



KATHOLIEKE
UNIVERSITEIT
LEUVEN

DEPARTEMENT TOEGEPASTE ECONOMISCHE WETENSCHAPPEN

RESEARCH REPORT 9955
THE SIMULTANEOUS RELATION BETWEEN
AUDIT REPORT TYPE AND BUSINESS
TERMINATION: EVIDENCE FOR NON-LISTED
COMPANIES IN A NON-LITIGIOUS AUDIT
ENVIRONMENT

by
A. GAEREMYNCK
M. WILLEKENS

D/1999/2376/55

The Simultaneous Relation between Audit Report Type and Business Termination: Evidence for Non-listed Companies in a Non-litigious Audit Environment

A. Gaeremynck and M. Willekens ¹
KULeuven

ABSTRACT

This study provides evidence on the relationship between audit report type and subsequent business termination in an environment where firms are closely held and the audit environment is non-litigious. The results show that an endogenous relationship exists between bankruptcy and audit report type, and between voluntary liquidation and audit report type. A non-clean opinion is typically given to firms with financial difficulties, which in turn become more severe after the receipt of a non-clean audit opinion. We find evidence that, even without a litigation deterrent in Belgium, financial performance has a similar impact on audit report type as in litigious environments, that is, the worse the financial condition the higher the likelihood of receiving a non-clean audit report. We also find that the self-fulfilling prophecy holds for bankruptcy, that is that a non-clean audit report triggers bankruptcy.

Our paper investigated the relationship between audit report type and business termination for various types of business terminations including bankruptcy, voluntary liquidation and merger. The results reveal significant differences across the forementioned types of business terminations. One difference is that the self-fulfilling prophecy only holds when the audited firm has no decision power as to termination of its operations, that is for bankruptcy. It does not hold for voluntary liquidation nor merger.

Another important difference relates to business termination through merger. No significant difference in performance exists between surviving and merging firms and no endogenous relationship exists between mergers and audit report type. For merging firms audit report qualifications are triggered by the weakness of the auditee's internal control system and not by substandard financial performance.

Finally, our study provides some evidence on quality differentiation between Big Six and non Big Six auditors in the Belgian audit market. When financial difficulties are obvious, as is the case when a company is about to go bankrupt, both Big Six and non big Six auditors are as competent and/or independent to assess and report going concern problems. However, when financial difficulties are less apparent, as is the case for firms which are about to go into liquidation, our results indicate that Big Six auditors are more likely to issue a qualified audit opinion.

¹ Address for correspondence: Department of Applied Economics, Naamsestraat 69, 3000 Leuven, Belgium, phone: 3216326921-3216326932, fax 3216326732, ann.gaeremynck@econ.kuleuven.ac.be, marleen.willekens@econ.kuleuven.ac.be

We gratefully acknowledge the comments of Willem Buijnick. We thank the FWO-Vlaanderen for its financial support.

1. INTRODUCTION

Previous research has examined the relationship between audit report type and firms' financial distress. Two distinct tracks were followed. One group of studies [see, for example, Mutchler 1985, Dopuch et al. 1987, Menon and Schwartz 1987, Bell and Tabor 1991, Chen and Church 1992, Mutchler et al. 1996] focused on investigating financial and other determinants of audit report type choice, where most examine determinants of going concern qualifications. Another group of studies [see, for example, Hopwood et al. 1989, Citron and Taffler 1992] examined the impact of audit report type on the probability of future bankruptcy and/or firm survival (self-fulfilling prophecy).

This paper wants to contribute to the literature in three ways.

First, unlike previous work, the relationship between audit report type and business termination is studied as an endogenous relationship. In all previous studies on audit reporting, it is assumed that financial performance determines the likelihood of issuing a qualified audit opinion, but the impact of the type of audit opinion itself on an auditee's financial performance is ignored. Financial performance measures are thus considered as exogenous variables, while they might not be. When an auditor has to decide upon audit report type, the financial condition of the client is taken into consideration. However, the likelihood of business termination can be accelerated by the receipt of a non-clean opinion.

Second, given the endogenous relationship between the audit report type and financial performance, the determinants of audit report type are studied in an environment where firms are privately held, auditing is mandatory and virtually no litigation against auditors exists. When auditors are not sued for issuing the wrong type of audit report, not so much the adverse consequences of issuing an inappropriate audit report, but rather auditor reputation has to safeguard an acceptable audit quality level. This raises the interesting research question whether

financial performance influences audit report type to the same extent as in litigious environments like the US.

Finally, given the characteristics of the Belgian audit and legal environment, where most firms are privately held, we investigate whether various stakeholders (such as, for example, banks and suppliers) rely on the information provided in the audit report for decision making. We test whether the self-fulfilling prophecy that a non-clean audit report affects subsequent business termination holds. Furthermore, we do not only test this hypothesis for subsequent failure, but also for two weaker forms of business termination, namely voluntary liquidation and merger.

The results show that an endogenous relationship exists between business termination and audit report type. A non-clean opinion is typically given when firms are facing financial difficulties, which in turn become more severe by reception of a non-clean opinion. Given this endogenous relationship, the auditor's concern about reputation guarantees that the auditee's financial performance has a similar impact on the auditor's opinion in Belgium (a non-litigious environment) as it has in litigious environments.

However, significant differences occur for the alternative types of business terminations studied in this paper (i.e. bankruptcy, voluntary liquidation and merger / take over). First, the self-fulfilling prophecy only holds when firms do not have the decision power to terminate their operations, as is the case with bankruptcies. Second, The results are also entirely different for merging firms as compared to the two other types of business terminations (bankruptcy and voluntary liquidation). No significant difference in performance between surviving and merging firms is apparent from the data and no evidence of an endogenous relationship between business termination decision and audit report type was detected. For merging firms weak internal control systems are the main reason for reception of an audit qualification. Finally, even in a non-litigious environment quality differences can be

observed between Big Six and non Big Six auditors. In circumstances where the financial difficulties are obvious, i.e. bankruptcy, both auditor types are equally competent to assess and signal going concern problems of clients. when this assessment is more difficult, such as for liquidating firms, Big Six auditors are more likely to issue a qualified opinion.

The remainder of this paper is organised as follows. Section 2 discusses the research questions and provides information on the Belgian auditing environment. Section 3 clarifies methodological issues and section 4 specifies the model and provides a discussion of our results. Finally, some conclusions are drawn in section 5.

2. RESEARCH QUESTIONS WITH RESPECT TO THE RELATIONSHIP BETWEEN AUDIT REPORTING AND BUSINESS TERMINATION IN BELGIUM

2.1. CHARACTERISTICS OF THE BELGIAN CAPITAL MARKET AND AUDIT ENVIRONMENT

Belgium is a continental European country with an institutional, accounting and auditing environment which is different from the one in the US. Notable differences relate to the audit function and audit regulations as well as to the characteristics of the capital market.

The Belgian capital market is much less developed compared to that in the US. Stock market capitalisation was only 33% of GNP in 1995, as compared to 82% in the US. Very few (only about 130) companies are listed on the Brussels stock exchange as the majority of companies are family owned. Furthermore, ownership is concentrated (very few shareholders) even in listed companies. Hence, unlike the US, widespread ownership is not a major reason for demand of publicly available financial statements. On the contrary, demand for financial statements stems mainly from government. Companies which meet certain legal form and size criteria are

mandated to file financial statements with the Belgian National Bank ². However, that does not mean that the other stakeholders of the firm do not use the financial statements for decision making.

Besides the capital environment, the auditing environment is significantly different from the one in the US. Auditing is mandatory for all large companies in Belgium ³. The regulator's motivation for such a widespread mandatory audit requirement is protection of *all* stakeholders of a company (such as employees, suppliers, banks,...). Furthermore, unlike the American audit environment the Belgian one is not at all litigious. The issuance of a wrong opinion by the auditor (for example, no going concern exception when financial difficulties are obvious and the firm fails afterwards) almost never results in a court case against the auditor. A valid question is therefore whether Belgian auditors have a big enough incentive to supply high quality audits and in due course issue a qualified or adverse audit opinion. Usually the threat of litigation works as a deterrent against below standard audit quality. When such a threat is absent the auditor may feel tempted to keep a friendly relationship with a client in order to safeguard the appointment.

To provide a stimulus for independence, the Institute of auditors tries to provide several guarantees. First, auditors are to be appointed for three years in Belgium although no mandatory rotation is required after three years. Second, Belgian auditors are also subject to disciplinary sanctions when they violate the Ethical code (Royal Decree of 10 January 1994). Third, the Belgian Institute of

² A firm is obliged to prepare and publish financial statements when limited liability of the owners is guaranteed. The amount of the financial information provided depends on the size of the firm. If the firms meet two of the following criteria, total assets >100 million francs, turnover >200 million Belgian francs and the number of employees is larger than 50, then the full scheme of the financial statements is demanded. Companies with more than 100 employees are always required to use this scheme. An example of a difference in the information provided between the full and the reduced scheme is the amount of sales, which is only required when the firm uses the full scheme.

³ Large companies are companies which meet at least two of the following criteria: Total assets > 100 million BEF; Turnover > 200 million BEF, number of employees > 50. Companies with more than 100 employees are always classified as a large company irrespective of their total assets or turnover.

Auditors organise directed investigations in audit firms to safeguard audit competence and independence. Fourth, every certified auditor is also subject to a peer review once in every five years. Finally, although not imposed by the Institute, the auditor's concern about his or her reputation can be an incentive to maintain a certain quality level.

As to the possible types and the content of an audit opinion the Belgian environment does not extensively differ from other countries. The different types of audit opinions include: an unqualified opinion, a qualified opinion, an adverse opinion and a disclaimer. Conditions under which a certain report type should be issued are comparable to most other countries, including the US. Qualifications relate to going concern problems and GAAP violations (mostly valuation problems of receivables, inventory or financial assets).

The content of the audit opinion is similar to that in other countries. An important difference, however, is that the auditor is required to provide an *explicit* assessment of the quality of an auditee's internal control system in the audit report.

2.2. RESEARCH QUESTIONS

The endogenous relationship between business termination and audit report type

This paper addresses the audit reporting decision making process in Belgium and its relationship with subsequent business termination of client companies. In previous research, the impact of financial health on audit report type choice by an auditor and the impact of audit report type on subsequent business termination (mostly bankruptcy) have been examined as two independent relationships.

The impact of financial condition on audit report type is widely documented (Mutchler, 1985; Dopuch et al. 1987, Bell and Tabor, 1991; Chen and Church,

1992). In all these studies it has been shown that the receipt of a non-clean opinion is determined by weak financial performance (signalled by liquidity, solvency and profitability problems).

The evidence on the impact of audit report type on business termination is scarce and results are mixed (Citron & Taffler, 1992; Hopwood et al., 1987).

the study of Citron & Taffler (1992), which uses a univariate analysis, did not find evidence for the self-fulfilling prophecy. On the contrary, the multivariate results of Hopwood et al. (1989) show that a consistency as well as the going concern opinion are significant in explaining bankruptcy the year before failure.

No study has tried to link the above two questions although audit report type and financial condition may influence one another. When the auditor makes an audit report decision, he assesses the financial condition of the auditee. One could say that the auditor assesses the likelihood that the auditee will terminate operations in the near future. On the other hand, it may well be that the audit report type an auditee receives affects decisions of stakeholders to the firm and hence affects the likelihood of business termination the subsequent year. A non-clean audit report could accelerate firm failure, liquidation or even merger or take over (self-fulfilling prophecy). Therefore financial condition and audit report type could be mutually dependent, and hence endogenous variables. This results in the following hypothesis:

Hypothesis 1: There exists an endogenous relationship between audit report type and the likelihood of business termination

Given possible endogeneity, the determinants of audit report type as well as business termination will be investigated.

The impact of likelihood of business termination on the audit reporting decision

Prior American research has reported evidence on the impact of an auditee's financial condition on audit report type choice by an auditor [see, for example, Mutchler 1985, Dopuch et al. 1987, Bell and Tabor 1991, Chen and Church 1992]. The studies can be divided into three categories depending on the type of the independent variables used: the level of performance (Mutchler, 1985; Chen and Church, 1992), the change in performance compared to the previous year (Dopuch et al. 1987; Bell & Tabor, 1991) and the deviation from the average performance in the industry (Bell & Tabor, 1991). the size of receivables and inventory (Dopuch et al. 1987; Bell & Tabor, 1991) and the size of the audited firm (Dopuch et al. 1991; Chen & Church, 1992) are also relevant in explaining audit report type. Finally, market data are also included in the studies of Dopuch et al. (1987) and Bell & Tabor (1991), which can not be used in the current study as all firms in the sample are privately held ⁴.

Given the institutional differences between the US and Belgium, where no litigation against auditors exists and firms are privately held, it is interesting to investigate whether a company's financial condition significantly affects the issuance of a non-clean audit report in Belgium. Should financial performance have no significant impact on audit reporting, in the sense that below standard financial performance does not lead to audit qualification, one could infer that absence of litigation and lack of concern about client loss lead to less stringent audit reporting in Belgium. In case the opposite result is found, that is that an auditee's financial performance does significantly affect audit reporting, we can conclude that a certain audit reporting quality level is maintained in Belgium despite the absence of

⁴ Only the studies, which use a mixed sample of bankrupt and surviving firms are mentioned although studies also exist which which investigate the type of the audit report before bankruptcy (Menon &

litigation. This can be attributed to the auditor's concern about reputation and possible disciplinary sanctions which can be imposed by the Institute of auditors if certain quality standards are not met. In this context, we test the following hypothesis:

Hypothesis 2: In an environment, where no litigation against auditors exists and firms are closely held, the audit report type is significantly affected by the likelihood of business termination (failure, liquidation and merger).

Unlike previous studies, we not only pose this question for a sample of surviving and bankrupt firms, but also for two other types of business terminations: voluntary liquidation and merger. This enables us to investigate whether the likelihood of subsequent business termination has the same influence on the receipt of a non-clean opinion for various groups of business terminations, i.e. voluntary liquidation, failure and merger. We expect the influence of the likelihood of subsequent business termination on audit report type to differ across alternative forms of business termination (and their respective match of survivors). One reason for this is that it is likely that alternative forms of business terminations are related to different levels of financial performance. The following hypothesis is tested in this context:

Hypothesis 3: The financial condition of a firm has a different influence on the likelihood of receiving a non-clean opinion for bankrupt, liquidating or merging firms.

The impact of audit report type on subsequent business termination

As the relationship between financial performance and audit report type is endogenously studied, another question we pose is whether audit report type affects business termination the subsequent year.

By posing this question we test the self-fulfilling prophecy that business termination is triggered by a non-clean audit report. We believe that this is particularly interesting in an environment as the Belgian one where auditing is mandatory for non-listed companies with concentrated ownership. As the firm's investors are typically also involved in the management of the company and/or have a seat on the board of directors, the agency role of auditing is no longer obvious. Therefore one could question the economic value of mandatory auditing in Belgium. It is interesting to test of whether the audit report has at least some informational value for (other) stakeholders of the auditee (banks, suppliers and employees), as the regulators claim. In summary, our test is a test of the economic role of auditing in a regulated environment.

Hypothesis 4: In a non-litigious environment and for closely held firms, the likelihood of business termination (bankruptcy, liquidation and/merger) is significantly affected by the audit report type issued on the financial statements of the previous year.

Unlike previous studies (Hopwood et al., 1989, Citron and Taffler, 1992), the self-fulfilling prophecy hypothesis is not only tested for a sample of failing and surviving firms but for all types of business termination (failure, voluntary liquidation and merger / take over). The type of the audit report is expected to have a larger influence on the likelihood of business termination, when the owners have no decision power on the incidence of business termination. Usually, owners have

(some) power with respect to voluntary liquidation and merger, but not with respect to failure as in the latter case banks and suppliers go to court to demand bankruptcy. This results in the following hypothesis:

Hypothesis 5: The audit report type has a larger influence on the incidence of failure than on voluntary vliquidation or merger.

3. SIMULTANEOUS EQUATION MODEL

In this section we introduce an audit report type and business termination simultaneous equation model. Let AR_t and $BUST_{t+1}$ denote unobserved latent variables that represent the likelihood of the auditor to issue a non-clean opinion on the company's financial statements of period t (AR_t), and that of the auditee to terminate its operations in the subsequent period $t + 1$ ($BUST_{t+1}$), respectively. When the auditor makes an audit report decision, he assesses the financial condition of the auditee. One could say that the auditor assesses the likelihood that the auditee will terminate operations during the subsequent period. If indeed audit report type is motivated by the likelihood that the auditee continues to exist or not, AR_t is a function of $BUST_{t+1}$. Hence:

$$AR_t = \alpha_0 + \alpha_1 BUST_{t+1} + \Pi_1 X + \mu_1 \quad (1)$$

holds, where X represents a vector of other observed exogenous variables (besides $BUST_{t+1}$) which affect AR_t , and μ_1 is the error term.

If the likelihood that the auditee terminates its operations in period $t+1$ is in turn affected by the previous year's audit report, and a simultaneous relation between audit report type and subsequent business termination indeed exists, then $BUST_{t+1}$ depends on AR_t as well and this can be written as:

$$BUST_{t+1} = \beta_0 + \beta_1 AR_t + \Pi_2 Y + \mu_2 \quad (2)$$

where Y represents a vector of other observed exogenous variables (besides AR_t) which affect $BUST_{t+1}$, and μ_2 is the error term.

If simultaneity indeed exists between AR and $BUST$, logit estimates of equations (1) and (2) would not yield unbiased consistent estimates of the coefficients because AR and $BUST$ are correlated with the error terms (Gujarati, 1995). Therefore a two-stage procedure is required. In the first stage only the independent exogenous variables are introduced and the following reduced form equations are estimated:

$$AR_t = \gamma_0 + \Gamma_1 X + \Gamma_2 Y + v_1 \quad (3)$$

$$BUST_{t+1} = \theta_0 + \Theta_1 X + \Theta_2 Y + v_2 \quad (4)$$

where X and Y represent the vectors of observed exogenous variables, and v_1 and v_2 represent the error terms. The result of these estimations is \hat{BUST}_{t+1} and \hat{AR}_t .

In the second stage, the predicted value of $BUST_{t+1}$, \hat{BUST}_{t+1} , is substituted in equation (1), and the predicted value of AR_t , \hat{AR}_t , is substituted in equation (2). The following equations are then estimated:

$$AR_t = \alpha_0 + \alpha_1 \hat{BUST}_{t+1} + \Pi_1 X + \mu_1 \quad (5)$$

$$BUST_{t+1} = \beta_0 + \beta_1 \hat{AR}_t + \Pi_2 Y + \mu_2 \quad (6)$$

To test the simultaneity hypothesis we use the Hausman specification test (Gujarati, 1995). This test also consists of two steps. First - as above - the reduced form equations (3) and (4) are estimated, and \hat{BUST}_{t+1} and \hat{v}_2 are estimated from (4), as are \hat{AR}_t and \hat{v}_1 from equation (3). Second, AR_t is regressed on \hat{BUST}_{t+1} and \hat{v}_2 , and X (vector), and $BUST_{t+1}$ is regressed on \hat{AR}_t and \hat{v}_1 , and Y (vector), respectively. This results in the estimation of the following logit regressions:

$$AR_t = \zeta_0 + \zeta_1 \hat{BUST}_{t+1} + \zeta_2 \hat{v}_2 + Z X + v_1 \quad (7)$$

$$BUST_{t+1} = \lambda_0 + \lambda_1 \hat{AR}_t + \lambda_2 \hat{v}_1 + \Lambda Y + v_2 \quad (8)$$

If simultaneity indeed exists, the logit estimation of the parameters \hat{v}_2 in equation (7) and \hat{v}_1 in equation (8) are significant, which indicates that a correlation exists between AR_t and business termination $BUST_{t+1}$. Should AR_t and $BUST_{t+1}$ be exogenous variables, then no significance for the respective error terms will be found.

4. MODEL SPECIFICATION

In this section we define the explanatory variables for the audit report type model as well as the business termination model which are used in order to test the hypotheses introduced in section 2.

The Audit Report Type Equation

The audit report type equation (see also eq. 5) includes the hypothesised (and to be tested) endogenous \hat{BUST}_{t+1} variable and a vector X of other exogenous variables that may affect audit report type.

\hat{BUST}_{t+1} (business termination) is included as a test variable in the AR-model to test hypothesis 2 that financial performance affects the opinion of the auditor despite the absence of litigation and a closely held ownership structure. From the results of previous research it is clear that a firm's financial health is a significant determinant of audit report type. Financial health can be assessed through various financial measures and a broad variety of such measures has been tested in prior studies ((Mutchler, 1985, Dopuch et al., 1987; Bell & Tabor, 1991 and Chen & Church, 1992). The advantage of our approach is that financial health is introduced by one aggregate measure, namely the probability of business termination, and not by various alternative exogenous variables, where correlation problems between the various financial variables could occur.

The following control variables were included in the AR-model. The first control variable is BSIX, which is included to assess whether there is a difference in reporting behaviour between Big Six and Non Big Six audit firms in Belgium, for audits of non-listed firms in a non-litigious audit environment. In the US, Mutchler et al. (1996) found evidence that audit report type is influenced by the size of the audit firm. LNASSET is the second variable included to control for size (see also Dopuch et al. 1987; Chen and Church, 1992). Client size could affect the audit opinion process, as it is reasonable to expect that auditor reputation will be affected more when a wrong opinion is issued for large clients which usually have greater

visibility. However, the loss of a large client results in a larger decrease of the audit fees, which works as a disincentive of auditor independence. IC is the third variable included to control for the impact of the quality of the auditee's internal control environment as assessed by the auditor on the audit reporting decision. It is expected that a weak internal control system increases the chance of a non-clean opinion as the chance of material errors is much larger. INVTA (inventory) and RECTA (receivables) are introduced as they capture high risk situations. In previous studies the evidence of the significance of these two variables is mixed (Dopuch et al. 1987; Bell and Tabor, 1991). Finally, two more control variables, not included in previous studies, are included to cope with the specific features of the Belgian environment: STBF and ALARM. The variable STBF measures the ex post need for short term bank financing. Apart from employees and suppliers, banks are major users of the financial statements in Belgium. Compared to the other users of the financial statements, they have better skills to value the information provided. The auditor is also aware of the extensive use of financial statements by banks and it is expected that the threshold for issuing a non-clean opinion will be lower. Finally, ALARM, measures how close the auditee is to an "alarm" situation which is defined in the Belgian law as a situation where a firm's net worth is smaller than half the size of the firm's capital. If an alarm situation occurs, the auditor is required to add a paragraph to the audit report, where he expresses his opinion about the going concern of the audited firm⁵. As the auditor has to pay special attention to this possible going concern problem, it is reasonable to expect that an alarm situation influences the choice between a clean and a non-clean audit opinion⁶.

⁵ An 'alarm situation' occurs when a firm has serious financial problems due to cumulative losses. In this case, the Belgian company law prescribes various legal requirements, also the firm's general assembly is required to decide on the going concern of the firm and to make and submit a recovery plan. These requirements are imposed to protect stakeholders; it is clear that it is a clear signal that a company may have a serious going concern problem.

⁶ Note that unlike prior American research (Bell and Tabor, 1991; Dopuch et al. 1987), no market

Using the independent variables described above, the estimated logistic regression for AR_t is as follows:

$$AR_t = \beta_0 + \beta_1 \hat{BUST}_{t+1} + \beta_2 BSIX + \beta_3 LNASSET + \beta_4 IC + \beta_5 INVTA + \beta_6 RECTA + \beta_7 STBF + \beta_8 ALARM$$

Figure 1 : Overview of the variables in the AR model

	Variable	expected sign
<i>DEPENDENT VARIABLE:</i>		
AR_t	= Audit report type; 0 = unqualified opinion; 1 = qualified or adverse opinion	
<i>INDEPENDENT VARIABLES</i>		
<i>TEST VARIABLE</i>		
\hat{BUST}_{t+1}	Likelihood of business termination (endogenised)	+
<i>CONTROL VARIABLE</i>		
BSIX	= Auditor type; 0 = Non Big Six auditor; 1 = Big Six auditor	+
LNASSET	= Natural logarithm of total assets	-
IC	= Internal control assessment by auditor; 0 = good; 1 = problems	+
INVTA	= Ratio of inventory over total assets	+
RECTA	= Ratio of receivables over total assets	+
STBF	= Dummy variable to indicate whether short term bank financing is needed; 0 = No short term bank finance; 1 = Otherwise	+
ALARM	= Ratio of net worth over half of the capital	+

The Business Termination Equation

The business termination equation (see also eqs. 2 and 6) includes the hypothesised (and to be tested) endogenous \hat{AR}_t variable and a vector Y of other exogenous variables to control for other factors that affect business termination or survival.

variables were included in the study as we are analysing audit reporting in privately held companies.

The \hat{AR}_t variable represents the likelihood of a non-clean audit opinion and is a test variable for the self-fulfilling prophecy. Prior evidence on this topic is scarce and mixed. Hopwood et al. (1989) show that a going concern as well as a consistency qualification help to predict future bankruptcy. Citron and Taffler (1992) report no significant results for the self-fulfilling prophecy.

Since business termination or survival primarily depends on a company's financial performance, a number of financial variables that have proven to be good discriminators between surviving and non-surviving firms in past research, were chosen as control variables. As in many other studies (for a review see for example Dimitras et al., 1996), proxies to measure liquidity, solvency and profitability problems are introduced.

As a firm is more profitable, measured by ROE, the likelihood of business termination is expected to be smaller. Even if a firm faces losses, the existence of operating profits (measured by OPROFIT) results in a larger chance of survival.

EQFIN and STDEBT are introduced to measure solvency problems. If a firm realised profits in the past and did not distribute them as dividends, the amount of equity as well as the likelihood of survival increase. However, the composition of debt is also relevant to predict failure. The larger the amount of short term debt, the larger the amount of debt which expires in the current year and the larger the chance of repayment problems.

Finally, three liquidity measures EXPDEBT, NETCASH and LIQ are introduced. The variable NETCASH measures the difference between the cash available in the firm and the short term bank loans. If a firm has financial difficulties, the amount of net worth shrinks and more short term bank loans are needed to finance its operations, which increases the likelihood of business termination.

The existence of expired debt to privileged parties such as tax and social security authorities has proven to be an extremely relevant measure to estimate liquidity problems in Belgium (see also Ooghe and Verbaere 1982, Ooghe et al. 1994). As privileged parties have to be paid in any case if a company fails, firms only withhold from paying them when they do not have the necessary funds. Finally, LIQ measures the immediate liquidity in a firm. As it takes some time to turn inventories and receivables into cash, the chance of failure increases as they are a larger part of the current assets.

Given these independent variables, the BUST -equation can be written as:

$$\text{BUST} = \beta_0 + \beta_1 \hat{\text{AR}}_t + \beta_2 \text{ROE} + \beta_3 \text{OPROFIT} + \beta_4 \text{EQFIN} + \beta_5 \text{STDEBT} + \beta_6 \text{EXPDEBT} + \beta_7 \text{NETCASH} + \beta_8 \text{LIQ} + \mu_1$$

Figure 2: Overview of variables in the BUST equation

	Variable	Expected sign
<i>DEPENDENT VARIABLE:</i>		
BUST	= Business termination; 0 = survival; 1 = termination	
<i>INDEPENDENT VARIABLES:</i>		
<i>TEST VARIABLE</i>		
$\hat{\text{AR}}_t$	= Likelihood of non-clean audit opinion (endogenised)	+
<i>CONTROL VARIABLES</i>		
<i>PROFITABILITY</i>		
ROE	= Return on equity	-
OPROFIT	= measure of positive operating profit; 0 = operating loss; 1 = operating profit	-
<i>SOLVENCY</i>		
EQFIN	= Ratio of (reserves + retained earnings) / total assets	-
STDEBT	= Ratio of short term debt / total debt	+
<i>LIQUIDITY</i>		
EXPDEBT	= dummy variable indicating whether the firm has tax and social security liabilities which are overdue (expired). 0 = no expired tax and social security liabilities; 1 otherwise	+
NETCASH	= ratio of (cash + short term investments - short term bank debt)/total assets	-
LIQ	= Ratio of cash / current assets	-

5. SAMPLE DESCRIPTION AND EMPIRICAL ANALYSIS

5.1. SAMPLE SELECTION

From the CDrom⁷ of the Belgian National Bank we selected *all* Belgian companies which were mandated to disclose and file annual financial statements with the Belgian National Bank and which report the financial information using the full scheme⁸ *and* which had terminated their business operations due to bankruptcy, liquidation⁹ or merger with / take over by another company in 1995 or 1996. We found that 230 such Belgian companies had terminated their business in 1995 or 1996. We then selected a matched sample of 230 companies which had continued to exist in their current form in 1995 or 1996. The latter was matched with the sample of business terminations according to size, industry and year.

Due to data limitations, a match between surviving firms and firms that had terminated their activities, was preferred above a match of firms that received a clean opinion and those that received a qualified audit opinion. The financial status firms (surviving, liquidation, failure or merger) but not the audit opinion is available on tape. As the audit report has to be bought on paper from the National Bank, it is impossible to match on the basis of audit report type¹⁰.

For the total sample of 460 companies we then retrieved the financial statements of the year prior to business termination or firm survival and we

⁷ The CDROM of the National Bank contains the financial statements of all firms with limited liability in Belgium, which are all obliged to make their financial statements publicly available. However, the CDROM only contains the balance sheet, the profit and loss account and the notes to the financial statements. Neither the audit report nor the notes from the board of directors is available on tape. These have to be bought on paper from the National Bank.

⁸ The sample is limited to firms which report their financial statements using the full scheme as only this category has to appoint an auditor.

⁹ The voluntary liquidating firms are only added to the sample in the first year they go into liquidation. All firms, which demanded liquidation in the past, but where the liquidation is not closed yet, are not introduced in the sample.

¹⁰ The sample of Hopwood et al. (1989) is designed in a similar way, they also used a matched sample of bankrupt and surviving firms. No match is done on financial performance as the non-clean opinions do not only contain going concern opinions but also qualifications for gaap. Furthermore, it is the purpose of the study to test the

purchased the related audit report directly from the National Bank. We then identified for each company the audit report type it had received the year prior to business termination or firm survival. We finally deleted from the observations those companies which had received a disclaimer of opinion together with their match. Disclaimers of opinions are often given for reasons, which are not related to the financial performance, such as change of auditor. This resulted in a final sample of 220 business terminations and 220 survivors.

[Insert Table to be inserted about here]

Table 1 Panel A presents a breakdown of our total sample by audit report type and business survival status categories. While 88.64% of survivors received an unqualified opinion, 63.64% of business terminations also received an unqualified opinion. Note however that this percentage is very different according to the type of business termination. Only 21.15% of failed firms received an unqualified opinion the year before they failed, where this percentage is 66.13% for the group of firms which voluntarily went into liquidation and 83.02% for firms which merged or were taken over. Note further also that a much higher percentage of firms which had terminated their business (76.19%) received a qualified or adverse opinion than those which survived (23.81%). Also, the χ^2 statistic rejects the hypothesis of independence of audit report type and business survival status with a p-value of less than 1%.

Some financial characteristics of the sample are given in Table 1 Panel B. Merging firms resemble surviving firms better than liquidating and failing firms. Failing firms perform significantly worse than the three other groups with respect to all financial performance measures. The occurrence of positive operating profits is in decreasing order of likelihood: 0.7091 for surviving firms, 0.6792 for merging firms,

influence of financial performance on the type of the audit opinion.

0.3871 for liquidating firms, and 0.2500 for failing firms. Failing firms also have the worst solvency position, they are more likely to have expired debt towards privileged debt holders (tax authorities) (expdebt) and need more external bank financing to finance their daily activities (STBF). The data show that short term bank financing is even more likely to occur for the group of surviving firms (0.3045) than for the group of merging firms (0.2358), which illustrates that these two classes are very much alike. This is also confirmed by the liquidity measure, for which merging firms have the largest amount of cash to the current assets ratio. Finally, the expected ranking as to financial performance for the various categories of business terminations also exists with respect to the variable ALARM (net worth/half of capital). Due to losses, the size of net worth is smallest for the group of failing firms (1.2316) followed by liquidators (2.4063), than mergers (8.3171) and finally surviving firms (15.59).

5.2 DISCUSSION OF RESULTS

Simultaneity Test Results

The first purpose of the paper is to investigate whether an endogenous relationship exists between audit report type and business termination.

As already mentioned in the hypothesis section, it is not only the purpose to investigate this relationship for the for the total sample of all business terminations and their match of surviving firms (N = 440) but also for the various subsamples (liquidation, merger or failure).

We applied the Hausman specification test, and first estimated per (sub)sample the reduced form equations (3) and (4) to attain logit estimates for \hat{BUST}_{t+1} and \hat{AR}_t . We then estimated values for the resp. error terms v_1 and v_2 . Second, we estimated

equations (7) and (8). Table 2 presents the results of the simultaneity tests for all (sub)samples.

[Insert table 2 about here]

Inspection of table 2 shows that we found significant coefficients for both \hat{v}_1 ($v_1=0.0003$) and \hat{v}_2 ($v_2=0.0001$) for the total sample (N). This shows that an endogenous relationship exists between audit report type and business termination, which is supportive of hypothesis 1. Business termination is accelerated by the receipt of a non-clean opinion, which is determined by the financial performance of the firm itself.

Inspection of the results of the Hausman test for the various subsamples yields some interesting insights. For both the subsample of bankrupt firms and their match (N₁) and the subsample of liquidated firms and their match (N₂) a statistical significant correlation between $BUST_{t+1}$ and the error term \hat{v}_1 ($p=0.0008$ for N₁ and $p=0.0225$ for N₂) and AR_t and the error term \hat{v}_2 ($p=0.0013$ for N₁ and $p=0.0270$ for N₂) is found, which is supportive of our hypothesis 1 of simultaneity between audit report type and business survival status. Only for the subsample of firms which merged or were taken over and their match (N₃) no supportive evidence of simultaneity was found. Neither \hat{v}_1 ($p=0.6107$) nor \hat{v}_2 ($p=0.4097$) are significant. A plausible reason for the lack of endogeneity could be that a merger is often done for other reasons than weak financial performance, and that these other reasons do not result in a non-clean opinion from the auditor.

In the remainder of this study we will analyse the AR and BUST models exogenously for the subsample of merging firms, while for the total sample as well as for the subsamples of liquidating and bankrupt firms, the relationship between AR and BUST will be studied as an endogenous relationship.

Results of the AR model

Table 3 presents the results of the logistic regression on audit report type.

[Insert Table 3 about here] ¹¹

Panel A presents the estimates for the total sample of all companies in the study whereas panels B, C and D present the estimates for the respective subsamples of liquidating, bankrupt and merging firms. For the total sample and subsamples of liquidators and bankrupt firms where a simultaneous model is tested, the BUST variable is endogenised and represents the *likelihood* of respectively business termination, bankruptcy or liquidation, as assessed using the model in table 2. For the subsample of mergers where the audit report type model is an 'exogenous' model, the BUST variable represents the *actual merger / take over status* of the company in the subsequent year.

The business termination variable \hat{BUST}_{t+1} has a coefficient significantly different from zero ($p=0.0001$) for the total sample. This evidence is supportive of hypothesis 2 that the likelihood of business termination determines the chance of

¹¹ The coefficients are not biased by problems of too high correlation. The highest correlation for the total sample occurs between Oprofits and \hat{AR}_t which equals -0.51011. The highest correlation for subsample 1, the group of bankruptcy firms occurs between Oprofits and \hat{AR}_t reaches -0.56054. The highest correlation exists between BigSix and Inassets (-0.30177) for the group of liquidating firms. Finally, the largest correlation exists between Inasset and Bigsix for subsample 3, the group of merging firms (-0.30002).

receiving a non-clean opinion. Despite the absence of litigation, financial problems do trigger the issuance of a non-clean opinion in Belgium.

As to the significance of \hat{BUST}_{t+1} for the various subsamples, the results show that it influences audit report type for the subsample of liquidating (N_2 , $p=0.0015$) and bankrupt firms (N_1 , $p=0.0003$) but not for the subsample of merging firms (N_3 , $p=0.2902$). This means that a subsequent merger or take over does not affect the auditor's opinion on the financial statements of the year prior to the merger / take over. A viable explanation for this result is that firms that merge or are taken over are performing much like surviving firms. Planned mergers are often done for other reasons than weak financial performance of the target¹². This confirms hypothesis 3 that financial condition does not have the same influence on the issuance of a non-clean opinion across the various subsamples. In summary, the significance of \hat{BUST}_{t+1} shows that audit report type is influenced by factors similar to those which are significant in American studies, even though the environment is substantially different (non-litigious and closely held firms).

The significance of the control variables also differs across the alternative subsamples. The IC-variable is strongly significant (p -value < 1 %) for the subsample of merging firms ($p=0.0006$) but not for the total sample and the subsample of bankrupt and liquidated firms. Note that this variable only significantly affects the audit reporting decision in the subsample where the \hat{BUST}_{t+1} does *not* significantly affect that decision. This implies that for companies which are not such bad financial performers, a badly organised Internal Control system rather than financial variables triggers the issuance of a non-clean audit report.

¹² Also, out of this subsample of 212 firms only 32 firms received a non-clean audit report, whereas for the group of bankrupt and liquidated firms together (i.e. $N_1 + N_2$) 73 firms out of 228 firms received a non-clean audit report.

The evidence with respect to the impact of auditor type on audit report type is mixed. The variable BIGSIX has a significant positive coefficient for the subsample of liquidated firms ($p=0.0297$) but not for the other two subsamples, which shows that some quality differentiation occurs in the audit market. When firms are performing very badly, and subsequently go bankrupt, both Big Six and Non Big Six auditors are able to read such signals (competence) and will issue a non-clean audit report to protect themselves from future reputational damage (independence). As the univariate results show, the problems of liquidating firms are less severe than those of bankrupt firms. The statistical significance of auditor type in the subsample of liquidating firms may indicate that Big Six auditors are more likely to detect the less apparent problems (competence) or that they are more likely to report these potential problems when detected (independence). The insignificance of BSIX for the subsample of merging firms can be explained by the fact that merging firms exhibit financial performance similar to surviving firms.

The other two variables, which capture the specific Belgian situation, give different results than expected. The insignificance of the variable STBF for the total sample as well as for the alternative subsamples shows that the auditor is not influenced by the type of reader of the financial statements. Furthermore, The variable alarm is only significant for the subsamples of liquidators ($p= 0.0059$) and mergers ($p=0.074$) but not for the total sample and the subsample of failing firms. This could mean that financial problems are that obvious (high significance of \hat{BUST}_{t+1}) when firms are in an alarm situation such that an additional report on the going concern situation of the firm does not influence the opinion of the auditor, while it does when financial problems are not that obvious¹³.

¹³ When the results of the exogenous regressions are compared to the endogenised results, it is interesting to mention that the overall significance of the model increases in an endogenised

Unlike previous studies (Dopuch et al. , 1987; Chen & Church, 1992), the size of the auditee does not significantly influence the audit opinion for the total sample or the different subsamples. Finally , mixed results are found for the two variables INVTA and RECTA, which test the chance of material errors in the financial statements. The INVTA variable has a positive significant coefficient for the total sample ($p= 0.0416$) and the subsample of merging firms ($p=0.0147$), which confirms previous evidence (see, for example, Dopuch et al. 1987; Bell and Tabor,1991). A somehow counterintuitive result is the negative significant coefficient for INVTA in subsample of bankrupt firms ($p=0.0354$). A possible explanation could be that bankrupt firms, which are more likely to receive a non-clean report, reduce their inventories to cope with their liquidity problems. Finally, The importance of the receivables in the balance sheet does not influence the opinion of the auditor , neither for the total sample nor for the alternative subsamples.

Results of the BUST model

The BUST-model was tested to provide empirical evidence on the self-fulfilling prophecy. Table 4 Panel A gives the estimates for the total sample of all companies in the study (N), whereas panels B, C, and D exhibit the estimates for the respective subsamples of bankrupt firms (N_1), liquidators (N_2) and mergers (N_3). Note again that for the total sample and the subsample of bankrupt firms and liquidators a simultaneous equation model is tested where the AR variable is endogenised and represents the *likelihood* of a non-clean audit report. The likelihood of a non-clean

relationship. Some differences occur for the significance of the independent variables. The variables DALARM, STBF, IC are significant in the regression analysis for the total sample, which ignores the endogenised relationship. For the subsample of bankrupt firms the only difference is the significance of IC and for the subsample of liquidators no differences occur between the exogenous and endogenous relationship.

audit report is the logit estimate of the reduced form equation (3). We refer to table 2 for the estimation of the \hat{AR}_t variable for the total sample and subsamples of bankrupt and liquidating firms. For subsample of mergers the business termination model only contains exogenous variables and hence the AR variable represents the *actual* audit report type that has been issued. When an unqualified opinion is issued AR takes the value zero, whereas it takes the value one in case of a non-clean audit report.

For the total sample we found a significant result for the \hat{AR}_t variable, which confirms hypothesis 4. As for the audit report model, the probability of business termination is also estimated for the alternative subsamples.

Regression on BUST for the subsample of bankrupt firms and their match (N_1) yields a strong significant result for \hat{AR}_t ($p=0.0003$). This evidence is strongly supportive of the self-fulfilling prophecy that reception of a non-clean audit report triggers subsequent bankruptcy in Belgium and confirms the results found in previous studies (Hopwood et al., 1989). For the subsample of liquidating firms (N_2) the \hat{AR}_t variable is not a significant determinant of the probability of liquidation ($p=0.7256$), meaning that the self-fulfilling prophecy does not hold for this category of business termination and thus that liquidations are not triggered by a non-clean audit opinion. This makes sense as voluntary liquidation is within the power of owners. In our opinion, this result provides an interesting contribution to the literature as in previous studies (Hopwood et al., 1989 ; citron & taffler, 1992) the self-fulfilling prophecy is only tested for a sample of bankrupt firms. FINALLY, estimation of the *exogenous* BUST model for the subsample of firms that merged or were taken over and their match yielded no significant results ($p=0.3901$). This

means that there is no evidence of the self-fulfilling prophecy for mergers. The results for the alternative subsamples confirm hypothesis 5.

Investigation of the significance of the control variables in the BUST-model reveals differences across mergers, liquidators and bankrupt firms.

Financial variables, which measure a firm's liquidity status, i.e. EXPDEBT and NET CASH, are only significant when estimating the probability of bankruptcy. As in prior research on bankruptcy prediction in Belgium (See also Ooghe and Verbaere, 1982, and Ooghe et al., 1991), firms fail to pay privileged debtholders when financial problems are severe ($p=0.0619$). The significance of the NETCASH variable ($p=0.0956$) shows that bankrupt firms use more bank debt to finance their daily activities, which certainly increases financial risk. The variable liq is not significant ($p=0.3925$) for the sample of bankrupt firms. Note that the above liquidity variables are not significant for the other two subsamples nor for the total sample.

The results show that the financial variables that significantly affect liquidation are different than those that affect bankruptcy. Solvency and profitability but not liquidity affect the likelihood of voluntary liquidation. As expected, firms with a better return on equity ($p=0.0429$) and larger retained earnings ($p=0.0795$) have a larger chance to survive than to liquidate. A closer look at both measures shows that the composition of debt and profits also provides relevant information. If the daily activities of the firm are profitable ($p=0.0053$) and the share of short term debt decreases ($p=0.077$), the larger the chance of survival. These variables are however not significant for the other subsamples or the total sample. These results show that liquidity problems is the dominant factor for bankruptcy while profitability and

solvency without liquidity problems are responsible for liquidation. finally, mergers do not differ from survivors ¹⁴.

5. CONCLUSIONS

The Belgian capital market and audit environment differs significantly from the US. Notable differences are that the vast majority of firms is closely held, the audit of the financial statements is mandatory for many non-listed firms, and that the audit environment is virtually non-litigious. Given this different institutional environment, it is investigated whether similar financial characteristics as in the US influence the auditor's reporting decision and whether the audit report has an economic role and information value for the various stakeholders of the firm. The information value of the audit report is not only studied for the failure but also for liquidation and merger.

The study provides a contribution to the literature as the above two relationships are investigated by use of a simultaneous equations approach. The results indeed show that an endogenous relationship exists between audit report type and failure or voluntary liquidation, but not between audit report type and merger or take over. A possible explanation is that mergers are done for reasons other than weak financial performance.

Given this endogenous relationship, the likelihood of business termination (liquidation or failure) is the main determinant of the audit report type. These results indicate that the financial determinants of audit report choice are similar to those in litigious environments and for listed firms. Another interesting result is that the quality of the internal control system as assessed and reported by the auditor

¹⁴ When the results of the exogenous model are compared to those of the endogenised model, only the variable Oprofits ($p=0.0033$) becomes also significant in the exogenous model. The same holds for the sample of bankrupt firms ($p=0.0766$). For the subsample of liquidating firms, the variables, which measure the solvency position, become insignificant in an exogenous relationship. Finally, no differences occur for the group of mergers.

influences the audit report decision only in case of less severe financial difficulties, that is for our subsample of merging firms and their match.

Finally, evidence is also provided that reporting differences exist between Big Six and non-Big Six firms in Belgium, but only in those cases where the financial difficulties are not that obvious, namely for liquidating firms. When a firm's financial problems are more straight forward, and subsequent failure is highly probable, no evidence of audit reporting differences between Big Six and non Big Six firms is found.

Some interesting results are also found with respect to the self-fulfilling prophecy. We find evidence supportive of the self-fulfilling prophecy of failure, but not of liquidation and merger/take over. This implies that a non-clean audit opinion accelerates business termination when stakeholders other than the owners (such as banks and suppliers) have power to initiate business termination, that is in case of bankruptcy (failure). On the contrary, when owners have decision power on the timing of business termination, as is the case with a merger and voluntary liquidation, a non-clean audit report has no impact.

In our opinion it would be worth while to replicate various aspects of our study on American data, consisting of publicly held firms with diffuse ownership which are operating in a litigious environment. Questions which could be raised are: 1. whether reporting differences between Big Six and non Big Six firms can also be observed for subsamples of bankrupt firms versus liquidating firms; 2. Whether the self-fulfilling prophecy holds when a simultaneous models is adopted, and whether different results as to this prophecy can be observed between bankruptcy, liquidation and merger, as found in this study.

REFERENCES

- Bailey, W. T. 1982. An Appraisal of Research Designs Used to Investigate the Information Content of Audit Reports. *The Accounting Review*. January 1982. Pp. 141-46.
- Beasley, M. S., 1996, An empirical analysis of the relation between the board of director composition and financial statement fraud, *The Accounting Review*, 4, 443-466.
- Bell, T. and R. Tabor, 1991, Empirical analysis of audit uncertainty qualifications, *Journal of Accounting Research*, 29 (Autumn), 350-370.
- Beneish M.D., Press E., 1993, The costs of technical violation of accounting based covenants, *The Accounting Review*, 68, 233-257.
- Citron D.B. and R.J.Taffler, 1992, The audit report under going concern uncertainties: an empirical analysis, *Accounting and Business Research*, 22-88 , 337-345.
- Chen, K. C.W. and B.K.Church, 1992, Default on debt obligations and the issuance of going concern opinions, *Auditing:a journal of practice and theory*, 11, 30-49.
- Chewning G., K. Pany and S. Wheeler, 1989, Audit reporting decision involving accounting principle changes, some evidence on materiality thresholds, *Journal of Accounting Research*, 78-96.
- Defond M. Jiambalvo J., 1994, Debt covenant violation and manipulation of accruals, *Journal of accounting and economics*, 17, 145-176.
- Dechow P.M., Sloan R.G., Sweeney A.P., 1996, Causes and consequences of earnings manipulation: an analysis of firms subject to enforcement actions by the SEC, *Contemporary Accounting Research*, 13, 1-36.
- Dimitras, A. I., S. H. Zanakis and C. Zopounidis (1996) 'A survey of business failures with an emphasis on prediction methods and industrial applications', *European Journal of Operational Research*, pp. 487-513
- Dopuch N. , R.W. Holthausen, R.W. Leftwich, 1987, Predicting audit qualifications with financial and market variables, *The Accounting Review*, 32, 431-453.
- Guajarti, D. 1995 Basic econometrics, McGrawHill NY, 838 pp.
- Hopwood William McKeon James and Mutchler Jane, 1989, A test of the incremental explanatory power of opinions qualified for consistency and uncertainty, *The Accounting Review*, 34 , 28-48.
- Koh H.C. , 1991, Model Predictions and auditor assessments of going concern status, *Accounting and Business Research*, 21, 331-338.
- LaSalle R. and Anandarajan A. and A.F.Miller, 1996, Going concern uncertainties: disclaimer of opinion versus unqualified opinion with modified wording, *Auditing : A Journal of practice and theory*, 15, 29-48.

LaSalle R. and Anandarajan A., 1996, Auditors' views on the type of the audit report issued to entities with going concern uncertainties, *Accounting Horizons*, 10, 33-50.

Menon K. and K.B.Schwartz, 1987, An empirical investigation of audit qualification decisions in the presence of going concern uncertainties, *Contemporary Accounting Research*, 3, 302-315.

Mutchler J.F., 1985, A multivariate analysis of the auditor's going- concern opinion decision, *Journal of Accounting Research*, 23, 668-682.

Mutchler J.F. W.Hopwood ,and J.C. McKeow, 1996, An explanatory model of audit opinion decisions on bankrupt companies, Working paper .

Nogler George E., 1995, The resolution of auditor going concern opinions, *Auditing A journal of practice and theory*, 14, 54-73.

O'Clock P. and K. Devine, 1995, An investigation of framing and firm size on the auditor's going concern decision, *Accounting and Business Research*, 25, 197-207.

Ooghe H. , Joos P. , De Bourdeaudhuij C. Financial distress models in Belgium: the results of a decade of empirical research, *The International Journal of Accounting*, 1994

Ooghe H. & E. Verbaere, Predicting business failure on the basis of accounting data: the Belgian experience, *The international Journal of Accounting*, Spring 1985

Table 1: Sample Description

Panel A: Audit Report Type and Business Survival Status

Audit Report Type:	Business Survival Status:				Total
	Survivors	Failure	Liquidation	Merger/Take Over	
Unqualified Opinion	195 (88,64%)	[58,21%] 11 (21,15%)	[3,28%] 41 (66,13%)	[12,24%] 88 (83,02%)	335
		All business terminations:		140 (63,64%)	[41,79%]
Qualified and Adverse Opinion	25 (11,36%)	[23,81%] 41 (78,85%)	[39,05%] 21 (33,87%)	[20,00%] 18 (16,98%)	105
		All business terminations:		80 (36,36%)	[76,19%]
Total	220	52	62	106	440
		All business terminations:		220	
Chi-square (p-value) = 111,6 (0,001)					
Note: Numbers within parentheses are column percentages. Numbers within brackets are row percentages					

Panel B: Financial characteristics of the firms

(means and standard deviation)

	Survivors		Failure		Liquidation		Merger/Take Over	
	mean	stdev	mean	stdev	mean	stdv	mean	stdv
Lnasset	5,034	0,7803	5,2567	0,4616	4,9476	0,889	5,0084	0,8362
Existence of operating profits	0,7091	0,455	0,25	0,4372	0,3871	0,491	0,6792	0,469
Expdebt	0,059	0,236	0,3654	0,4862	0,0484	0,2163	0,0472	0,213
STBF	0,3045	0,461	0,8653	0,3446	0,3548	0,4823	0,2358	0,4265
Liq	0,117	0,178	0,0583	0,0528	0,1228	0,233	0,1505	0,244
Dalarm	15,59	114,2	1,2316	18,31	2,4063	12,078	8,3171	27,486

lnasset=natural logarithm of the total assets

existence of operating profits= a dummy, which equals 1 when the operating profits are positive

expdebt= a dummy, which equals 1 when the firm has expired debt to privileged stakeholders (employees, tax authorities), zero otherwise;

STBF=a dummy, which equals 1 when (cash +short term investments in financial assets-short term bank financing)<0; zero otherwise;

liq= cash/current assets;

Dalarm= net worth/(1/2 capital).

TABLE 2: HAUSMAN SPECIFICATION TEST
THE AUDIT OPINION MODEL

Step 1: Reduced form estimation of Ar_i

AR_i : Logit estimates of eq. 3

Variables	Total Sample All Firms N = 440		Bankruptcies And match N ₁ = 104		Liquidations and match N ₂ = 124		Mergers/TO and match N ₃ = 212	
	COEFFICIENT	SIGNIFICANCE	COEFFICIENT	SIGNIFICANCE	COEFFICIENT	SIGNIFICANCE	COEFFICIENT	SIGNIFICANCE
INTERCEPT	-2,8037	0.0324	-3,2419	0.4579	-4,8375	0.1070	-0,7451	0.7822
BIGSIX	-0,3281	0.2722	-1,6884	0.0342	0,226	0.7526	0,1405	0.8165
LNASSETS	0,4205	0.0493	0,9599	0.2140	0,1996	0.6472	-0,2479	0.5761
IC	0,8716	0.0216	1,4106	0.0638	-2,0727	0.2541	3,3435	0.0002
INVTA	0,6283	0.4576	-2,9371	0.0947	1,036	0.5427	6,2846	0.0006
RECTA	1,3059	0.0143	1,5944	0.1903	-1,7103	0.2067	2,6407	0.0289
STBF	0,6918	0.0438	2,1293	0.0165	0,5213	0.5452	0,0251	0.9735
ALARM	-0,007	0.4260	0,0001	0.9697	-0,3154	0.0180	-0,021	0.4022
ROE	-0,00269	0.0008	-0,00189	0.2347	-0,0063	0.0332	-0,00387	0.0016
OPROFIT	0,0778	0.0002	2,2181	0.0027	0,1468	0.8383	-0,6448	0.2630
EQFIN	-0,00887	0.0005	-0,000459	0.9672	-0,0137	0.0831	-0,00754	0.0576
STDEBT	-1,4691	0.0015	-3,7931	0.0088	3,5279	0.0454	-3,0739	0.0024
EXPDEBT	1,4227	0.0006	0,7183	0.3416	0,4263	0.8066	3,1691	0.0001
NETCASH	-0,0047	0.9932	1,0453	0.5534	0,5811	0.6227	-1,3863	0.2483
LIQ	0,7359	0.3024	10,9602	0.0667	-0,0606	0.9668	3,4256	0.0100

Step 2: Results of estimation of eqs 7

	Total Sample All Firms N = 440		Bankruptcies And match N ₁ = 104		Liquidations and match N ₂ = 124		Mergers/TO and match N ₃ = 212	
	COEFFICIENT	SIGNIFICANCE	COEFFICIENT	SIGNIFICANCE	COEFFICIENT	SIGNIFICANCE	COEFFICIENT	SIGNIFICANCE
Intercept	-4.9633	0.0001	-4.7038	0.2569	-3.8238	0.0633	-1.0125	0.5292
\hat{BUST}_{t+1}	+6.5951	0.0001	+3.9879	0.0008	+5.0035	0.0013	+3.5800	0.2002
\hat{v}_2	+1.0848	0.0001	+3.1864	0.0013	+1.8057	0.0270	+0.3809	0.4097
BIGSIX	-0.2666	0.3373	-1.1648	0.1841	+2.0021	0.0166	-0.7709	0.2571
LNASSETS	+0.0434	0.8070	+0.6327	0.4047	-0.0401	0.9126	-0.5055	0.0833
IC	+0.4427	0.2359	+1.4347	0.0609	-1.9657	0.1580	+1.9038	0.0067
INVTA	+1.7070	0.0376	-4.2558	0.0159	+1.0518	0.5626	+3.9725	0.0085
RECTA	-0.2422	0.5826	+0.3021	0.7961	-1.2203	0.2118	-0.0743	0.9217
STBF	+0.0454	0.8778	-0.5861	0.5631	+0.1634	0.8309	+0.4373	0.4068
ALARM	-0.0137	0.1589	-0.00114	0.7848	-0.2836	0.0055	-0.0660	0.0830
p-value of the model		0.0001		0.0001		0.0001		0.0001

THE BUSINESS TERMINATION MODEL

BUST_{t+1}: Logit estimates of eq. 4

	Total Sample		Bankruptcies and match		Liquidations and match		Mergers/TO and match	
	All Firms N = 440		N ₁ = 104		N ₂ = 124		N ₃ = 212	
	COEFFICIENT	SIGNIFICANCE	COEFFICIENT	SIGNIFICANCE	COEFFICIENT	SIGNIFICANCE	COEFFICIENT	SIGNIFICANCE
INTERCEPT	-1,421	0.1370	-15,6706	0.0183	-1,9242	0.3047	-2,0207	0.1294
BIGSIX	-0,0221	0.9188	-2,6008	0.0357	-1,3329	0.0103	0,8087	0.0085
LNASSETS	0,2841	0.0639	2,732	0.0205	0,3034	0.3089	0,2593	0.2211
IC	0,3148	0.3351	0,4124	0.6621	0,5438	0.4177	0,5836	0.3118
INVTA	-0,8591	0.1924	-2,1156	0.2785	-0,1124	0.9360	-0,8458	0.4314
RECTA	0,8984	0.0237	2,7726	0.0531	0,1613	0.8563	0,8098	0.1548
STBF	0,5777	0.0314	5,759	0.0004	0,5157	0.3806	-0,1874	0.6473
ALARM	-0,00161	0.4608	0,00048	0.8858	0,00031	0.9885	0,00242	0.6998
ROE	0,00007	0.5361	0,00019	0.6872	-0,00695	0.0595	-0,000518	0.5456
OPROFIT	-0,9234	0.0001	-4,1184	0.0007	-1,2826	0.0051	0,0285	0.9325
EQFIN	-0,00193	0.3296	-0,00838	0.4884	-0,00901	0.0729	-0,000514	0.5609
STDEBT	-0,118	0.7589	-2,0997	0.1069	1,6982	0.0723	-0,1954	0.7229
EXPDEBT	0,6327	0.0971	3,4441	0.0074	-0,1093	0.9155	-0,5267	0.3832
NETCASH	0,4563	0.2785	2,0277	0.3794	-0,1074	0.8958	0,3899	0.5197
LIQ	0,4802	0.3785	19,8349	0.0570	-1,0885	0.3204	1,3408	0.0792

Step 2: Results of estimation of eqs 8

	Total Sample All Firms N = 440	Bankruptcies and match N ₁ = 104	Liquidations and match N ₂ = 124	Mergers/TO and match N ₃ = 212				
Intercept	-0.9331	0.0857	-5.3127	0.0272	-0.00900	0.9944	-0.2659	0.6282
\hat{AR}_t	+3.0128	0.0003	+7.3308	0.0005	+1.2046	0.3620	+0.6563	0.4321
\hat{v}_t	+1.0550	0.0003	2.9592	0.0008	+1.5246	0.0225	0.2665	0.6107
ROE	+0.00021	0.5455	+0.00148	0.4816	-0.00811	0.0517	0.0001	0.9180
OPROFIT	-0.2876	0.2728	-0.1343	0.8945	-1.1219	0.0084	0.1065	0.7419
EQFIN	-0.000032	0.9500	-0.00669	0.5422	-0.00364	0.4752	-0.000436	0.5870
STDEBT	+0.5097	0.2101	+2.2129	0.2336	1.1333	0.1861	0.00174	0.9972
EXPDEBT	-0.1696	0.7106	2.8090	0.0247	+0.3649	0.7207	-0.7962	0.2304
NETCASH	+0.2909	0.4129	-3.3259	0.0559	-0.6542	0.2816	+0.5729	0.2263
LIQ	0.0769	0.8783	-6.5547	0.2967	-0.8857	0.3059	+0.6381	0.3535
p-value		0.0001		0.0001		0.0002		0.7533

TABLE 3: SIMULTANEOUS EQUATION LOGIT ESTIMATES OF THE AUDIT REPORT MODEL

Panel A: Results of endogenised audit report type model based on total sample (N)

Variable	Parameter Estimate	p-value
Dependent variable: AR		
INTERCEPT	-4,8308	0,0001 ***
^	6,4126	0,0001 ***
BUST _{t+1}		
BSIX	-0,304	0,2623
LNASSET	0,0496	0,7755
IC	0,3883	0,2829
INVTA	1,6254	0,0416 **
RECTA	-0,245	0,5771
STBF	-0,014	0,16
ALARM	0,093	0,7434
	N-non clean	105
	N-total	440
*** Significant at the 1% level; ** Significant at the 5% level;		
* Significant at the 10% level		
	p=value	=0.0001
	-2log intercept only	483.563
	-2log intercept and covariates	397.159

R²

The Dependent variable, AR, takes the value 1 if the auditee received a qualified or adverse opinion and 0 if it received an unqualified opinion.

Panel B: Results of endogenised audit report type model for sample of bankrupt firms

and match of survivors (N1)

Variable	Parameter Estimate	p-value
Dependent variable: AR		
INTERCEPT	-4,1839	0,249
^	3,6607	0,0003 ***
BUST _{t+1}		
BSIX	-0,8659	0,2626
LNASSET	0,5391	0,4226
IC	1,1436	0,1055 *
INVTA	-3,3576	0,0354 ***
RECTA	0,2905	0,7795
STBF	-0,000993	0,7622
ALARM	-0,4637	0,5716
	N-non clean	47
	N-total	104
	p=value	=0.0001
	-2log intercept only	143.212
	-2log intercept and covariates	90.767

R²

Panel C: Results of endogenised audit report type model for sample of liquidated firms and match of survivors (N2)

<i>Variable</i>	<i>Parameter Estimate</i>	<i>p-value</i>
Dependent variable: AR		
INTERCEPT	-3,7737	0,0658 *
^	4,6555	0,0015 ***
BUST _{t+1}		
BSIX	1,6549	0,0297 **
LNASSET	0,0543	0,8793
IC	-1,9465	0,1441
INVTA	1,1664	0,4752
RECTA	-1,2446	0,2057
STBF	0,0248	0,9727
ALARM	-0,2769	0,0059 ***
	N-non clean	26
	N-total	124
	p=value	=0.0001
	-2log intercept only	127.355
	-2log intercept and covariates	80.926
R ²		

Panel D: Results of 'exogenous' audit report type model for sample of firms that merged/taken over and match of survivors (N3)

<i>Variable</i>	<i>Parameter Estimate</i>	<i>p-value</i>
Dependent variable: AR		
INTERCEPT	-0,2369	0,8678
BUST	0,4777	0,2902
BSIX	-0,2288	0,6327
LNASSET	-0,3998	0,1440
IC	2,2062	0,0006 ***
INVTA	3,1288	0,0147 **
RECTA	0,1667	0,8188
STBF	0,1687	0,7167
ALARM	-0,0679	0,0740 *
	N-non clean	32
	N-total	212
	p=value	=0.0001
	-2log intercept only	179.921
	-2log intercept and covariates	148.393
R ²		

TABLE 4: SIMULTANEOUS EQUATION LOGIT ESTIMATES OF THE BUSINESS TERMINATION MODEL

Panel A: Results of endogenised business termination model based on total sample (N)

<i>Variable</i>	<i>Parameter Estimate</i>	<i>p-value</i>
Dependent variable: BUST		
INTERCEPT	-0,957	0,0744
^	2,9963	0,0003 ***
AR t		
ROE	0,00022	0,5562
OPROFIT	-0,2627	0,3083
EQFIN	-0,000046	0,9302
STDEBT	0,511	0,2009
EXPDEBT	-0,1762	0,6953
NETCASH	0,308	0,3817
LIQ	0,08	0,872
	N-business terminations	220
	N-total	440

*** Significant at the 1% level; ** Significant at the 5% level;

* Significant at the 10% level

The Dependent variable, BUST, takes the value 1 if the firm terminated operations and 0 if it continued to exist

Panel B: Results of endogenised business termination model for sample of bankrupt firms and match of survivors (N1)

<i>Variable</i>	<i>Parameter Estimate</i>	<i>p-value</i>
Dependent variable: BUST		
INTERCEPT	-4,2177	0,0333 **
^	6,1442	0,0003 ***
AR t		
ROE	0,0011	0,5409
OPROFIT	0,00398	0,9964
EQFIN	0,00771	0,4446
STDEBT	1,6023	0,3052
EXPDEBT	1,9111	0,0619 *
NETCASH	-2,6292	0,0956 *
LIQ	-4,5547	0,3925
	N-Bankruptcies	52
	N-total	104

Panel C: Results of endogenised business termination model for sample of liquidated firms and match of survivors (N2)

<i>Variable</i>	<i>Parameter Estimate</i>	<i>p-value</i>
Dependent variable: BUST		
INTERCEPT	0,0227	0,986
$\hat{A}R_t$	-0,3992	0,7256
ROE	-0,00705	0,0429 **
OPROFIT	-1,1606	0,0053 ***
EQFIN	-0,00797	0,0795 *
STDEBT	1,4717	0,077 *
EXPDEBT	0,633	0,5124
NETCASH	-0,657	0,2514
LIQ	-0,9808	0,2676
	N-Liquidations	62
	N-total	124

Panel D: Results of 'exogenous' business termination model for sample of firms that merged/taken over and match of survivors (N3)

<i>Variable</i>	<i>Parameter Estimate</i>	<i>p-value</i>
Dependent variable: BUST		
INTERCEPT	-0,1889	0,7125
AR	0,3785	0,3901
ROE	-0,000051	0,9525
OPROFIT	0,0833	0,7932
EQFIN	-0,000493	0,5617
STDEBT	-0,0343	0,9444
EXPDEBT	-0,695	0,2548
NETCASH	0,5337	0,2485
LIQ	0,6746	0,3222
	N-Mergers/Take overs	106
	N-total	212

