is associated with quality of auditor.

Additional evidence suggesting size to be a good proxy for audit quality was presented by Becker et al (1998); Francis et al (1999) where clients of Big 4 audit companies were documented to have lower abnormal accruals which (as mentioned earlier in this paper) is consistent with higher quality of audit.

There is however other explanations to why size of audit firms, such as Big 4, generally reaches higher audit quality. An alternative interpretation of the relation between Big 4 and audit quality was stated by Francis (2004):

““Good” companies are more likely to select Big 4 auditors, are less likely to manage earnings, and in general are more likely to have higher quality earnings."
In other words, it’s not high-quality auditing that causes the observed audit outcomes; rather, auditor choice is endogenous and it may simply be that good firms with good earnings quality hire high-quality auditors”.

Moreover, De Angelo (1981) states that other factors such as audit fee are also correlated with quality of audit. The reason for this is that auditors have incentives to uphold audit quality since they can capture higher fees by doing so. Conversely, if auditors cheat in their reporting and supposedly they get caught, they face a risk of being terminated by their clients and receiving reduced fees from clients that continue to retain them.

From another perspective, again, in order to thoroughly report material misstatements the auditor firm must be independent from their clients. If an auditor is dependent on a client, the auditor may feel pressure to avoid reporting certain accounting deficiencies and therefore the auditor tend to do whatever it takes to keep the client, otherwise the auditor firm risk to lose future audit fees (Wooten 2003). This interpretation of the association between audit fee and audit quality implies that audit fee is not correlated with high quality of audit.

Other researchers have the opposite interpretation meaning that higher audit fee does indeed imply higher audit quality. In that sense the relation between audit fee and audit quality is positive and it is expressed either through more audit effort (more hours) or through greater expertise of the auditor (higher rates) (Francis, 2004).

Considering the alternative explanations of why Big 4 have higher audit quality and that higher audit fee is not related to higher audit quality, size and audit fee will still stand as proxies for audit quality in this research for two reason. First, even though the explanation by Francis should be considered, it does not change the evidence that audit size is positively associated to audit quality. Second, we clearly find the evidence of a positive relation between audit fee and audit quality to be superior to the findings suggesting the opposite.
Audit Quality and Accrual Persistency

In a paper by Li Dang (2004) a clear association between audit quality and reliability in the financial statements was documented where the association was motivated since investors rely more on financial data when perceived audit quality is higher.

Doyle et al (2007) examined the relationship between the persistency of accruals and the internal controls of firms. They found that weaknesses in the internal control system of firms showed a strong association with the poorly estimated accruals not identified as cash flow. This association is primarily driven by weak disclosures. From this we draw the conclusion that weaker disclosures lead to less reliability in accruals.

Furthermore, additional evidence indicating that the quality of financial reporting effects accruals was presented by both Doyle et al (2007) as well as Drake et al (2008). To summarize the evidence from these studies in turn poorly estimated accruals were shown to have a strong association with weak internal control systems. This association is according to the authors primarily driven by low quality of disclosures (Doyle et al, 2007). Next, an association between quality of disclosures and mispricing of accruals was demonstrated where low quality of audit implies high degree of mispricing (Drake et al, 2008).

One of the first studies to examine if and how audit quality affects the accrual component was done by Krishnan (2003). Krishnan measured audit quality as Big 6 auditor firms and found evidence that companies that use Big 6 auditor firms show stronger association between stock prices and discretionary accruals. He extended these findings by examining if companies audited by Big 6 (compared to companies audited by non- Big 6) shows a stronger association between discretionary accruals and future profitability where the association was operationalized by one year ahead earnings and two years ahead earnings and cash flow from operations. His results showed that companies audited by Big 6 auditor firms report lower amounts of discretionary accruals (than non Big 6) and the association between stock returns and discretionary accruals is greater for firms audited by Big 6 auditor firms. Most importantly though, he found that discretionary accruals of clients of big 6 auditors have a greater association with future profitability than discretionary accruals of clients of non Big 6 auditors which suggest that companies that use big 6 auditor firms have more persistent accruals and therefore more persistent earnings.
Moreover, Zhao (2010) examined the impact of audit fee on accruals. He investigated if audit pricing differs between cash flows and accruals and if higher audit fee is associated with increased accrual reliability. He showed that audit pricing are significantly higher for accruals than audit pricing for cash flows.

To examine the relation between audit fee and accrual reliability, Zhao evaluated the changes in accrual reliability by comparing the earnings persistence between accruals between the pre- and post SOX period. He connected accrual reliability to accrual persistence in accordance to the findings by Richardson et al. (2005) and demonstrated that higher audit fee is associated with higher accrual persistence.

### 3. Motivation and hypothesis

The literature presented above describes why the accrual component is of importance for investors and analysts and what mechanisms that underlies its persistency. It gives further details of the way auditing can affect the accrual component.

This paper contributes to the literature by extending our knowledge of what might explain the persistency in the accrual component. Previous studies have shown that the different persistence in the accrual component is explained by subjective management (Xie, 2001). This study seeks to explain if a more complete definition of audit quality can additionally affect these subjective managerial actions.

Additional, neither Krishnan nor Zhao solely or explicitly focus on measuring accrual persistence of their respective audit quality surrogates, yet both present results that suggests a positive association between auditor size and accrual persistence as well as a positive association between audit fee and accrual persistence. They also use different approaches to establish their research. This study will investigate the accrual persistence with a homogenous test where both auditor size and audit fee will be applied first separately and then together.
Accordingly, are hypotheses are as follows:

H1: Big 4 audited firms with higher (lower) audit fee experience higher (lower) persistency in discretionary accruals.

H2: Non Big 4 audited firms with higher (lower) audit fee experience higher (lower) persistency in discretionary accruals.

A test providing an increase of the persistency in accruals would provide additional information on how to affect the persistency of accruals thus yielding valuable information on how to decrease the negative implications accruals have on the capital market. A test showing no significant increase of the persistency in accruals would also provide information to the literature regarding i.e. the uncertainties of an association between auditor size and audit fees.

4. Methodology

Sample Selection

All data will be taken from Thomson Reuter’s Datastream and the tests will be performed on US listed firms. Since information about audit fees is not available prior to 2002 our sample is based on the years 2002-2009. Also, since we need information about one-year ahead earnings for our regression, which is not yet available for 2010, the actual test period will be 2002-2008. This gave us an original sample consisting of 8193 companies. We dele firms that (1) don’t have information about audit fees and audit firm size, (2) don’t have information about beginning of year total assets and the data necessary to calculate accruals. (3) We will also delete firms where any variable from the Jones model used to separate discretionary accruals has a value of more than three standard deviations from its mean. This leads to a final sample consisting of 913 Big 4 audited firms and 5378 firm-year observations and 575 Non Big 4 audited firms and 3420 firm-year observations leading to a total sample of 1488 firms and 8798 firm year observations.
Research design

To answer our hypothesis we rely on a series of regressions measuring the persistency of the different earnings components with respect to future earnings. The method to calculate the persistency of the components of earnings will be used according to Xie (2001). This will show the persistency in the different earnings components with respect to their one-year ahead earnings and will be measured with the following equation:

\[ \text{EARN}_{t+1} = \beta_0 + \beta_1 \text{CFO}_t + \beta_2 \text{NAC}_t + \beta_3 \text{ABNAC}_t + \nu_{t+1} \]  

(1)

Where:

\text{EARN}_{t+1} = \text{One-year ahead earnings (defined as Net income before extraordinary items)}

\text{CFO}_t = \text{Net cash from operating activities in year } t

\text{NAC}_t = \text{Nondiscretionary accruals in year } t

\text{ABNAC}_t = \text{Discretionary accruals in year } t

\nu_{t+1} = \text{Residuals from the model}

From this equation we will be able to see the persistency of the three earnings components CFO, NAC and ABNAC in year t with respect to one-year ahead earnings (EARN_{t+1}). The \( \beta \)'s (\( \beta_1, \beta_2 \) and \( \beta_3 \)) are the coefficients that will show the persistence of the earnings components in relation to one-year ahead earnings (EARN_{t+1}) where a higher coefficient number indicates higher persistence of the specific component. The equation (1) will be calculated using an ordinary least squares (OLS) regression. Our testing will be conducted in three steps and will be formed as follows:

1. First we will run regressions for Big 4 audited firms and Non Big 4 audited firms separately. This will be done in order to see if the results found by Krishnan (2003) still holds for our sample and time period. The expectations of this testing is in accordance to prior research on audit quality and accruals, that is using a Big 4 auditor lead to higher persistency in discretionary accruals. By running two regressions separately for Big 4 audited firms and Non Big 4 audited firms we will be able to compare the coefficients with each other to see any
differences between the two samples.

2. The second step of our research will be to run tests for Big 4 audited firms alone, adding audit fees as separating criteria. Firms audited by Big 4 will be divided on the levels of audit fees where firms paying relative high audit fees will be compared to firms paying relative low audit fees. The sample will be divided into quartiles based on the magnitude of audit fees where we will test the extreme quartiles, \text{Q\_HIGH} and \text{Q\_LOW}. Our assumption is that firms with relative high audit fees (\text{Q\_HIGH}) will have higher persistency in discretionary accruals and firms with relative low audit fees (\text{Q\_LOW}) will have less persistency in discretionary accruals. We will run two regressions using equation (1) and compare the \beta’s from (\text{Q\_HIGH}) and (\text{Q\_LOW}). If \text{Q\_HIGH} shows higher beta values than \text{Q\_LOW} it will support our first hypothesis.

3. The third step in our research will be to use our Non Big 4 audited firm sample and will be perform the same regressions and procedures as in step 2. Thus the sample will again be divided into quartiles based on the levels of audit fees and tested on the two extremes \text{Q\_LOW} and \text{Q\_HIGH}. Again, our hypothesis is that firms with relative high audit fees (\text{Q\_HIGH}) have higher persistency in discretionary accruals and firms with relative lower audit fees (\text{Q\_LOW}) will have less persistency in discretionary accruals. In accordance to step two we will run equation (1) again on the two subsamples and compare the \beta’s from the two subsamples to see any differences.

From these regressions we will be able to answer our hypothesis and see not only if audit fee adds to and enhances the connection between accrual persistence and auditing but also if there is any difference between firms audited by Big 4 and Non Big 4 and their reported accruals with respect to the fees paid.
Definition of variables

All variables will be defined in accordance to Xie (2001). This is done since Xie adjusts for discretionary accruals, which according to research shows stronger correlation with persistency. Earnings (EARN) are defined as Net income before extraordinary items and Cash from operations (CFO) is defined as net cash from operating activities. Accruals are measured as the difference between earnings and CFO. We deflate all variables with beginning of year total assets.

Earnings – CFO = Total Accruals

To separate discretionary and nondiscretionary accruals we use the same method as Xie (2001) that entails the use of the cross-sectional Jones model (1991) for separating discretionary accruals. This is motivated since prior literature (Krishnan 2003) that shows that the cross-sectional model (Jones) is more precise than its time series counterparts. This lead to the following equation:

\[
\frac{ACCR_D}{TA_{t-1}} = a^1(1/TA_{t-1}) + a^2(\Delta REV_i/TA_{t-1}) + a^3(PPE_i/TA_{t-1}) + \varepsilon_t \quad (2)
\]

Where \(\Delta REV\) is the change in sales in year \(t\) and PPE is property plant and equipment in year \(t\). The regression will be run in cross section and separately for each year combination. We denote the predicted values from the Jones model (1991) as nondiscretionary (normal accruals, NAC) accruals and the residuals (\(\varepsilon\)) as discretionary accruals (abnormal accruals, ABNAC). Separation of accruals into discretionary and non discretionary accruals is done because the discretionary accrual is the component driving the lower persistency in accruals and this fact is well documented in prior research (Xie 2001). In table (1) we present descriptive statistics for the two samples of Big 4 audited firms and Non Big 4 audited firms.
Table 1

Big 4 descriptive statistics

<table>
<thead>
<tr>
<th></th>
<th>Minimu m</th>
<th>Maximu m</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earn</td>
<td>-1,00</td>
<td>1,2</td>
<td>-0,0085</td>
<td>0,19102</td>
</tr>
<tr>
<td>CFO</td>
<td>-0,83</td>
<td>1,07</td>
<td>0,0506</td>
<td>0,17270</td>
</tr>
<tr>
<td>NAC</td>
<td>-0,17</td>
<td>0,05</td>
<td>-0,0535</td>
<td>0,02238</td>
</tr>
<tr>
<td>ABNAC</td>
<td>-0,96</td>
<td>1,02</td>
<td>-0,0107</td>
<td>0,11270</td>
</tr>
</tbody>
</table>

Table 2

Non Big 4 descriptive statistics

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>EARN</td>
<td>-0,82</td>
<td>0,56</td>
<td>-0,0082</td>
<td>0,13717</td>
</tr>
<tr>
<td>CFO</td>
<td>-0,71</td>
<td>0,82</td>
<td>0,0268</td>
<td>0,13695</td>
</tr>
<tr>
<td>NAC</td>
<td>-0,14</td>
<td>0,11</td>
<td>-0,0516</td>
<td>0,02263</td>
</tr>
<tr>
<td>ABNAC</td>
<td>-0,81</td>
<td>0,51</td>
<td>0,0181</td>
<td>0,10096</td>
</tr>
</tbody>
</table>

As can be seen, there are no large differences of the min, max, mean and standard deviation between the two subsamples from where we draw the conclusion that there are no differences of how Big 4 and Non Big 4 auditors handle the accruals reported by the firms.

Audit fee is defined as the total cost of audit (auditor fee on Thompson Reuter’s Datastream) for each year and is scaled by beginning of year total assets to adjust for size. Audit firm size is defined as firms audited by Big 4 (KPMG, Deloitte, Ernst & Young and PriceWaterhouseCoopers) and non Big 4 audit firms.
5. Results

Test 1: Big 4 audited versus Non Big 4 audited firms.

The first part of our test is to examine if the relationship between accrual persistency and audit quality, which Krishnan (2003) found, still holds for our sample. This is the basis of our study and our ordinary least squares regressions using equation (2) gave the following results for big 4 audited firms and non big 4 audited firms.

Table 3:
Results from regression of Big 4 audited firms consisting of 913 firms and 5378 firm-year observations.

\[
\text{EARN}_{t+1} = \beta_0 + \beta_1 \text{CFO}_t + \beta_2 \text{NAC}_t + \beta_3 \text{ABNAC}_t + \nu_{t+1} \quad (1)
\]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficients</th>
<th>Std. Error</th>
<th>Sig (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFO</td>
<td>.770</td>
<td>.006</td>
<td>.000</td>
</tr>
<tr>
<td>NAC</td>
<td>.586</td>
<td>.007</td>
<td>.004</td>
</tr>
<tr>
<td>ABNAC</td>
<td>.512</td>
<td>.004</td>
<td>.000</td>
</tr>
</tbody>
</table>

As showed in table 3 the Coefficients (B) for the variables CFO, NAC and ABNAC are 0.77, 0.586 and 0.512 respectively. This presents the persistency for each of the earning components for Big 4 audited firms. As expected and according to prior research, the persistency in CFO is the highest (0.77) of the three earnings components. In the same way, the persistence of non discretionary accruals (NAC) is higher than for discretionary accruals (ABNAC). This indicates what we already know about the persistence of the different components and the relationship between them, that is discretionary accruals are less persistent. The coefficients from our regression are significant at the 5% level (P > 0.05). Next, we test the persistency for Non Big 4 audited firms. Our ordinary least squares regressions for our sample of Non Big 4 audited firms using equation (1) yield the following results.
Table 4:

Results from regression of Non Big 4 audited firms consisting of 575 firms and 3420 firm-year observations.

\[
\text{EARN}_{t+1} = \beta_0 + \beta_1 \text{CFO}_t + \beta_2 \text{NAC}_t + \beta_3 \text{ABNAC}_t + \nu_{t+1} \quad (1)
\]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficients</th>
<th>Std. Error</th>
<th>Sig (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFO</td>
<td>0.715</td>
<td>0.075</td>
<td>0.000</td>
</tr>
<tr>
<td>NAC</td>
<td>0.471</td>
<td>0.045</td>
<td>0.003</td>
</tr>
<tr>
<td>ABNAC</td>
<td>0.420</td>
<td>0.025</td>
<td>0.001</td>
</tr>
</tbody>
</table>

The coefficients (B), which tell us the persistency of the different earnings components, are again as expected. For CFO, NAC and ABNAC the coefficients are 0.715, 0.471 and 0.420 respectively. As in the first regression the variable CFO yield the highest persistency of the different earnings components (0.715) and is higher than the persistency of NAC (0.471) which in turn is larger than the persistence of ABNAC (0.420). All coefficients are statistically significant at the 5 % level (significant when p > 0.05).

Comparing the results from our first two regressions in table 3 and table 3, they indicate that discretionary accruals are more persistent for firms associated with Big 4 auditor firms. The persistency in discretionary accruals is 0.512 for Big 4 audited firms and 0.420 for Non Big 4 audited firms. This supports our hypothesis and the results found by Krishnan (2003), that Big 4 audited firms have higher persistency in discretionary accruals than Non Big 4 audited firms. Evidence also suggests that non discretionary accruals follows the same pattern where Big 4 audited firms have higher persistency (0.586) than Non Big 4 audited firms (0.471). Overall the results from the first part of our research confirms that audit firm size affect the persistency of discretionary accruals and that Big 4 audited firms have higher discretionary
accrual persistence than Non Big 4 audited firms, in accordance to prior studies (Krishnan 2003).

Test 2: Testing of hypothesis (H1) that Big 4 audited firms with higher (lower) audit fees have higher (lower) persistency in discretionary accruals.

For the second part of our testing we divide our subsample of 913 Big 4 audited firms and 5378 firm-year observations into quartiles depending on their annual cost of audit, audit fee. Again, we use the equation (2) and run two ordinary least squares regressions for firms that have relative high audit fees (Q_HIGH) and firms that have relative low audit fees (Q_LOW). These are the results from our regressions:

\[
\text{EARN}_{t+1} = \beta_0 + \beta_1 \text{CFO}_t + \beta_2 \text{NAC}_t + \beta_3 \text{ABNAC}_t + \nu_{t+1} \quad (1)
\]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficients</th>
<th>Sig (P)</th>
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<tbody>
<tr>
<td>CFO</td>
<td>0.820</td>
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</tr>
<tr>
<td>NAC</td>
<td>0.227</td>
<td>0.003</td>
</tr>
<tr>
<td>ABNAC</td>
<td>0.133</td>
<td>0.002</td>
</tr>
</tbody>
</table>
Table 6.

Results from regressions for Big 4 audited firms with relative low audit fees (Q_LOW).

\[
\text{EARN}_{t+1} = \beta_0 + \beta_1 \text{CFO}_t + \beta_2 \text{NAC}_t + \beta_3 \text{ABNAC}_t + \nu_{t+1} \tag{1}
\]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coeff</th>
<th>Std. Error</th>
<th>Sig (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFO</td>
<td>0.612</td>
<td>0.018</td>
<td>0.000</td>
</tr>
<tr>
<td>NAC</td>
<td>0.792</td>
<td>0.013</td>
<td>0.002</td>
</tr>
<tr>
<td>ABNAC</td>
<td>0.369</td>
<td>0.008</td>
<td>0.000</td>
</tr>
</tbody>
</table>

For Big 4 audited firms in Q_HIGH (table 5) the coefficients are 0.82, 0.227 and 0.133 for the three earning components CFO, NAC and ABNAC respectively. They are all significant at the 5 % level (p > 0.05). The results from the regression are interesting in the sense that they differ from what we hypothesize. Instead these findings suggest no increase in accrual persistence which is opposite to what we hypothesized. When the coefficients from table 5 are compared to the results in table 3 we observe that the persistency of discretionary accruals is lower than persistency for the entire Big 4 sample. For the entire Big 4 sample (table 3) the coefficients for discretionary accruals are 0.512. When compared to the coefficient from Q_HIGH (Big 4) 0.133 we observe a decrease in accrual persistency. This lead to the conclusion that higher audit fees does not lead to higher persistency in discretionary accruals for Big 4 audited firms. Again, these results are contrary to our belief (that higher audit fees imply higher accrual persistence) and are expressed by indicating that firms with higher audit fees show lower persistency.

These findings are even more interesting when you compare them with the results in table 6 which shows the coefficients from Q_LOW (BIG 4, Low audit fee) which for the three earnings CFO, NAC and ABNAC are 0.792, 0.612 and 0.369 respectively and all statistically significant at the 5 % level (p > 0.05). These findings further enhance the results that discretionary accruals for Big 4 audited firms do not depend on the size of audit fees.
Comparing the coefficients for Q_HIGH and Q_LOW we observe that the persistency of discretionary accruals for Q_HIGH is 0.133 and 0.369 for Q_LOW. We actually observe a higher persistence in discretionary accruals in Q_LOW than for Q_HIGH, again in contrast to what we expected. The results differ for the different quartiles but not in the way we expected. Observing the extreme quartiles, audit fees do not seem to affect the persistency for Big 4 Audited firms. To further investigate these findings we perform the same test but for Non Big 4 audited firms to observe if the same relationship can be found there.

Test 3: Testing of the hypothesis (H2) that Non Big 4 audited firms with higher (lower) audit fees have higher (lower) persistency in accruals.

For this part of the testing we use our sample of 575 Non Big 4 audited firms and 3420 firm year observations divided into quartiles based on their level of audit fees. The ordinary least squares regressions are run using equation (1) for Q_HIGH and Q_LOW for Non Big 4 audited firms.

Table 7:

Results from regression for Non Big 4 audited firms with relative high audit fees (Q_HIGH)

$$\text{EARN}_{t+1} = \beta_0 + \beta_1 \text{CFO}_t + \beta_2 \text{NAC}_t + \beta_3 \text{ABNAC}_t + \nu_{t+1} \quad (1)$$

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficients</th>
<th>Std. Error</th>
<th>Sig (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFO</td>
<td>0.729</td>
<td>0.005</td>
<td>0.000</td>
</tr>
<tr>
<td>NAC</td>
<td>0.580</td>
<td>0.003</td>
<td>0.003</td>
</tr>
<tr>
<td>ABNAC</td>
<td>0.554</td>
<td>0.008</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Table 8:
Results from regressions for Non Big 4 audited firms with relative high audit fees (Q_LOW)

\[ \text{EARN}_{t+1} = \beta_0 + \beta_1 \text{CFO}_t + \beta_2 \text{NAC}_t + \beta_3 \text{ABNAC}_t + \nu_{t+1} \quad (1) \]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficients</th>
<th>Std. Error</th>
<th>Sig (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFO</td>
<td>0.705</td>
<td>0.004</td>
<td>0.000</td>
</tr>
<tr>
<td>NAC</td>
<td>0.407</td>
<td>0.005</td>
<td>0.000</td>
</tr>
<tr>
<td>ABNAC</td>
<td>0.387</td>
<td>0.003</td>
<td>0.000</td>
</tr>
</tbody>
</table>

For Non Big 4 audited firms with relative high audit fees (Table 7) the coefficients for the three earnings components CFO, NAC and ABNAC are 0.729, 0.58 and 0.554 respectively and are all statistically significant at the 5% level (p > 0.05). When the coefficients from table 7 are compared with the coefficients from table 4, we observe that the coefficients for discretionary accruals in Q_HIGH are higher than the ones reported for the whole sample of Non Big 4 firms, 0.554 for Q_HIGH and 0.42 for the whole Non Big 4 sample. This is an increase of the persistency in discretionary accruals for Non Big 4 audited firms with relative high audit fees. These results are in accordance to our hypothesis that Non Big 4 audited firms with higher fees experience higher persistency in discretionary accruals (ABNAC) than for the entire sample of Non Big 4 audited firms.

Our findings that audit fee has a bearing on the persistency of accruals is corroborated when we look at the coefficients from the regression for Q_LOW (Table 8). The coefficients for CFO, NAC and ABNAC are 0.705, 0.407 and 0.387 respectively and are all statistically significant at the 5% level (p > 0.05). Compared to Q_HIGH, they show lower persistency in discretionary accruals which supports our theory in the sense that Non Big 4 audited firms with relative low audit fees have lower persistency in discretionary accruals. This also holds when we compare Q_LOW with the full sample of Non Big 4 audited firms which have a persistency of 0.42 compared to the persistency of discretionary accruals in Q_LOW which is
0.387. These results indicate that for Non Big 4 audited firms, audit fees influence the persistency of discretionary accruals.

Comparing the results from our regressions we draw the conclusion that Big 4 audited firms show higher persistency in discretionary accruals than Non Big 4 Audited firms. Furthermore, our regressions show that audit fees do not affect accrual persistency in the way we hypothesized for Big 4 audited firms. Rather, our results indicate that firms that with relative high audit fees show lower accrual persistency than firms with relative low audit fees. Additional, none of the Q_LOW and Q_HIGH from tests 2 of Big 4 audited firms yield higher persistency than the entire Big 4 sample consequently leading to our conclusion that audit fees have no impact on the persistence of discretionary accruals for Big 4 audit firms.

For Non Big 4 audited firms on the other hand, our hypothesis is confirmed. Q_HIGH yield higher persistency than both Q_LOW and the entire sample of Non Big 4 audited firms. Thus, this suggests that audit fees affect the persistency in discretionary accruals for Non Big 4 audited firms.

6. Conclusion

Prior studies have noticed that audit quality can affect the persistency in accruals. Evidence suggests that auditor size as well as audit fee have positive associations with the persistence in accruals. This paper extend to these findings by examining if the persistency in accruals differs between Big 4 auditor firms and Non Big 4 auditor firms as a function of the audit fees charged by the auditor firms.

In accordance to previous research on accrual persistence, we separate accruals into discretionary and non discretionary accruals since evidence suggests that discretionary accruals are less reliable and less persistent thus more able to be affected by auditors than non discretionary accruals.

We find that clients of Big 4 auditor firms seem to have higher persistency in accruals than clients of Non- Big 4 auditor firms. These findings confirm the results presented by Krishnan
Next, we add audit fees for companies of Big 4 and Non-Big 4 separately and observe the difference in accrual persistence. We find that Big 4 audited firms experience no increase in accrual persistence when adding audit fee. Interestingly, our results rather indicate that higher audit fee yields lower persistency in accruals for these firms.

Overall, since our test showed that the hypothesized connection between audit quality and accrual persistence is not confirmed for Big 4 audited firms, this indicates that audit quality, measured by size and audit fees, is not capable of additionally affecting this part of earnings quality. This suggests that the enhanced accrual persistence generated from using Big 4 auditor firms might be the result of higher audit fees paid for the Big 4. Conversely, as our findings suggest that audit fees have a higher bearing on the accrual persistence for Non Big 4 audited firms this implies that the enhanced accrual persistence generated from using Non Big 4 auditor is due to lower fees paid for the smaller Non Big 4 auditor firms. It seems as auditor size and audit fee has a state of opposition as the factors can only improve accrual persistence separately. Hence, these findings indicate that size of auditor and audit fees are positively associated which corroborates the evidence presented by Palmrose (1986).

Audit quality is not an exact science and there are a lot of theories on what audit quality actually is. We have used the most commonly used theories from prior literature but there are other proxies that could be interesting for future research. For instance, industry specific factors which we have not taken into account for, has been proved to affect the quality among Big 6 auditor firms (Krishnan 2003). Perhaps industry expertise among auditors has an effect on reported accruals and therefore its persistency of accruals but we leave this for future research to answer. Finally, the complexity of different companies that could be driving forces behind the persistency and magnitude of accruals can also be of interest for future research.
References


