BANKRUPTCY, AUDITOR SWITCHING AND AUDIT FAILURE:
EVIDENCE FROM THE UK 1987-94.

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Abstract

If a company's auditor believes that the company is likely to enter bankruptcy, the auditor is required to warn investors by giving a 'qualified' audit report. This paper investigates whether auditor switching can help explain why auditors frequently fail to warn about impending bankruptcy. The paper shows that managers use the switch decision to avoid receiving qualified reports and a switch exogenously reduces the accuracy of audit reports by replacing established incumbent auditors with less well informed new auditors. These results mean that the use of switching by managers is not necessarily contrary to investors' interests. Moreover, policies aimed at reducing managerial influence - for example, a recent EC policy proposal recommended the compulsory periodic switching of auditors - could reduce the accuracy of audit reports.

1. Introduction

During the 1980s and early 1990s there were a number of well-publicized cases in which auditors were criticized following corporate failure, leading to concerns that auditors are failing to give investors adequate warnings about bankruptcy. Empirical evidence indicates that auditors rarely give qualified reports to companies that subsequently file for bankruptcy (Alman and McGoohan, 1974; Koh, 1991; Ciarlo and Taufler, 1992; Author, 1998). This does not necessarily imply that auditors are failing in their responsibilities; the low predictive power of most statistical bankruptcy models suggests that auditors may not accurately warn about impending failure simply because bankruptcy is a rather unpredictable event.

However, there are three reasons for believing that audit reports are not as accurate as they could be. First, previous studies have found that audit reports are poor indicators of financial distress compared to the predictions of bankruptcy models (Alman and McGoohan, 1974; Deskin, 1977; Koh, 1991; Author, 1998). This is surprising since auditors have access to information that is not available to statisticians whereas the bankruptcy models were estimated using publicly available information. Secondly, the number of successful litigation cases brought against auditors and the sizes of the awards suggest that auditors sometimes fail in their responsibilities towards shareholders (Author, 1998). Finally, Department of Trade and Industry (DTI) investigations into UK corporate collapses have often been critical of auditors.
2. Existing research

There are three stylized facts concerning the relationship between financial health, auditor switching and audit reporting. First, failing companies are more likely to switch auditors than non-failing companies, and a switch of auditor appears to be a signal of financial distress (Fried and Schill, 1981; Eichenseer et al., 1999; Albrecht, 1990; Moon and Schwartz, 1983).

Secondly, a change in auditor is more likely to occur following a qualified report (Chow and Rice, 1982; Crazwell, 1988; Krishnan et al., 1995, 1996). This indicates that switches can occur because companies try to avoid receiving qualified reports. However, these studies did not make clear why opinion-shopping might cause a positive correlation between lagged audit reports and auditor switching. In particular, opinion-shopping means that a company is more likely to switch if this subsequently reduces the probability of receiving a qualified report.

Finally, the reports of switching companies tend to become less favourable compared to non-switching companies, and the post-switch reports of switching companies are not generally more favourable than pre-switch reports (Chow and Rice, 1982; Krishnan et al., 1995). This has led some to suggest that opinion-shopping by companies is generally futile (Krishnan, 1994). However, this conclusion could be misleading because one should really compare the reports that companies actually receive following their switch decisions, with the reports companies would have received had they made different switch decisions. This distinction is particularly important if auditors condition their reporting strategies on companies' switch decisions.

Theoretical research on 'opinion-shopping' behaviour has shown how companies can strategically use the switch decision to obtain more favourable reports (Dye, 1993; Teoh, 1992). One limitation of these models is their assumption that auditors cannot condition their reporting strategies on companies' switch decisions. In contrast, Author (1995) has shown that when auditors take account of past switch decisions, a switch can excessively increase the probability of a qualified report. In the model, auditors have different information sets, and so audit reporting is more persistent when companies choose not to switch their auditor. This means that a switch increases the probability that an independent auditor gives a qualified report. Since failing companies are more likely to receive qualified reports compared to non-failing companies, failing companies are more likely to switch and a switch is a signal of financial distress. This means that an independent auditor is more likely to give a qualified report to a company that chooses to switch. To test whether companies successfully engage in opinion-shopping, the model demonstrates that one should explicitly control for the unobservable reports that companies would have received had they made different switch decisions.

One contribution of this paper is to show that when one controls for these unobservable reports, the evidence very strongly supports the view that companies do engage in opinion-shopping. In addition, the paper investigates whether auditor switching has exaggerated effects on the 'conservatism' and 'accuracy' of audit reports.

1 In some instances it is reasonable to assume that managers adjust audit qualifications - a qualified report may imply to stakeholders that the managers are more aware of the company's affairs or that managers have attempted to present an unambiguously true view of the company's performance. If managers adopt some influence over the selection and use of auditors, it makes sense to view any change in auditor as evidence of the auditor's belief that the independent auditor is more likely to give a qualified report that is a more auditor. In the accounting literature this is known as 'opinion-shopping'.

2 See enclosed paper
To help explain what is meant by 'conservatism' and 'accuracy', it is helpful to consider Fig. 1. The horizontal axis shows an auditor's expectations about its clients’ bankruptcy probabilities ($P$). The vertical axis shows the density function $f_P$. The figure illustrates the case where an auditor believes that most clients have low bankruptcy probabilities.

![Graph](image)

**FIG 1.** An auditor’s expectations about its clients’ bankruptcy probabilities.

Existing research has assumed that if auditors strictly follow their profession’s rules, they should give qualified reports to those companies that are most likely to enter bankruptcy (Alman and McGough, 1974; Denisin, 1977; Koh, 1991). The number of qualified reports is determined by the auditor’s choice of a cut-off probability, $P^*$: companies lying to the left of $P^*$ are given unqualified reports whilst companies lying to the right are given qualified reports. $P^*$ determines the conservation of audit reports - ceteris paribus, a lower $P^*$ implies an increase in conservatism (i.e. an increase in the frequency of audit qualifications).

One can measure the accuracy of audit reports by defining two types of reporting error. The type I error rate is equal to the proportion of failing companies that are given unqualified reports; the type II error rate is equal to the proportion of non-failing companies that are given qualified reports (Koh, 1991). Hence there is an important distinction between the accuracy and conservation of audit reports. An increase in conservatism corresponds to a lower $P^*$ which reduces the type I error rate and increases the type II error rate, for a given level of accuracy. On the other hand, an increase in accuracy reduces both the type I and type II error rates, for a given level of conservatism.

If switching and non-switching companies use the switch decision to avoid receiving qualified reports, the conservation of audit reports is reduced ($P^*$ is increased). This raises the type I error rate and lowers the type II error rate. Whether this is in investors' interests depends on the relative costs of type I and type II errors.

If a switch is a signal of financial distress, the auditor may be more (less) likely to give a qualified report to a company that chooses (does not choose) to switch (Author, 1998). This means that for companies that choose (not) to switch, auditors choose a relatively low (high) $P^*$. This tends to lower (raise) the type I error rate and raise (lower) the type II error rate for switching (non-switching) companies.

Finally, a switch may exogenously affect the overall accuracy of audit reports. For example, a new auditor may be less familiar with a client than an established incumbent auditor, and so switching may increase both the type I and type II error rates for a given level of conservatism. These issues are of great relevance to policymakers - in response to concerns that long auditor-company relationships might facilitate collusion and reduce the conservation of audit reports, the European Community 8th Directive called for compulsory auditor switching every five years.

3. The Data
3.1 The sample

An attempt was made to collect data on all quoted UK companies between 1987-92. The data were collected in two stages. First, information on company shareholdings, auditors, and

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A company is defined as being a UK company if its headquarters and auditors were based in the UK. However, many of the companies in the sample had overseas operations and overseas shareholders.
audio reports were collected from microfilm copies of companies’ annual reports. From each report it was noted whether the auditor had given a qualified or unqualified opinion. When there is a significant possibility of the company ceasing to trade in the foreseeable future, the auditor is required to state that the accounts give a true and fair view, subject to the company remaining a going concern - a qualification given for this reason is called a ‘going concern qualification’. In the data, qualifications are given for going concern issues, fundamental uncertainties, and non-compliance with Statements of Standard Accounting Practice (SSAPs) - a qualification given for any of these reasons is called a ‘general qualification’. A list of companies that entered administration, receivership or liquidation was obtained from Stock Exchange Financial Yearbooks. All such companies are defined in this paper as failing. In the population of UK quoted companies, there were 96 failing companies between 1987-94. Microfiche data were available for 4936 companies of which 133 failed during the sample period.

Next data on cashflow, profitability, and leverage ratios, and numbers of employees were collected from Datastream. The Confederation of British Industry (CBI) Quarterly Industrial Trends Surveys were consulted to investigate changes in business confidence because leading indicators of the economic cycle might be useful in predicting when bankruptcies are most likely to occur. Every four months, the CBI publishes the results of a questionnaire asking companies, “Are you more, less, or optimist than you were four months ago about the general business situation in your industry?” By subtracting the proportion of respondents answering “less optimistic” from that answering “more optimistic”, a variable (CDI) was constructed to express business confidence. Data on each company’s Standard Industrial Classification (SIC) codes were collected from Exel because industry sector is also likely to be an important determinant of bankruptcy. Data for some of the 1956 companies in the initial sample were unavailable from Datastream and Exel. The final sample comprised 976 companies of which 90 failed over the sample period.

2.2. Bankruptcy and audit reporting between 1987-94. Table 1 shows the pattern of bankruptcy, audit reporting and audit contracts switching over the period 1987-94. Row 1 shows the total number of companies for which data were available in the initial sample. Row 2 shows the number of quoted companies in the population that failed. Given the timing of the economic cycle, it is unsurprising that the majority of failures occurred between 1990-2. A comparison of rows 2 and 4 shows that there is typically a period of around a year between the last annual report of a failing company and its entry into bankruptcy.

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1 See, for example, the Corporate reconstructions survey in Wigan, University. At this stage, I expected the situation that the company should have receivables written off in the two consecutive years because this predicts that they are likely to be the reason for the audit opinion, since one company which was then over rate collected up to the point of adherence, and therefore these companies were cited as receiving orders.

2 An audit report is qualified if the auditor states that the accounts give a true and fair view of the company’s affairs. A qualified audit report raises doubt as to whether the accounts give a true and fair view. If, for example, a company’s financial statements are not prepared in accordance with generally accepted accounting principles (GAAP), the auditor may qualify the report. GAAP is a set of rules that accountants use to prepare financial statements.

3 In a sample of cases, the auditor did not give a going concern qualification but did not express any opinion on the company’s continuing ability to continue. These cases were treated as going concern qualifications because the auditor expressed that going concern problems were brought to the attention of management.

4 Fundamental uncertainties’ refers to circumstances where an action is uncertain about provisions made for tax, writing-down costs, bad debts or litigation.

5 The results reported in this paper are not sensitive to different kinds of companies ( ///////////////////////////////////////)

6 These variables are defined in Table 2.
Table 1: Financial health and audit reporting (1987-94).

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>S</td>
<td>779</td>
<td>867</td>
<td>805</td>
<td>923</td>
<td>933</td>
<td>408</td>
<td>897</td>
<td>833</td>
<td>2180</td>
</tr>
<tr>
<td>F</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>16</td>
<td>166</td>
<td></td>
<td></td>
<td>180</td>
</tr>
<tr>
<td>CBI</td>
<td>79</td>
<td>18</td>
<td>-3</td>
<td>-23</td>
<td>-13</td>
<td>8</td>
<td>30</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>NFAILS</td>
<td>5</td>
<td>13</td>
<td>31</td>
<td>55</td>
<td>26</td>
<td>8</td>
<td>3</td>
<td>2</td>
<td>133</td>
</tr>
<tr>
<td>NQ</td>
<td>12</td>
<td>13</td>
<td>9</td>
<td>23</td>
<td>32</td>
<td>32</td>
<td>33</td>
<td>32</td>
<td>203</td>
</tr>
<tr>
<td>NQCO</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>NW</td>
<td>54</td>
<td>25</td>
<td>26</td>
<td>38</td>
<td>29</td>
<td>27</td>
<td>25</td>
<td>22</td>
<td>224</td>
</tr>
</tbody>
</table>

Notes:
S = Number of observations in the sample in year.
F = Number of U.K. public limited companies that became non-public in year.
CBI = Proportion of companies reporting 'bad' means the proportion answering 'bad' in the CBI questionnaire.
NFAILS = Number of companies in the sample which went into liquidation in year prior to earnings announcement.
NQ = Number of companies in the sample receiving qualified reports in year.
NQCO = Number of companies in the sample receiving going concern qualifications in year.
NW = Number of companies in the sample having audit insolvency in year.

Row 2 shows that the CBI variable is quite a good leading indicator of future economic conditions. Although the actual number of failing companies was quite low in 1989, most respondents were pessimistic about the future - companies partially anticipated the recession of 1990-2. In 1992 business confidence improved even though the actual number of failing companies remained high - companies partially anticipated the recovery of 1993-4. Rows 5 and 6 show that the number of qualified reports jumped up in 1990 and remained high during the recovery of 1993-4. This suggests that auditors failed to anticipate the recession of 1990-2 and the recovery of 1993-4. Row 7 shows the number of switches occurring between 1988-94. The average rate of auditor switching is 3.10%, implying that the average period of auditor incumbency is 31.6 years - companies rarely switch auditor.

3.3. Financial health, auditor switching and audit reporting

Table 2 shows the correlations between financial health, auditor switching, lagged audit reports and current reports. Panel A shows that failing companies are more likely to receive qualified reports and are more likely to switch. Panel B shows that companies are more likely to switch following qualified reports - this is true for both failing and non-failing companies.

The evidence also indicates that switching companies are more likely to subsequently receive qualified reports compared to non-switching companies. For the 224 observations in which a switch occurred, 19 companies (8.5%) received qualified reports. For the 568 observations in which no switch occurred, 165 companies (2.9%) received qualified reports. These results are consistent with previous empirical research as described in section 2.

Finally, panel C shows that there is a strong positive correlation between lagged and current reports, and this correlation is greater for companies that do not switch. For the 124 companies that received qualified reports and chose not to switch, 61 (58.8%) received qualified reports in the following period. For the 21 companies choosing to switch following qualified reports, 6 (28.6%) received qualified reports in the following period. For the 572 observations where companies received qualified reports and chose not to switch, 102 (17.5%) received qualified reports in the following period. For the 205 companies choosing to switch following qualified reports, 13 (6.4%) received qualified reports in the following period. This suggests that audit reporting is more persistent when companies decide not to switch - this is unsurprising since a new auditor is likely to have different beliefs about a company's financial health, compared to an incumbent auditor.
### Table 2

<table>
<thead>
<tr>
<th>Panel A - Relationship between Bankruptcy and Audit Switching, and Bankruptcy and Audit Switching</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFAILS = 0</td>
</tr>
<tr>
<td>O6 = 0</td>
</tr>
<tr>
<td>650</td>
</tr>
<tr>
<td>172</td>
</tr>
<tr>
<td>240</td>
</tr>
</tbody>
</table>

### Table 3

<table>
<thead>
<tr>
<th>Company size, cashflow, leverage and profitability variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Variable</strong></td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>Cash</td>
</tr>
<tr>
<td>Net Income</td>
</tr>
<tr>
<td>Operating cash flows</td>
</tr>
<tr>
<td>Current ratio</td>
</tr>
<tr>
<td>Current ratio</td>
</tr>
<tr>
<td>Capital structure</td>
</tr>
<tr>
<td>Capital structure</td>
</tr>
</tbody>
</table>

### Table 4

<table>
<thead>
<tr>
<th>Industry Sector</th>
<th>Number of companies in sample</th>
<th>Number of failing companies in sample</th>
<th>Number of non-failing companies in sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Agriculture</td>
<td>19</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3 Energy and water</td>
<td>51</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>4 Extensions of credit and services</td>
<td>137</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5 Other goods and services</td>
<td>275</td>
<td>28</td>
<td>28</td>
</tr>
</tbody>
</table>

### 2.6 Financial distress variables

Previous research indicates that cashflow, leverage, profitability and company size are related to financial distress (Altman, 1988). Data on these variables were obtained from DSS and are defined in Table 3. The return on capital variable (ROC) measures profitability, whilst the capital gearing variable (CAPE) is a measure of leverage. The gross cashflow (GCF) is measured as the return on capital (ROC) multiplied by the capital gearing variable (CAPE). The cash ratio (CASH/TA) is measured as the amount of cash to total assets (TA). The return on equity (ROE) is measured as the net profit margin (Net Income) divided by the capital gearing variable (CAPE). The return on assets (ROA) is measured as the net profit margin (Net Income) divided by the capital gearing variable (CAPE).
3.5. Agency cost variables

Evidence from event studies indicates that a switch of auditor is a signal of financial distress (Fried and Schill, 1981; Eichenseher et al., 1996; Albrecht, 1999). Therefore, we might find that a company has more incentive to avoid a switch when agency costs are high. Agency costs arise from the separation of ownership from control as it is costly for the owner(s) to monitor management behavior. In this paper, they are measured using data on directors' and other large shareholders. Table 5 shows that these holdings are inversely related to company size.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of employees</th>
<th>Number of companies</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIRSHN</td>
<td>0 - 149</td>
<td>160</td>
<td>25.91</td>
<td>2.49</td>
</tr>
<tr>
<td>LARGSHN</td>
<td>0 - 149</td>
<td>160</td>
<td>13.64</td>
<td>1.52</td>
</tr>
<tr>
<td>DIRSHN</td>
<td>150 - 399</td>
<td>159</td>
<td>10.47</td>
<td>2.13</td>
</tr>
<tr>
<td>LARGSHN</td>
<td>150 - 399</td>
<td>159</td>
<td>14.79</td>
<td>1.92</td>
</tr>
<tr>
<td>DIRSHN</td>
<td>400 - 999</td>
<td>243</td>
<td>12.36</td>
<td>3.09</td>
</tr>
<tr>
<td>LARGSHN</td>
<td>400 - 999</td>
<td>243</td>
<td>12.64</td>
<td>1.96</td>
</tr>
<tr>
<td>DIRSHN</td>
<td>1000 - 2000</td>
<td>128</td>
<td>10.32</td>
<td>3.12</td>
</tr>
<tr>
<td>LARGSHN</td>
<td>1000 - 2000</td>
<td>128</td>
<td>13.61</td>
<td>3.15</td>
</tr>
<tr>
<td>DIRSHN</td>
<td>2000 - 4999</td>
<td>116</td>
<td>7.93</td>
<td>2.70</td>
</tr>
<tr>
<td>LARGSHN</td>
<td>2000 - 4999</td>
<td>116</td>
<td>14.52</td>
<td>1.15</td>
</tr>
<tr>
<td>DIRSHN</td>
<td>5000 - 9999</td>
<td>170</td>
<td>14.93</td>
<td>1.57</td>
</tr>
<tr>
<td>LARGSHN</td>
<td>5000 - 9999</td>
<td>170</td>
<td>9.88</td>
<td>1.79</td>
</tr>
</tbody>
</table>

Notes:
1. DIRSHN = The percentage of relative shareholdings held by the directors.
2. LARGSHN = The percentage of relative shareholdings held by other large shareholders.
3. Data were collected in the initial shareholdings of directors which are reported as a percentage of total shares, also.

4. Shareholding data were not collected for all observations because of the high cost of collecting the information. For companies which did not wish to have the study period, shareholding information was only collected in 1999 and is used as a proxy for the missing observations in other years. In practice, this is unlikely to cause measurement error problems, since shareholding patterns virtually stabilize in the long run. Where there is a potential problem, this may reduce because companies may be more likely to switch when they are being monitored. o denominator in the state of corporation are those on companies that have experienced large changes in stock price.
5. Large shareholders (5%), individually, categorized as large shareholders and are included in the denominator (5% or 125% of the total market value). For each company, the year-on-year tax shareholdings were calculated. For example, suppose that company A has the following large shareholders in year t:
<table>
<thead>
<tr>
<th>Individually (5%)</th>
<th>Individually (5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excluded (5%)</td>
<td>Individual (5%)</td>
</tr>
</tbody>
</table>

6. The relationship between company size and the shareholdings of directors and other large shareholders can be estimated using the following equation:

   $\text{FAIL}_{it} = \beta_0 + \beta_1 \text{X}_{it} + \beta_2 \text{Z}_{it} + \beta_3 \text{W}_{it} = \gamma_{ij}$

   $\text{QSH}_{it} = \gamma_0 + \gamma_1 \text{X}_{it} + \gamma_2 \text{Z}_{it} + \gamma_3 \text{W}_{it} = \eta_{ij}$

   $\text{SW}_{it} = \delta_0 + \delta_1 \text{O}_{it} + \delta_2 \text{Q}_{it} + \delta_3 \text{W}_{it} + \delta_4 \text{Z}_{it} + \delta_5 \text{W}_{it}$

   (1) (2) (3)

   where $\text{X}_{it}$, $\text{Z}_{it}$, and $\text{W}_{it}$ are random variables representing different factors affecting company size, and $\gamma_{ij}$, $\eta_{ij}$, and $\zeta_{ij}$ are random variables representing different factors affecting shareholdings.

4. Research Methodology

This aim of this section is to describe how to test whether (a) companies engage in opinion shopping, (b) a switch is a signal of financial distress and exogenously increases the conservatism of audit reports, (c) a switch exogenously reduces the accuracy of audit reports.

4.1. The structural models of bankruptcy, audit reporting and auditor switching

The structural models of bankruptcy, audit reporting and auditor switching are shown in eqs. (1)-(3), with the variables defined in Table 6.
TABLE 6
Variable definitions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>X_{1t}</td>
<td>1 if company i issues its final annual report in year t prior to entering bankruptcy; 0 otherwise.</td>
</tr>
<tr>
<td>Q_{1t}</td>
<td>1 if company i receives a qualified report in year t + 1 or in state S = 0 otherwise.</td>
</tr>
<tr>
<td>S_{1t}</td>
<td>1 if company i issues a new auditor in year t + 1 or in state S = 0 otherwise.</td>
</tr>
<tr>
<td>F_{1t}</td>
<td>2 if F_{1t} = 1, = 0 otherwise.</td>
</tr>
<tr>
<td>SW_{1t}</td>
<td>2 if SW_{1t} = 1, = 0 otherwise.</td>
</tr>
<tr>
<td>X_{2t}</td>
<td>A set of publicly observable variables capturing the financial health of company i in year t</td>
</tr>
<tr>
<td>Z_{1t}</td>
<td>A set of publicly unobservable variables that capture financial health and are otherwise observed</td>
</tr>
<tr>
<td>Z_{2t}</td>
<td>A set of publicly unobservable variables that capture financial health and are observed only if the company is in state S = 0</td>
</tr>
<tr>
<td>X_{3t}</td>
<td>A set of variables that are correlated to financial distress but which help to explain audit reporting</td>
</tr>
<tr>
<td>X_{4t}</td>
<td>A set of variables that are correlated to financial distress and audit reporting but help explain audit switching</td>
</tr>
</tbody>
</table>

Eq. (1) is a bankruptcy model in which failing companies are distinguished from non-failing companies using observable variables relating to financial distress (X_{1t}). There may also be publicly unobservable variables which would be useful in identifying failing companies, some of these are observed by the auditor (Z_{1t}), and some are observed by the company (Z_{2t}). Eq. (1) assumes that the X_{2t} and X_{3t} variables do not help identify failing companies; the validity of this restriction is tested in the bankruptcy model.

Eq. (2) is a model of audit reporting. The model's coefficients depend on whether the company is in the switching (S = 1) or non-switching state (S = 0). The company chooses to be in state 1 if it switches, whereas it chooses to be in state 2 if it does not switch. This equation is used to predict the reports that companies would have received had they made different switch decisions. The audit reporting decision is explained using publicly observable financial distress variables (X_{1t}), and by other variables that do not help to identify failing companies (X_{2t}). In addition, the auditor may have private information about the probability of bankruptcy and this may affect the auditor's report (Z_{1t}). Eq. (2) imposes the restriction that the X_{3t} variables do not affect audit reporting; the validity of this restriction is tested in the audit reporting model.

Eq. (3) is a structural model of auditor switching. The model allows auditor switching to depend on publicly observable financial distress variables (X_{1t}), since previous research indicates that financial health helps explain switching (Dias and Schwartz, 1985). Switching may also be affected by publicly unobservable financial distress variables (Z_{2t}).

To the extent that the Z_{2t} variables have significant effects on switching, the company's switch decision may be a signal about whether the company is in financial distress. If a switch is a signal, one would expect auditors' reports to be conditioned on companies' switch decisions (Auditor, 1999). Under the null hypothesis that a switch does not exogenously increase the probability of a qualified report, θ_{11} = θ_{12} in eq. (2). Under the alternative hypothesis, a switch exogenously increases the probability of a qualified report (θ_{11} > θ_{12}).

The switch decision also depends on variables that do not help to identify failing companies nor help explain audit reporting (X_{4t}). Finally, eq. (3) allows the company to engage in opinion-shopping since the switch decision depends on the reports the company would receive in the switching (Q_{1t}^{+}) and non-switching states (Q_{1t}^{-}). If companies do not engage in opinion-shopping, one should be unable to reject the null hypothesis that θ_{11} = θ_{12}.

The alternative hypothesis is that companies successfully engage in opinion-shopping (θ_{11} < θ_{12}). Under the alternative hypothesis, when a new auditor is more likely to give a qualified report compared to the incumbent auditor (Q_{1t}^{+} > Q_{1t}^{-}) the company is less likely to switch; when a new auditor is less likely to give a qualified report compared to the incumbent auditor (Q_{1t}^{+} < Q_{1t}^{-}) the company is more likely to switch. Therefore, in controlling for the reports that companies would have received had they made different decisions.

---

15 For example, an auditor has the right to verify individual transactions and to check the values of individual assets and liabilities. The auditor can also engage in dialogue with management to ensure that reported earnings are correct.
switch decisions, my methodology is sufficiently flexible to allow both switching and non-switching companies to engage in opinion-shopping. Eq. (3) imposes the restriction that the $X_{24}$ variables do not affect switching in the structural model. This restriction cannot be tested because identification of eq. (3) depends on it. The validity of this restriction is based on theory and is discussed in section 5.2.

In equations (1)-(3), it is assumed that $E[\gamma_{14} \times Z_{25} | Y_{1}] = 0$, $E[\gamma_{15} \times Z_{25} | Y_{2}] = 0$, and $E[\gamma_{16} \times Z_{24} | Y_{3}] = 0$. These restrictions make sense because there is usually a lag of several months between the switch decision, the audit report, and the bankruptcy outcome.

4.2 Controlling for private information about the probability of bankruptcy

This section describes how one can test whether audit reports or auditor switching signal valuable private information about the probability of bankruptcy. In eqs. (1)-(3) switching and audit reporting are allowed to depend on financial distress variables that are not publicly observable, but are observed by the auditors ($Z_{14}$) and the company ($Z_{25}$). If this private information affects the switch decision or the auditor’s report, the switch in report (which are publicly observable) may be a signal of financial distress. Since the $Z_{14}$ and $Z_{25}$ variables are observed by the statistician, one cannot directly test the null hypothesis that $\beta_{2725} = 0$, and $\beta_{38} = 0$. This section explains how one can indirectly test these hypotheses.

Eq. (4) replaces the unobservable $Z_{24}$ variable in eq. (2) with the bankruptcy dummy ($FAILS_{25}$).

$$Q_{25,11}^* = 705 + 715 X_{11} + 725 X_{21} + 735 Z_{14} + 745 Z_{25}$$

$$Q_{25,24}^* = 705 + 715 X_{14} + 725 X_{24} + 745 FAILS_{25} + 755 Z_{25}$$

Under the null hypothesis, the auditors’ private information about the probability of bankruptcy does not affect audit reporting. If $\beta_{2725} = 0$, it must be true that $E[FAILS_{25} \times Z_{25}] = 0$, implying that $x_{25} = 0$ in eq. (4). Intuitively, if an auditor’s private information does not affect the audit reporting decision ($x_{25} = 0$), the company’s subsequent going-concern status should not help explain its audit report ($x_{25} = 0$). The alternative hypothesis is that an auditor is more likely to give a qualified report when there is private information indicating financial distress ($x_{25} > 0$), and so a qualified report is a signal of financial distress ($x_{25} > 0$). Similarly, one can test whether the private information content of audit reports depends on whether the company is in the switching or non-switching state. If reports signal the same information in both states one would be unable to reject the null hypothesis that $x_{25} = 0$. The alternative hypothesis is that audit reports have greater information content when they are issued by established incumbent auditors rather than new auditors ($x_{25} < 0$).

In a similar way, one can investigate whether a switch is a signal of financial distress by replacing the unobservable $Z_{24}$ variable in eq. (3) with the bankruptcy dummy ($FAILS_{25}$).

$$SW_{25} = 0 \times \left( Q_{25,11}^* \times Z_{25} + Q_{25,24}^* \right) + 0 \times X_{14} + 0 \times X_{24} + 62 X_{34} + 62 Z_{24} + 735$$

$$SW_{24} = 0 \times \left( Q_{25,11}^* \times Z_{25} + Q_{25,24}^* \right) + 0 \times X_{14} + 0 \times X_{24} + 62 FAILS_{25} + 735$$

Under the null hypothesis that a switch is not a signal of financial distress, $\beta_{2724} = 0$. If $\beta_{2724} = 0$, it must be true that $E[FAILS_{25} \times Z_{25}] = 0$, implying that $x_{24} = 0$ in eq. (5). Intuitively, if a company’s private information about the probability of bankruptcy does not affect its switch decision ($x_{24} = 0$), the company’s subsequent going-concern status should not help explain auditor switching ($x_{24} = 0$). The alternative hypothesis is that companies are more likely to switch when they have unfavourable private information about the probability of bankruptcy ($x_{24} > 0$), and so a switch is a signal of financial distress ($x_{24} > 0$).\(^{16}\)

\(^{16}\) An alternative way to test whether audit reports or switching signal valuable information about the probability of bankruptcy would be to exclude $x_{24}$ and $x_{25}$ as explanatory variables in the bankruptcy model. The results from doing this are qualitatively the same as those reported in this paper (Baliga, 2004).
4.3. The reduced form model of auditor switching

Previous research has shown that companies are more likely to switch auditors following qualified reports ([Chow and Reis, 1982; Cramwell, 1998; Cronon and Talifer, 1995; Krishnan and Stephens, 1995]). It can now be shown how this is consistent with the hypothesis that companies successfully engage in opinion-shopping (0₁ < 0₁). Substituting (4) into (5) gives the reduced form model of auditor switching (eq. (6)).

\[
SW_{it}^* = 0 + \beta_1 X_{it1} + \beta_2 X_{it2} + \beta_3 X_{it3} + \beta_4 X_{it4} + \beta_5 FALS_{it} + \epsilon_{it},
\]

The \( X_{it} \) variables affect switching in the reduced form model (eq. (6)) through their effects on audit reporting - the \( X_{it1} \) variables do not affect switching in the structural model (eq. (3)). Without loss of generality, suppose that the only \( X_{it4} \) variable is lagged audit report \((X_{it2} = 0, Z_{it1} = 0)\). A positive correlation between lagged audit reports and auditor switching \((\beta_1 > 0, \beta_2 > 0)\) can arise if companies engage in opinion-shopping \((0_1 < 0_1)\), and if audit reporting is more persistent in the non-switching states than in the switching state \((\gamma_{21} < \gamma_{22})\). However, previous studies investigating the relationship between lagged reports and auditor switching failed to consider whether persistence in reporting differs in the switching and non-switching states.

Eq. (6) also shows that the financial distress variables \(X_{it4}\) and \(FALS_{it}\) can explain switching in two ways. First, the relationship could reflect an opinion-shopping effect \((\beta_1 \gamma_{21} - \gamma_{22} > 0)\) and \(X_{it1} = 0\) and \(X_{it4} > 0\). Second, the relationship between financial health and auditor switching may have nothing to do with opinion-shopping \((\beta_2 = 0\) and \(\beta_3 = 0\)). For example, failing companies may be more likely to switch because they see greater pressure to obtain low-cost audit services. In contrast to previous research, this paper estimates a structural model of auditor switching to determine whether the relationship between financial health and switching reflects opinion-shopping behaviour.

4.4. The structural model of auditor switching

As well as estimating the reduced form switching model shown in eq. (6), this paper estimates a structural model. Eq. (7) replaces the unobservable \(Q_{it1}^*\) and \(Q_{it2}^*\) variables with their predicted values \((\hat{Q}_{it1}^*\) and \(\hat{Q}_{it2}^*\)) - these are obtained by estimating audit reporting models for the switching and non-switching states.

\[
SW_{it}^* = 0 + \beta_1 (\hat{Q}_{it1}^* - \hat{Q}_{it2}^*) + \beta_2 X_{it1} + \beta_3 X_{it3} + \beta_4 FALS_{it} + \epsilon_{it},
\]

Equation (7) is identified because it does not include the \(X_{it1}\) variables that are in the audit reporting models (eq. (4)). When estimating audit reporting models for the switching and non-switching states, it is necessary to control for the effects of self-selectivity. To do this, consider eq. (5) which is the reduced form model of switching shown in eq. (6).

\[
SW_{it}^* = \alpha Z_{it} + v_{it},
\]

where

\[
Z_{it} = [1, X_{it1}, X_{it2}, FALS_{it}, X_{it3}]
\]

and

\[
\alpha = [\theta_0, \theta_1 \gamma_{21} - \gamma_{22}, \theta_2 \gamma_{21}, \gamma_{22}, \theta_3].
\]

Suppose the dependent variable in the audit reporting model \((Q_{it}^*)\) is normally distributed.

\[
Q_{it}^* = N(\mu_{Q_{it}} + \sigma_{Q_{it}} x_{it1}, \sigma_{Q_{it}} x_{it2}, \sigma_{Q_{it}} x_{it3}, \sigma_{Q_{it}} FALS_{it}, \sigma_{Q_{it}} x_{it4})
\]
where $\sigma^2 = \text{Var}(v_{ij} | x_{lj})$.

The reporting model in the switching state for companies that choose to switch is:

$$L(Q_{jj} | \mathbf{SW}_{ji} = 1) = \frac{1}{\pi_{1}} \frac{1}{\sqrt{2\pi}} \left( x_{lj} - \mu_{1} \right)^{2} \exp\left(-\frac{1}{2}(x_{lj} - \mu_{1})^{2}/\sigma^{2}\right)$$

where $\pi_{1} = \Phi(\mu_{1} - \mu_{2}/\sigma)$

and $\Phi(.)$ and $\phi(.)$ are the normal density and normal distribution functions respectively.

The reporting model in the non-switching state for companies that choose not to switch is:

$$L(Q_{jj} | \mathbf{SW}_{ji} = 0) = \frac{1}{\pi_{2}} \frac{1}{\sqrt{2\pi}} \left( x_{lj} - \mu_{2} \right)^{2} \exp\left(-\frac{1}{2}(x_{lj} - \mu_{2})^{2}/\sigma^{2}\right)$$

where $\pi_{2} = \Phi(\mu_{2} - \mu_{1}/\sigma)$

Under the null hypothesis that companies do not engage in opinion-shopping, $\pi_{1} = 0$. Since $\mu_{1} = \mu_{2} = 0$, it implies that companies do not engage in opinion-shopping ($\pi_{1} = 0$) if $\pi_{1} = 0$. One would expect to find evidence of self-selectivity ($\pi_{1} > 0$) in eqs. (9) and (10). If self-selectivity is caused by opinion-shopping, one would expect to find that $\pi_{1} > 0$ if $\pi_{1} < 0$.

If $\pi_{1} < 0$, companies that choose to switch have lower average $Q_{1ij}^{*}$; if $\pi_{1} > 0$, companies that choose not to switch have lower average $Q_{2ij}^{*}$.

4.3 Testing for omitted variables bias and heteroscedasticity in probit models

All the models reported in this paper are tested for omitted variables bias and heteroscedasticity using the Lagrange Multiplier (LM) tests developed by Davidson and MacKinnon (1984). Eqs. (11) and (12) define the heteroscedastic probit model and the corresponding log-likelihood function where the variance of $u_{ij}$ is a function of $x_{ij}$.

$$Y_{ij} = \alpha_{1}X_{ij} + u_{ij}$$

where $Y_{ij} = 1$ if $Y_{ij} > 0$

$$Y_{ij} = 0$$

otherwise

$$\text{ln}(L) = \sum Y_{ij} \Phi[\beta_{1}X_{ij} \exp(-\gamma_{1}X_{ij})] + \sum (1 - Y_{ij}) \Phi[-\beta_{1}X_{ij} \exp(-\gamma_{1}X_{ij})]$$

The heteroscedastic probit model becomes homoscedastic when $\gamma_{1} = 0$. For most models in this paper, the null hypothesis of homoscedasticity was rejected and so the results are reported for heteroscedastic probit models.

5. Estimation results

This section estimates bankruptcy, audit reporting and auditor switching models and tests the null hypotheses summarised in Table 7.

### Table 7

| Bankruptcy model | $\text{FAILS}_{ij}^{*} = \beta_{0} + \beta_{1}X_{ij} + \epsilon_{ij}$ |
| Audit Reporting model | $Q_{ij}^{*} = \gamma_{1}X_{ij} + \gamma_{2}X_{ij} + \gamma_{3}F A I L S_{ij} + \epsilon_{ij}$ |
| Reduced form model of auditor switching | $\text{SW}_{ij}^{*} = \delta_{0} + \delta_{1}X_{ij} + \delta_{2}X_{ij} + \delta_{3}F A I L S_{ij} + \delta_{4}X_{ij} + \delta_{5}X_{ij} + \epsilon_{ij}$ |

$\epsilon_{ij}$: A random error term.

The explanatory variables used to estimate these models are the company size, industry sector, profitability, cashflows, leverage, lagged audit report and agency cost variables described in section 3. It is necessary to identify which of these variables identify failing companies ($X_{ij}$); explain audit reporting but do not help identify failing companies ($X_{ij}$).
and, explain auditor switching but do not help identify failing companies or explain audit reporting (X3, 2). This is done by starting with general bankruptcy, reporting and switching models before moving towards more parsimonious representations.

Table 8 presents the results for seven models. Models 1 and 2 are bankruptcy models; 3-5 are audit reporting models; 6 and 7 are reduced forms switching models. For all seven models, the LM test statistics show no evidence of omitted variables bias. The null hypothesis of homoscedasticity was rejected in models 1-5 but not in model 7. Where evidence was found for heteroscedasticity, the variances in the error terms depended significantly on the gross cashflow variable (GCF). 

Model 1 estimates the bankruptcy model including all the X1(t), X2(t) and X3(t) variables. The coefficients on the lagged audit report (O2(t-1)), and agency cost variables (LARGISH and DIRSH) are all insignificant - these variables do not belong to X1(t), and are omitted from model 2. The coefficients on the remaining variables are all significant and so these variables belong to X1(t).

Models 1 and 2 show that bankruptcy is more likely to occur when the economy moves from boom to recession. The negative coefficient on the number of failing companies in the population (G3) implies that a company is less likely to go bankrupt in the future if the economy is currently in a recession. The coefficient on the CBI indicator of business confidence (CB1) is negative because it captures the effects of future economic conditions on the probability of bankruptcy (an increase in CB1 implies that business confidence is improving). The signs on F1 and CBI show that a company is less (more) likely to fail over the next 12-18 months if the economy is currently in a recession (boom) and business conditions are expected to improve (worsen). Another important determinant of bankruptcy is company size. The coefficient on the number of employees (EMP) is negative showing that corporate failure is more likely if a company is small.8 The industry dummies are also important - a company was more likely to enter bankruptcy if it operated in the construction sector (DS1) or in the financial services sector (DS2). This reflects the fact that high interest rates during the 1992-93 recession badly affected the building Industry. Moreover, in contrast to the 1979-81 recession, the 1990-92 recession badly hit the financial services sector. A company is also more likely to go bankrupt when it is suffering cashflow difficulties. The negative coefficient on the debt-to-asset ratio (DBT/A) implies that a company is more likely to fail if it is having problems receiving payment from debtors. Similarly, the negative coefficient on the cash ratio (CASH) indicates that companies are more likely to fail if cash reserves are low. Leverage is also an important determinant of bankruptcy; the positive coefficient on capital gearing (CAP/G) shows that a company is more likely to fail when leverage is high. The negative coefficient on the return on capital variable (ROA) implies that a company is more likely to fail when profitability is low.

Audit reporting models 3-5 are estimated under the restriction that the coefficients are the same in the switching and non-switching states (the dependent variable is O3 rather than O3, 2). This is done because the small number of auditor switches means that it is impossible to estimate very general audit reporting models in the switching state due to degrees of freedom problems. However, the aim of this section is to determine which variables affect audit reporting (i.e. which variables belong to X1(t) and X2(t)). A comparison of reporting in the switching and non-switching states is undertaken in section 3.2 using the derived parsimonious specification (model 7).

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8 The definitions for F1 and F2, and O2, are essentially ad hoc and are therefore less reliable or sector-specific. To investigate this, a variable capturing the number of industry switches in which each company fails was included in the model. No evidence was found to suggest that the number of such switches affected the probability of bankruptcy. Other measures of company size used in the model of Table 8 (e.g. X2) were found to have little or no effect on the odds of failure in the Table 8 models.
<table>
<thead>
<tr>
<th>Models of bankruptcy, audit reporting and auditor switching</th>
<th>(z statistics in parentheses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>explanatory variable</td>
<td>Model 1</td>
</tr>
<tr>
<td>market to book</td>
<td>0.266 **</td>
</tr>
<tr>
<td>debt ratio</td>
<td>0.188 **</td>
</tr>
<tr>
<td>cash flow</td>
<td>0.199</td>
</tr>
<tr>
<td>sales</td>
<td>0.164</td>
</tr>
<tr>
<td>cash flow</td>
<td>0.136</td>
</tr>
<tr>
<td>market to book</td>
<td>0.276</td>
</tr>
<tr>
<td>debt ratio</td>
<td>0.199</td>
</tr>
<tr>
<td>cash flow</td>
<td>0.164</td>
</tr>
<tr>
<td>cash flow</td>
<td>0.136</td>
</tr>
</tbody>
</table>

Model 3 includes all the X11a, X11b and X11c variables. From the set of X11 variables, only marketability (ROCA2) and leverage (CAPM3) significantly affect audit reporting - auditors are more likely to qualify the reports of companies that have low marketability and are highly leveraged.

In models 4 and 5, the significantly positive coefficients on the bankruptcy dummy (FAILS2) indicate that one can reject the null hypothesis that reports are unaffected by auditors' private information about the probability of bankruptcy. When an auditor observes private information indicating that the company is in financial distress, the auditor is more likely to give a qualified report (q4 > 0). 3

In models 3, 4, and 5, the coefficients on lagged reports (Q4-1) are positive and highly significant indicating that there are strong persistence effects in audit reporting. One can be confident that the Q4-1 variable is not picking up the effects of financial distress, since the coefficient on Q4-1 is insignificant in the bankruptcy model.

In models 3, 4, and 5, the coefficients on the agency cost variables (LARGSH3 and DRHSH3) are insignificant, indicating that these variables do not belong to X11. Model 5 only contains variables that have significant effects on audit reporting and is the preferred specification for the audit reporting model.

Models 6 and 7 are reduced form models of auditor switching. Model 6 shows that the coefficients on the financial distress variables (X11a) are insignificant in explaining auditor switching. Model 7 omits variables with insignificant effects and is the preferred specification for the reduced form switching model. The coefficients on the bankruptcy,
dummy (FAILS) are positive and (just) significant. Consistent with previous research, this
means that a switch is a signal of financial distress \( \{t_1 \cdot t_2 \cdot t_3 \cdot t_4 \cdot t_5 \} > 0 \).

The coefficients on the agency cost variables (DHRSHG and LARGSHG) are
significantly positive. This is consistent with the argument that companies with high agency
costs prefer not to switch auditor because a switch is a signal of financial distress. Since the
agency cost variables have insignificant effects in the bankruptcy and audit reporting models,
they belong to \( X_{3j} \).

The highly significant positive coefficients on lagged reports (QoI) in models 6 and
7 indicate that companies are more likely to switch following qualified reports. Since the QoI
variable has significant effects on audit reporting and auditor switching, it belongs to \( X_{3j} \).

Section 4.3 showed that this positive relationship \( \{t_1 + t_2 \cdot t_3 \cdot t_4 \cdot t_5 \} > 0 \) could occur if audit
reporting is less persistent in the switching state than in the non-switching state \( \{t_1 \cdot t_2 \cdot t_3 \cdot t_4 \cdot t_5 \} < 0 \),
and if companies engage in opinion-switching \( E_0 < 0 \). Section 5.2 tests whether companies
engage in opinion-switching by estimating audit reporting models in the switching and non-
switching states and by estimating the structural switching model.

5.2. The structural model of auditor switching

This section estimates parsimonious audit reporting models for the switching and non-
switching states, and estimates the structural model of auditor switching. The equations
estimated, and the hypotheses tested are summarized in Table 9.

![Table 9: Equations estimated and hypotheses tested](image)

Models 3-5 from Table 8 showed that the main determinants of audit reporting are
leverage (CAPG), predictability (ROC), lagged audit reports (QoI), and auditors’ private
information (FAILS). These variables are therefore included in the audit reporting models.

The inverse Mills’s ratios \( \{t_1 + t_2 \cdot t_3 \cdot t_4 \cdot t_5 \} > 0 \) and \( \{t_1 + t_2 \cdot t_3 \cdot t_4 \cdot t_5 \} > 0 \) are considered
from model 7 of Table 8.

Models 1-4 from Table 10 are audit reporting models estimated in the switching and
non-switching states. Models 1 and 2 are estimated for observations in which a switch
occurred (eq. (9)); models 2 and 3 are estimated for observations in which no switch occurred
(eq. (10)). Models 2 and 3 control for the effects of self selectivity by including the inverse
Mills’s ratios, while models 4 and 5 impose the restriction that there are no self-selectivity
effects \( p_1 = p_2 = 0 \).

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24 The logistic and probit models are estimated using the two-stage approach which gives consistent
coefficient estimates. In a simultaneous switching model with non-binary dependent variables, a feasible
for the case of ordered switching matrix appears to be possible in the case of the two variables used in such a
framework could include the right-hand-side specifications for QoI and wave in any of these can only be entered
into the specification of the equations.
Models 1-4 show that a company is more likely to receive a qualified report when profitability (ROCE) is low and leverage (CAP) is high - this is consistent with the reporting models estimated in section 5.1.

The coefficients on the bankruptcy dummy (FAILS) are significant in models 2 and 4 but insignificant in models 1 and 3 (Z = 0.712 > 0). Private information about the probability of bankruptcy is more likely to affect the report of an established incumbent auditor than a new auditor. This is important because it suggests that a policy of compulsory auditor switching, aimed at reducing the ability of managers to engage in opinion-shopping, could have counter-productive effects in terms of reducing the informativeness of audit reports.

In models 1 and 2, the intercept is higher for companies that choose to switch (β01 > β02). Although this difference is not highly significant, it is consistent with the argument that a switch can exogenously increase the probability of a qualified report if the switch is a signal of financial distress (Market, 1998). The lack of significance should not be surprising given that a switch is only a weak signal of financial distress.

In models 1 and 2, the coefficients on the inverse Mills ratio (vie(Zi)) and viki(Zi) are negative which is consistent with the view that self-selectivity effects are caused by opinion-shopping. However, since these coefficients are not statistically significant, one cannot reject the null hypothesis that there are no self-selectivity problems (β01 < β02). This restriction is imposed in models 3 and 4.

| TABLE II |
| Models of audit reporting in the switching and non-switching states and structural models of auditor switching (β-statistics in parentheses) |

<table>
<thead>
<tr>
<th>Model</th>
<th>Explanation variables</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td></td>
<td>0.0563 (0.0306)</td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td>0.0575 (0.0306)</td>
</tr>
<tr>
<td>Model 3</td>
<td></td>
<td>0.0575 (0.0306)</td>
</tr>
<tr>
<td>Model 4</td>
<td></td>
<td>0.0575 (0.0306)</td>
</tr>
</tbody>
</table>

The coefficients on lagged audit reports (u(i-1)) in models 1-4 indicate that audit reporting is highly persistent in the non-switching state but not persistent in the switching state (\( \beta_{11} < \beta_{12} \)). The reduced form switching model showed that companies are much more
likely to switch following qualified reports \(Q_{11}^{*} \cdot Q_{21}^{**} > 0\). Therefore, one would expect

in to find that companies engage in opinion-shopping \(Q_{1} < 0\) in the structural switching

model. Having estimated audit reporting models for the switching and non-switching states,

the results are used to generate the opinion-shopping variable \(Q_{12}^{**} - Q_{22}^{**}\), so that the

structural switching model eq. (7) can be estimated.

Section 5.1 showed that none of the \(X_{i}^{1}\) variables had significant effects in the

reduced form switching model (model 6 from Table 8). However, the profitability (ROIC) and

leverage (CAPG) variables had significant effects on audit reporting (models 3-5 from

Table 8). Eq. (6) shows that the insignificant effects of ROIC and CAPG in the reduced

form model could arise if the direct effect of financial health on switching \(Q_{2}\) offsets the

indirect opinion-shopping effect \(Q_{1}^{*} \cdot Q_{21}^{**} \cdot Q_{22}^{**}\). The ROIC and CAPG variables should be

included in the structural switching model, because once the opinion-shopping effect is

controlled for they could have significant direct effects on auditor switching. The coefficients

on the agency cost variables (DIRSHK and LARGSLE) and the bankruptcy dummy

(FAILSLE) were significant in the reduced form switching models (models 6 and 7 from Table

8). Therefore, these variables are also included in the structural model.

The key restriction in estimating the structural model is that lagged reports \(Q_{2(t-1)}\) do

not directly affect auditor switching. As explained in section 3, theory suggests that lagged

reports affect auditor switching because persistence in reporting differs in the switching and

non-switching states - lagged reports only affect switching through their effect on audit

reporting (Anastor, 1998). This theoretical restriction means that the structural model is just

identified and allows the coefficients on the opinion-shopping variable \(Q_{12}^{**} - Q_{22}^{**}\) to be

estimated.

Models 3 and 6 from Table 10 show the results from estimating the structural

switching model. In model 5, the opinion-shopping variable \(Q_{14}^{**} - Q_{24}^{**}\) is constructed

from models 1 and 2 which controlled for self-selectivity; in model 6, the opinion-shopping

variable \(Q_{14}^{**} - Q_{24}^{**}\) is constructed from models 3 and 4 which impose the restriction

of no self-selectivity effects \((Q_{1} = Q_{2} = 0)\). The results for models 5 and 6 are very similar

reflecting the finding that self-selectivity effects are insignificant in the audit reporting

models.

The coefficients on the profitability (ROIC) and leverage (CAPG) and bankruptcy

(FAILSLE) variables indicate that a switch is more likely to occur when companies are in

financial distress - however, the coefficients on FAILSLE and ROIC are not statistically

significant. The coefficients on the agency cost variables (DIRSHK and LARGSLE) are

positive and highly significant indicating that switching is less likely to occur when agency

costs are high. This is consistent with the argument made for the reduced form model -

companies with high agency costs are less likely to switch because of the adverse signalling

effects.

The key difference between the reduced form and structural switching models is the

inclusion of the opinion-shopping variable \(Q_{14}^{**} - Q_{24}^{**}\) in place of the lagged audit

report variable \(Q_{2(t-1)}\). The highly significant negative coefficients on the opinion-shopping

variable mean that one can strongly reject the null hypothesis that companies do not engage

in opinion-shopping \(Q_{1} < 0\) against the alternative hypothesis that companies successfully

engage in opinion-shopping \(Q_{1} > 0\).

5. Conclusions and policy implications

The evidence from this paper strongly supports the view that companies successfully engage

in opinion-shopping. This conclusion differs from previous studies that failed to control for

the reports that companies would have received had they made different switch decisions.

Audit reporting is much less persistent in the switching state than in the non-switching state.

Therefore, companies that engage in opinion-shopping tend to switch auditors who give

qualified reports and retain auditors who give unqualified reports. The fact that previous
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