Vlerick Leuven Gent Management School
the Autonomous Management School of Ghent University and Katholieke Universiteit Leuven

Vlerick Leuven Gent Working Paper Series 2009/21

FINANCIAL DISTRESS AND FIRM EXIT: DETERMINANTS OF INVOLUNTARY EXITS, VOLUNTARY LIQUIDATIONS AND RESTRUCTURING EXITS

SOFIE BALCAEN
JOZEFIEN BUYZE
HUBERT OOGHE

D/2009/6482/24

FINANCIAL DISTRESS AND FIRM EXIT: DETERMINANTS OF INVOLUNTARY EXITS, VOLUNTARY LIQUIDATIONS AND RESTRUCTURING EXITS

SOFIE BALCAEN

Ghent University

JOZEFIEN BUYZE

Ghent University

HUBERT OOGHE

Vlerick Leuven Gent Management School

[1] The authors would like to thank Antoon Lenaert (National Bank of Belgium), Cécile Buydens and Guy Delvaux (Balanscentrale of the National Bank of Belgium) for their helpful cooperation with Sofie Balcaen's doctoral research and provision of the requisite data. The authors also recognize the indispensable contributions of Sophie Manigart (Universiteit Ghent), Charles Van Wymeersch (Facultés Universitaires Notre-Dame de la Paix, Namur), Didier Van Caillie (Université de Liège) and Erkki Laitinen, and gratefully acknowledge the financial assistance of the Ghent University Special Research Fund.

Contact:

Hubert Ooghe

Vlerick Leuven Gent Management School

Tel: +32 09 210 97 86

Fax: +32 09 210 97 00

Email: Hubert.Ooghe@vlerick.be

ABSTRACT

This paper provides new insights on the determinants of firm exit after distress. Using nested logit models and a sample of 6118 distress-related exits from Belgium, we analyze the impacts of available and potential slack and the relative efficiency of voluntary liquidation, compared to acquisition and merger, on the type of exit. It appears essential to examine the type of exit outcome as a two-stage process. The first stage considers the fundamental distinction between voluntary and involuntary exit, the latter being the least favorable and most avoided exit strategy. In this situation, high levels of available and potential slack resources, as reflected by large cash holdings, strong group relations and low current leverage, increase the probability of voluntary exit. High slack allows distressed firms to avoid bankruptcy and decide on their exit process. In the second stage, and provided that exit is voluntary, voluntary liquidation is compared to restructuring exit (acquisition, merger or split). In this stage, a higher relative efficiency of voluntary liquidation compared to a restructuring exit, as indicated by absence of group relations, small firm size, high secured debt level and large cash holdings, increase the likelihood of voluntary liquidation and reduce the probability of a restructuring exit.

1. INTRODUCTION

As a result of a situation of economic distress, firms may eventually exit. Besides entering an involuntary exit procedure, a distressed firm has other exit options. For example, it may choose to exit in a more efficient and orderly way through voluntary liquidation. Alternatively, it may opt for acquisition by another firm (Astebro and Winter, 2001) or a merger. Bulow and Shoven (1978) and Shrieves and Stevens (1979) suggest that bankruptcy avoidance may motivate mergers. Especially during the past decade, acquisitions and mergers have appeared as more favorable exit alternatives in many continental European countries. An intriguing question in this respect concerns the reasons why some firms exit involuntarily (by bankruptcy), while other firms exit by a voluntary liquidation or by an acquisition or merger. Given that the eventual exit type may have important implications for a distressed firm's stakeholders, including creditors, shareholders, lenders, employees, customers, suppliers, related firms, government, and the economy as a whole, this research question is important. Moreover, in the context of the current global economic downturn, this question is both timely and relevant. However, until now, surprisingly little is known about the determinants of a distressed firm's exit type.

There are several reasons for this lack of insight into the determinants of the type of distress-related exit. First, most academic studies on corporate failure and business failure paths simplify the concept of business failure to bankruptcy exit alone and do not look at the alternative forms of exit available to firms. Even the empirical studies that have emerged with the recent resurgence of interest in studies on corporate failure strongly focus on involuntary exit in the form of bankruptcy. These studies are flawed in that they ignore the fact that voluntary exit types, such as voluntary liquidation, acquisition and merger, are alternatives to bankruptcy. A further issue that is largely ignored in these studies is that not all bankruptcies are related to failures. Although a bankruptcy declaration is often based on poor liquidity and/or solvency, some bankruptcies are simply the result of a strategic decision not preceded by distress. Financially stable firms may file for a bankruptcy because they simply want to rid themselves of their debts and restart business activity with a clean sheet. Alternatively, some bankruptcies result from sudden and unexpected events, such as a natural disaster. The implicit inclusion of 'sudden bankruptcies', reflecting strategic decisions (Hill et al., 1996), and 'accidental bankruptcies', resulting from an unexpected event (Davis and Huang, 2004) may result in biased conclusions about the determinants of failure paths.

Furthermore, most empirical studies about corporate failure and business failure paths are based on small samples of large (listed) firms and, therefore, have a rather low external validity. For example, Laitinen (1992), Laitinen (1991, 1993, 1994), Luoma and Laitinen (1991), and Van Wymeersch and Wolfs (1996) sample only 20, 40, 36 and 136 failing firms, respectively. Together, these three shortcomings are associated with a lack of insight into the broader phenomenon of business failure. Second, prior studies on distress-related exit mostly have a limited scope. An important limitation is that they do not consider multiple exit types and often compare only two exit alternatives. Also, they mostly are based on small samples and only observe the distressed firms close to exit, ignoring information from a broad pre-exit window (Pastena and Ruland, 1986; Peel and Wilson, 1989; Kanatas and Qi, 2004).

In this study, we extend the narrow concept of business failure, which is strongly associated with involuntary exit (bankruptcy), with all possible types of exit as an outcome of distress. We explore the concept of distress-related exit, considering multiple exit types, and attempt to identify the determinants of the exit type by investigating several firm characteristics at the first signs of distress and at the time of exit. With this multistate approach to distress-related exit, we fill an important gap in the existing literature on business failure and firm exit. We distinguish between three main exit types: (1) involuntary exit, following bankruptcy, compulsory liquidation or reorganization procedure; (2) voluntary liquidation; and (3) restructuring exit, being an acquisition, merger or split. In this study, the term ‘restructuring exit’ is not related to reorganization or internal firm restructurings, but it rather indicates that the eventual exit results from an external, legal restructuring, such as a merger or an acquisition. To account for the fundamental distinction between involuntary and voluntary exits, we employ a two-stage approach. In the first stage, voluntary exit is an alternative outcome to involuntary exit; in the second stage, and providing exit is voluntary, voluntary liquidation is compared to a restructuring exit. The reason for this fundamental partition into involuntary and voluntary exits is that an involuntary exit is clearly the most unfavorable exit option. In a situation of distress, managers will try to avoid involuntary exit because, unlike the voluntary exit types, it involves the greater destruction of economic value and provides only partial compensation for stakeholders. As a result, an involuntary exit is likely to be driven by different determinants than the voluntary exit types. Provided that a distressed firm is able to avoid involuntary exit, it can voluntarily decide about the desired exit mode, being a voluntary liquidation or a restructuring exit in the form of an acquisition or merger. In this second stage, it is not clear which exit type is most favourable.

In both situations, external stakeholders recover most of their contributions. By considering firm exit as a choice, our focus on organizational mortality complements the existing literature on business failure, where exit is mostly seen as being enforced by the firm's environment and hostile to the firm.

Guided by organization theory on slack resources and literature about strategic management, this study investigates how the level of slack resources and the relative efficiency of the voluntary exit systems at the start and at the end of the exit process determine the exit type as an outcome of distress. We argue that the available and potential slack resources contribute to avoiding forced exit and, hence, determine the probability of involuntary exit compared to voluntary exit. Further, we argue that the relative efficiency of voluntary liquidation as compared to a restructuring exit, explains the type of voluntary exit, being a voluntary liquidation or a restructuring exit. These research questions are investigated using a large Belgian sample of 6,118 distress-related exits of nonstarting firms, including bankruptcies, voluntary liquidations and restructuring exits (i.e. acquisitions and mergers). This sample mainly includes small and medium-sized, privately held firms. All firms are more mature, as we exclude starting firms whose exit decisions may be very different from those of mature firms. First, we show that high available and potential slack resources decrease the probability of an involuntary exit, while the relative efficiency of voluntary liquidation compared to a restructuring exit determines the type of voluntary exit.

By providing empirical evidence on the determinants of the exit type of firms that have experienced a situation of distress, this paper contributes to the literature about the process of business failure and firm exit. More specifically, the simultaneous analysis of all possible exits as an outcome of distress—including bankruptcy, voluntary liquidation and different types of restructuring exit—fills a gap in the existing literature and allows new theoretical and practical insights into which exit strategies are employed. Moreover, the two-stage specification of the eventual exit outcome allows us to understand better the effects of diverse explanatory factors and the dynamics that play in the exit process. Further, by demonstrating the effect of slack resources and the relative efficiency of voluntary liquidation on the type of exit after distress, our study contributes to the literature on slack resources and to the strategic management literature. Additional contributions of this paper to the existing literature are fourfold. First, the richness of our dataset allows analysis of the effects of available and potential slack resources and the relative efficiency of voluntary liquidation and restructuring exit as exit systems on the type of exit path.

Second, the analysis of a large sample of distress-related exits in Belgium including a substantial number of small and privately owned unlisted firms—which have been largely neglected in previous studies about firm exit and business failure—makes it possible to draw conclusions that can be more readily generalized. As the sample includes all exits from the period 1998-2000 and does not result from further selection criteria, selection biases are minimized. Third, the focus on the exit of non-starting more mature firms, which act differently compared to new or starting firms confronted with distress, allows conclusions to be generated for categories of exits that have until now remained largely unexplored. Finally, by considering historical firm information from a broad pre-exit window up to 10 years prior to exit, this study adds significantly to the existing business failure studies, which are often limited to the investigation of firm information close to exit.

The remainder of the study is structured as follows. Section 2 gives an overview of the literature on distress-related exit. It also briefly summarizes the various exit opportunities for distressed firms and explains the need for a two-stage modeling approach. Section 3 formulates hypotheses about the effect of slack resources and the relative efficiency of voluntary liquidation versus restructuring exit on the exit type. Section 4 elaborates on the sample of distress-related exits, the nested logit methodolgy that is used to identify the exit type determinants and the variables. Section 5 reports the results of the nested logit models and section 6 summarizes the most important conclusions and gives suggestions for further research.

2. DISTRESS-RELATED EXIT AND EXIT TYPES

2.1. Exit types of distressed firms

When exiting, a firm has several exit opportunities: involuntary exit, voluntary liquidation and restructuring exit. The first exit type, involuntary exit, may involve bankruptcy procedures (i.e., Chapter 11 in the U.S.), or a winding-up enforced by the court (also known as compulsory liquidation). Worldwide, bankruptcy procedures are usually part of insolvency regulation for financially distressed firms, allowing an appropriate person (i.e., the manager/owner or a creditor) to file for bankruptcy. Specific commissioners are then assigned with the task of sorting out the distribution of the firm’s assets to compensate for the debt claims and then of liquidating the assets.

In most cases, the economic consequences of bankruptcy are that the firm's stakeholders are only partially paid and the firm's operations is permanently closed. In the case of a judicial winding-up, the court makes an order for the firm to be liquidated on the petition of an appropriate person. This procedure is used less frequently than bankruptcy procedures.

The second exit outcome is voluntary liquidation. The shareholders can on their own decide to voluntary liquidate a firm when the liquidation value of the assets exceeds the liquidation value of the liabilities. In this situation, the firm is able to settle all its liabilities from the proceeds of the liquidation of the assets. The remaining liquidation proceeds accrue to the shareholders. Shareholders are likely to opt for a voluntary liquidation when the firm's going-concern value of the firm is less than the value of the firm's assets. If the liquidation value of the assets does not allow covering the outstanding liabilities, the creditors have to formally approve the liquidation procedure and the liquidation plan. They also retain the right to call for a bankruptcy, if this would appear to increase their chances of recovering their accounts (Dewaelheyns and van Hulle, 2008). In that situation, shareholders get nothing out of the liquidation procedure. With a voluntary liquidation, the directors and owner/shareholders hence willingly agree to initiate a liquidation procedure, without outside pressure or order from the Court of Commerce or from creditors. The firm is liquidated upon voluntary decision of the directors and shareholders.

The third exit category is the restructuring exit. This refers to all exits of a voluntary nature where a firm undergoes a major transformation. This causes a change in the firm's legal identity and the firm disappears without a liquidation procedure. A restructuring exit may lead to (1) an acquisition or takeover by another firm, possibly a healthy industry rival or a related firm; (2) a merger with another firm involving the foundation of a new firm and the disappearance of the merged firms; or (3) a split whereby the distressed company is decomposed into several units, which may be sold or reappear as new firms. Unlike involuntary exit and voluntary liquidation, much of the firm's productive capacity is reused in the economy with a restructuring exit. Moreover, a restructuring exit does not require a final distribution of properties, nor does it require a total discharge of debts. For example, in the case of an acquisition, debts are often secured by the new company.

When comparing involuntary exit with voluntary exit types, it is obvious that the involuntary exit can be considered as the most unfavorable exit type for a distressed firm.

It entails the greater destruction of economic value, hence reducing the number of stakeholders being fully compensated and increasing the number incurring losses. Moreover, taxes due are often not fully paid.

As this is the least favorable option for many stakeholders, including shareholders, who are the residual claimants and usually receive nothing (Bulow and Shoven, 1978), firms usually attempt to avoid an involuntary exit. Conversely, with a voluntary exit, all external stakeholders are usually compensated, and only shareholders may suffer losses. In addition, and in contrast to a voluntary exit as the result of 'entrepreneurial self-selection', an involuntary exit involves a juridical procedure that is often initiated by external parties (financial institutions, companies, individuals and/or government) and therefore fits into the 'external selection' exit mechanism (Prantl, 2003).

2.2. Literature review

There is a recent upsurge in studies on the determinants of firm exits, distinguishing between different types of exits. Some studies focus on owner characteristics in entrepreneurial firm exits (e.g. Harhoff et al., 1998; Prantl, 2003; Leroy et al., 2009). The current study, however, focuses on firm characteristics that determine whether a firm has a higher probability of exiting through different exit modes. A firm has a higher probability of going bankrupt compared to being acquired when the firm is older and larger (Buehler et al., 2006, in a sample of Swiss firms), has a low asset quality, low earnings and high managerial efficiency (Wheelock and Wilson, 2000, in a sample of 4000 commercial U.S. banks). Further, a firm has a higher probability of going bankrupt compared to being voluntarily liquidated when it is larger – both at start-up (Prantl, 2003) and at exit (Harhoff et al., 1998) – and when it is a subsidiary rather than an independent firm (Harhoff et al., 1998; Prantl, 2003). Also, a limited liability status and diversification lowers the probability of voluntary liquidation (Harhoff et al., 1998). Few studies distinguish between exiting through a merger or acquisition and voluntary liquidation. Entrepreneurial firms have a higher probability of being acquired, rather than being voluntarily liquidated, when they are larger and more profitable (Leroy et al., 2009).

Few studies to date distinguish between multiple exit types, however. Most studies use a binary approach, comparing only two outcomes, e.g. bankruptcy versus acquisition. Exceptions are Köke (2002), who distinguishes bankruptcy, acquisition and survival, but fails to find determinants of bankruptcy versus acquisition.

Further, Schary (1991) uses a four-state multinomial logit model to distinguish between bankruptcy, voluntary liquidation, merger and survival, and Cefis and Marsili (2007) distinguish between bankruptcies and voluntary closures, mergers and acquisitions, and exits through radical restructuring, comparing these three exit types with a group of continuing firms. Jones and Hensher (2007) use a nested tree structure to compare insolvent firms, distressed acquisitions and outright failures with surviving firms. Interestingly, while these studies confirm earlier findings on characteristics that distinguish between exit and survival, they find few characteristics that distinguish between different exit types. Neither firm profitability nor other firm characteristics, such as firm size, number of plants or financial reserves explain the difference between bankruptcy and other exits, like acquisition (Schary, 1991; Köke, 2002). Only the industry type is found to explain the exit outcome, with bankruptcies being relatively more prevalent in clothing, machinery and construction of other vehicles (in particular shipyards) and takeovers being relatively more prevalent in ore mining, rock and stone mining, paper and metals (Köke, 2002). Although the degree of financial leverage does not distinguish between bankruptcy and acquisition (Schary, 1991; Köke, 2002), a larger total debt to total equity it is found to increase the probability of an outright failure compared to insolvency or distressed merger (Jones and Hensher, 2007).

Little is known to date, however, on how distressed firms exit, as most exit studies ignore whether firms are distressed or financially healthy before exiting. Except from Jones and Hensher (2007), all above mentioned studies compare different exit types or simply compare firms that exit with financially healthy firms that survive. Some studies focus on exit of distressed firms, however, thereby taking a binary outcome approach (Peel and Wilson, 1989; Pastena and Ruland, 1986; Kanatas and Qi, 2004). Distressed firms have a higher probability of exiting through an acquisition rather than going bankrupt, if they have a more favorable liquidity profile and are less levered (Peel and Wilson, 1989). Further, the probability of a merger as an alternative to bankruptcy is higher for firms with a lower leverage, a larger size or a high ownership concentration (Pastena and Ruland, 1986). Additionally, distressed firms have a higher probability of exiting through an acquisition rather than being voluntarily liquidated if they have a higher leverage (Kanatas and Qi, 2004). Besides the limitations of the binary approach, another weakness of the few studies focusing on the exit type of distressed firms is that they use a small sample of merely 72 (Peel and Wilson, 1989) or 110 distressed exits (Pastena and Ruland, 1986). These studies might hence be prone to sample selection biases. Further, they focus on firm characteristics close to exit and ignore information from a broader pre-exit window.

Not all firms exit shortly after having experienced a distress situation, however (Balcaen et al., 2009). For example, firms may first try to restructure in order to survive as an independent entity. It is hence likely that firm characteristics may change considerably between the first signs of distress and the exit.

The current study addresses shortcomings in the literature by focusing on exits of distressed firms, thereby distinguishing between multiple outcomes. More specifically, bankruptcy, voluntary liquidation, and acquisitions and mergers are distinguished by using a multistate approach on a large unbiased sample of distress-related exits. We examine whether there are differences between the determinants of these exit types, conditional on a firm having experienced economic problems and exiting. To account for the fundamental distinction between involuntary and voluntary exit, we examine the exit type outcome of a distressed firm as a two-step process by applying a two-stage modeling approach. In a first stage, involuntary exit is compared to voluntary exit. At this stage, involuntary exit is avoided unless the distressed firm has no other alternatives. In a second stage, and provided that the exit is voluntary, voluntary liquidation is compared to a restructuring exit. Having been able to avoid a bankruptcy, the distressed firm can voluntarily decide about the desired exit mode. For some firms, voluntary liquidation may be the most efficient exit option, while for other firms, an acquisition or a merger (i.e. a restructuring exit) is more efficient. In both situations, external stakeholders recover most of their contributions to the firm. Shareholders usually prefer an acquisition over a liquidation, as in case of an acquisition they receive shares or cash from the acquiring firm and there is still the opportunity for positive abnormal returns, while in the case of voluntary liquidation, they usually receive very little or nothing (Jensen and Ruback, 1983; Pastena and Ruland, 1986). A restructuring exit is, however, not always the most efficient exit option compared to voluntary liquidation. Although it is often asserted that a takeover or merger is a better exit option than liquidation, a voluntary liquidation may in some cases appear as the most optimal or most efficient exit system (Caves and Porter, 1976; Ghosh et al., 1991; Gimeno et al., 1997; Maksimovic and Phillips, 2001). This will depend on the conditions underlying the exit decision and the associated level of efficiency of the respective exit systems. Further, firm characteristics at the first sign of distress and close to exit are included in the study, which allows for extension of the existing literature.

3. DETERMINANTS OF EXIT TYPE

First, this study investigates how the level of available slack and potential slack resources at the first sign of distress and at the time of exit determine the probability of involuntary exit, as a less favorable exit type compared to voluntary exit. Guided by organization theory, we argue that higher levels of slack resources will allow firms to avoid involuntary exit and opt for a more favorable, voluntary exit type, such as voluntary liquidation, acquisition or merger. Second, we suggest that the type of voluntary exit will depend on the relative efficiency of the two voluntary exit systems of voluntary liquidation and restructuring exit. We hence investigate how different factors affecting the probability of a successful voluntary liquidation and the probability of a successful restructuring exit impact the exit type outcome.

3.1. Voluntary versus involuntary exit

Organization theory sees a firm as an entity that seeks survival as the ultimate goal. In order to survive, a firm should be able to adapt to its environment and protect its core (Hannan and Freeman, 1989). In this context, firms accumulate slack resources, because organizational slack acts as a buffer to protect their core from environmental pressures and (short-term) random fluctuations in the environment (Cyert and March, 1963; Thompson, 1967; Pfeffer and Salancik, 1978; Bromily, 1991; Cheng and Kesner, 1997). Bourgeois (1981) defines "organizational slack" as "that cushion of actual or potential resources which allow an organization to adapt successfully to internal pressures for adjustment or to external pressures for change in policy as well as to initiate changes in strategy with respect to the external environment. (p**.** 30)". Organizational slack serves as a resource to tackle problems (Sharfman et al., 1988) and as an enhancer of strategic behavior, such as firm expansion, innovation or valuable alliances, especially in situations of environmental shifts and strategic uncertainty (Cyert and March, 1963; Thompson, 1967; Bourgeois, 1981; Cheng and Kesner, 1997; Tan and Peng, 2003). In uncertain environments – for example financial distress, recessions, demand shocks – the presence of slack resources mitigates risks and allows firms to survive (Sharfman et al., 1988; Tan and Peng, 2003; Latham and Braun, 2008). Slack resources are defined as resources that are "visible to the manager and employable in the future" (Sharfman et al., 1988, p. 602). High discretion slack resources are currently uncommitted resources that are relatively liquid and can easily be redeployed in a wide variety of situations (Singh, 1986; Sharfman et al., 1988; Hambrick and D'Aveni, 1988; Voss, Sirdeshmukh and Voss, 2008).

Examples are cash holdings, marketable securities or credit lines. Low-discretion slack resources – also called absorbed slack or recoverable slack – can only be used in particular situations and may require considerable organizational changes before the firm can use them. Examples are excess machine capacity, inventories, work in progress, accounts payable and accounts receivable (Bourgeois and Singh, 1983; Sharfman et al., 1988; Bromiley, 1991; Miller and Lieblein, 1996; Cheng and Kesner, 1997; Reuer and Lieblein, 2000; Voss at al., 2008; Latham and Braun, 2008). As a situation of environmental uncertainty and distress typically increases the need for high-discretion slack resources (Sharfmann et al., 1988; Latham and Braun, 2008), this study on distress-related exits focuses on high-discretion slack resources, hereby following the approach of Cheng and Kesner (1997), Sharfman et al. (1988), and Bourgeois (1981). Bourgeois and Singh (1983), Bromiley (1991) and Cheng and Kesner (1997) further distinguish between "available slack" and "potential slack". While the available slack is immediately available in the firm, the potential slack has not yet entered the firm, but is accessible within a short time frame. Potential slack are future resources that can be generated from the environment.

Given the theorized role of slack resources in highly uncertain environments, the role of slack resources may be even more pertinent in a situation where a firm experiences distress and where involuntary exit poses a threat. As the involuntary exit is the most unfavorable exit type for a distressed firm and many of its stakeholders, firms usually try to avoid this type of exit. Slack resources may play an essential role in this choice[1]. More specifically, we expect that high slack resources contribute to avoiding involuntary exit and allow a distressed firm to opt for a more favorable, voluntary liquidation or M&A. Distressed firms with high levels of available and potential slack resources are expected to have a higher probability to avoid a forced bankruptcy. First, high levels of slack resources make voluntary liquidation easier, as it is more probable that sufficient cash is present (available cash) or can be raised from affiliated parties (potential slack) to fully repay all creditors. Second, high levels of slack resources decrease the probability of an involuntary exit. High available slack resources allow to absorb changes, resist to environmental pressures and tackle problems that may threaten survival. If the situation of distress goes along with a restricted access to external financial resources, high levels of available slack allow distressed firms to (at least temporary) continue their operations and activities that constitute their core to survival. In other words, the existing slack resources act as a "rainy-day" buffer (Latham and Braun, 2008). This, in turn, increases the probability of a voluntary exit. Further, a high level of available slack allows for a greater flexibility in adaptation to the situation of distress.

For example, financial slack in the form of cash can be used to acquire the resources that are necessary to implement a strategic change (Latham and Braun, 2008), again increasing the probability of survival and a voluntary exit. In a similar way, high potential slack – induced by additional slack resources that can be mobilized from the parent or related firm or cash raised by additional funding in the form of debts – increases the capabilities to avoid a forced bankruptcy, to survive and ultimately to exit in a voluntary way. Thus, from an organizational theory perspective, we predict that firms entering into distress with ample available and potential slack resources will be more able to avoid involuntary exit and opt for a more favorable, voluntary exit type. On the contrary, in distressed firms with insufficient slack resources, the deterioration of the distressed situation is likely to accelerate, causing ever-lower levels of resources. As a result, we expect that in firms with low available and potential slack resources, an involuntary exit is likely to become inevitable, even in an early stage following the first signs of distress. These firms are more likely to be subjected to involuntary exit. Hence:

Hypothesis 1: Available slack resources have a positive effect on the likelihood of a voluntary exit compared to involuntary exit

Hypothesis 2: Potential slack resources have a positive effect on the likelihood of a voluntary exit compared to involuntary exit

Current cash and cash equivalents reflect the level of available slack, while the level of potential slack resources is determined by the future accessibility of additional resources. Indicators that reflect potential slack are the strength of group relations and current leverage. The latter, negative indicator of potential slack largely determines the future borrowing capacity. We will elaborate on each of these indicators of slack resources.

Cash holdings

Cash and cash equivalents (together labeled cash holdings) are available slack resources because they involve currently uncommitted resources that can easily be redeployed for various purposes (Sharfman et al., 1988). Myers and Majluf (1984), for instance, define cash holdings as 'financial slack'. Firms may maintain large cash holdings, far in excess of their transactions needs, as a buffer to meet unexpected contingencies to ensure survival (Baum et al., 2006a, 2006b). For this reason, high levels of cash holdings may be viewed as "options purchased by the firms' managers that may be exercised in adverse times in order to ensure firm survival" (Baum et al., 2006a, p. 4). In case of distress, cash provides a firm with financial resources that allow to absorb financial problems and to offset potential difficulties in its access to credit or other external financing and/or to initiate strategic changes so as to adapt to the pressures from the external environment.

Group relations

Group relations are a source of potential slack resources (Ringlstetter, 1995). As group relations enable firms to establish an 'internal capital market' where resources are reallocated across firms, they facilitate the mobilization of slack resources (Shin and Stultz, 1998). In this manner, they can (partly) overcome the problems related to information asymmetries in the external capital market, as group member firms usually have more information on the focal firm's prospects than outside investors (Deloof and Jegers, 1996). For example, firms that are part of a group may be able to absorb unexpected cash shortages by speeding up the collection of intragroup receivables (Deloof and Jegers, 1996). Similarly, in a distressed situation, related firms may provide different forms of financial support, such as equity participation, subordinated loans or guarantees. Because of the existence of an internal capital market, subsidiaries are likely to benefit from support of the group to which they belong, especially when they belong to the core of the group (De Waelheyns and Van Hulle, 2006). An affiliate is likely to receive the necessary financial support from its parent firm, because the parent firm may be liable for the obligations of its affiliate or because of reputation effects. The bankruptcy of an affiliate could be viewed as a signal of the forthcoming bankruptcy of the parent firm. Accordingly, to preserve its reputation, a parent firm is likely to help to avoid the bankruptcy of its distressed affiliates (Prantl, 2003).

Current leverage

The business failure literature unanimously indicates a high debt level as one of the most important bankruptcy determinants (e.g. Dimitras et al., 1996; Daubie and Meskens, 2002). Alternatively, firms with a higher borrowing capacity have a higher probability of being able to raise additional cash through raising new debt. An important indicator of the future borrowing capacity of a firm is its current leverage. Contrary to firms with more equity and more unused debt capacity, a firm with a high leverage may experience difficulties in accessing additional financial resources. This low level of potential slack leads to a higher vulnerability to external pressures. As a result, a high current leverage is an indicator of a low level of potential slack (Singh, 1986).

3.2. Voluntary liquidation versus restructuring exit

If a distressed firm is able to avoid involuntary exit, it has the opportunity to decide on the voluntary type of exit, being a voluntary liquidation or a restructuring exit. At this stage, it is unclear which type of exit is the most favorable. With both exit types, external stakeholders have a high probability of recovering most of their liabilities. Strategy literature argues that, in a situation of underperformance, a voluntary liquidation or dissolution becomes more appealing when the firm's owners, who have a residual claim over the assets and resources, notice interesting alternative uses for these resources and when the assets can be liquidated for a high value (Caves and Porter, 1976; Porter, 1976; Gimeno et al., 1997). Further, studies on (distressed) firm acquisitions argue that the probability of firm exit by acquisition depends on the underlying conditions that constitute the attractiveness of an acquisition by another firm as a strategic option for the firm, such as the probability of receiving a reasonable buy-out price (Ghosh et al., 1991; Clark and Ofek, 1994; Berger and Ofek, 1996; Maksimovic and Phillips, 2001; Astebro and Winter, 2001; Kanatas and Qi, 2004). This suggests that the owners' motivation to liquidate will depend on the relative efficiency of voluntary liquidation as an exit alternative, compared to the relative efficiency of acquisition as an exit alternative.

Given the efficiency-related arguments that substantiate the motivation of the owners to opt for liquidation or a restructuring exit, we propose that the relative efficiency of a voluntary liquidation compared to a restructuring exit determines the eventual exit type in a situation of distress. We expect a distressed firm to opt for the relatively most efficient voluntary exit option.

This depends on the specific conditions underlying the exit decision and the associated success probability. If the probability of a successful liquidation is high, which increases the relative efficiency of voluntary liquidation, the firm's owners will be more motivated to opt for voluntary liquidation as an exit mode, instead of an acquisition or merger. On the contrary, if a restructuring exit is more likely to be successful, which decreases the relative efficiency of voluntary liquidation, the distressed firm is more likely to choose an acquisition or merger. As a result, we predict that a distressed firm will be more likely to exit by a voluntary liquidation when the relative efficiency of voluntary liquidation, as compared to a restructuring exit, is high. On the contrary, it will be more likely to exit by an acquisition or merger when the relative efficiency of voluntary liquidation, as compared to a restructuring exit, is low. This leads to the following hypothesis:

> Hypothesis 3: The relative efficiency of voluntary liquidation, as compared to a restructuring exit has a positive effect on the likelihood of voluntary liquidation compared to a restructuring exit.

The relative efficiency of voluntary liquidation compared to a restructuring exit is observed through various factors affecting the probability of a successful liquidation and the probability of a successful restructuring exit. We include business group membership, firm size, secured debt level, debt level, cash holdings and firm performance.

Business group membership

First, business group membership has a negative effect on the probability of a successful liquidation, because of reputation effects at the level of the parent firm. A liquidation of a subsidiary or affiliate may cause stakeholders to fear forthcoming distress in the parent company and this may, in turn, cause a considerable loss of reputation of the parent firm (Prantl, 2003). In order to preserve their own reputation, parent firms tend to avoid liquidation of their subsidiaries and affiliates and prefer a sale. In addition, business group membership positively affects the probability of a successful restructuring exit for two reasons. First, business group membership positively influences the probability of finding a third party that is willing to contract with the firm as a buyer or a merger partner.

Group relations involving parent relationships and cross-participations with related firms may allow firms to use their networks to find potential buyers or merger partners, within or outside of the group structure (Dewaelheyns and van Hulle, 2008) and this facilitates acquisition or merger. Within a group context, there is a chance of an intragroup acquisition or merger with a related firm. Further, affiliates that are partly or fully owned by a parent firm generally benefit from the parent firm's network, funding, and knowledge (Mata and Portugal, 2002). Second, the creditors, including banks, may have stronger incentives to cooperate in a restructuring exit when the distressed firm is a member of a group, compared to a stand-alone company (Dewaelheyns and van Hulle, 2008).

As a result, because of its negative effect on the probability of a successful liquidation and its positive effect on the probability of a successful restructuring exit, business group membership indicates a lower relative efficiency of voluntary liquidation, compared to acquisition or merger.

Firm size

Firm size may negatively influence the probability of a successful liquidation. A first reason is stakeholder intervention. Larger firms generally have a larger network of stakeholders. They have more employees – possibly represented by trade unions – a larger network of suppliers, a larger customer base, more shareholders (multiple owners instead of a sole owner, who may also be the manager), a larger number of banks with whom they have contracted loans, and so forth. These firms have a lower freedom of action and radical strategic changes are more likely to involve opposition by stakeholders. In case of an impending liquidation, the probability of stakeholder intervention is high. Also, as an external stakeholder, government – represented by various public instances – is likely to intervene and attempt to avoid liquidation. A second reason is the higher going concern value. A large firm size generally indicates a higher going concern value and this makes liquidation less attractive. When going concern value is high, liquidation would cause much going concern value to be lost.

Further, firm size may have a positive effect on the probability of a successful restructuring exit (Harhoff et al., 1998; Leroy et al., 2009; Praet, 2008). First, the probability of finding a suitable acquisition or merger partner is higher for large firms. Large firms receive more attention because they are more likely to be the subject of large transactions (Diamond and Verrecchia, 1991).

Moreover, external parties, including potential takeover or merger partners, are better able to make an accurate assessment of the firm's financial health, which increases their willingness to act as a partner in a restructuring project. This is the result of the larger information content of financial statements (Vermaelen, 1981; Zeghal, 1984; Chari et al., 1988; Bharath et al., 2006, 2007) and the fact that there is more voluntary disclosed information and/or alternative sources of information. Second, going concern value is generally higher in large firms. This implies a high takeover price and increases the probability of a successful restructuring exit.

Consequently, having a negative effect on the probability of a successful liquidation procedure and a positive effect on the probability of a successful restructuring exit, a large firm size indicates a lower relative efficiency of voluntary liquidation, compared to a restructuring exit.

Secured debt level

A high secured debt level generally indicates a large presence of securable assets (Scott, 1976) with a high liquidation value. Only firms having assets with a high liquidation value or collateral value are able to contract secured loans. This is especially true for small privately owned firms, where bank finance is the main source of external finance and debt typically is heavily secured (Lean and Tucker, 2001). Assets appropriate for serving as collateral generally have a broader set of potential buyers and have a high value in alternative uses (i.e. high asset redeployability) and, hence, have a high liquidation value (Williamson 1988; Shleifer and Vishny, 1992). A high liquidation value, in turn, impacts the probability of a successful liquidation in two ways. First, a high liquidation value increases the likelihood that liquidation value will exceed the current market value of stock, debt and legal obligations, which makes liquidation financially more attractive. If the firm's assets can be sold at a high price, all stakeholders are likely to be compensated and even shareholders may receive a surplus, which positively influences the likelihood that managers will initiate a liquidation procedure. When managers' intentions are strongly aligned with shareholder interests – for example, in privately held firms – a high liquidation value will increase the use of voluntary liquidation as a vehicle to transfer a distressed firm's assets to higher valued uses and to generate positive returns for shareholders (Lang et al., 1995; Sullivan et al., 1997).

Second, in a situation of distress, a high liquidation value may cause secured creditors to push for liquidation instead of restructurings (Leyman et al., 2008). Well-secured creditors are more likely to oppose reorganization (Bergström et al., 2002) and push for liquidation (Ayotte and Morrison, 2008).

Especially when collateral value equals or exceeds loan value, banks push for liquidation (Franks and Sussman, 2005), as liquidation then ensures that their loans will be fully repaid, while this is uncertain in a restructuring.

As a result, indicating a higher liquidation value of the assets, a high secured debt level has a positive effect on the probability of a successful liquidation procedure and, hence, on the relative efficiency of voluntary liquidation compared to a restructuring exit.

Debt level

A low leverage positively affects the probability of a successful liquidation procedure (Fleming and Moon, 1995). Low debts increase the likelihood that the liquidation value of a firm's assets is sufficient to compensate for the outstanding liabilities. A low debt level associated with a small number of creditors increases the success probability of a liquidation procedure even more (Bolton and Scharfstein, 1996; Diamond, 2004). Moreover, when debts are low, shareholders are more likely to choose to liquidate if liquidation appears to maximize firm value. A low debt level increases the likelihood that shareholders will agree on a voluntary liquidation when the firm's liquidation value exceeds going-concern value (Ghosh et al., 1991). On the contrary, with a high debt level, the liquidation value of the assets is less likely to cover the outstanding liabilities and, in this kind of situation, creditors need to formally approve the liquidation procedure and the liquidation plan before the liquidation procedure can be initiated (Dewaelheyns and Van Hulle, 2008). Further, with a high debt level, shareholders are more likely to choose not to liquidate – even if liquidation would maximize firm value – because of the large agency costs related to the high debt level and because liquidation would increase the face value of a firm's debt (Titman, 1984). For these reasons, in firms with a low leverage and a large equity buffer, the probability of a successful voluntary liquidation is larger. This is in line with the empirical studies on firm exit indicating a negative relationship between the level of debt and voluntary liquidation (Fleming and Moon, 1995; Kim and Schatzberg, 1987; Hite et al., 1987).

Second, a high level of debts has a positive effect on the probability of a successful restructuring exit for distressed firms (Kanatas and Qi, 2004), as it increases the probability of finding a suitable acquisition or merger partner. A high debt level acts as an enhancer of credibility that a distressed firm will be committed to continue production and competition if there is no merger (even if it reduces firm value), which increases the willingness of potential acquirer (industry rival) to consider a takeover of the distressed firm (Kanatas and Qi, 2004). Consequently, a high debt level debt helps the distressed firm to receive a better buyout price from a rival, even when it is unprofitable. Nevertheless, a too high debt level - indicating strong financial distress – might decrease the attractiveness of a firm as a takeover candidate (Pastena and Ruland 1986).

As a result, having a negative effect on the probability of a successful liquidation procedure and a positive effect on the probability of a successful restructuring exit, a high leverage signifies a lower relative efficiency of voluntary liquidation, compared to a restructuring exit. This is in line with the studies of Clark and Ofek (1994), Astebro and Winter (2001), and Berger and Ofek (1996), who find a positive relationship between debt level and the probability of exit by an acquisition or merger.

Cash holdings

Cash holdings have a positive effect on the likelihood of a successful liquidation procedure (Ghosh et al., 1991; Fleming and Moon, 1995). Voluntary liquidation requires a full payment of all creditors. Here, large cash holdings increase the probability that the outstanding liabilities will be fully compensated and, hence, increase the attractiveness of liquidation.

For this reason, large cash holdings indicate a higher relative efficiency of voluntary liquidation, as compared to an acquisition or merger. With large cash holdings, the relative efficiency of voluntary liquidation is higher. This corresponds to Ghosh et al. (1991) and Fleming and Moon (1995), who indicate a positive relationship between the liquidity level and the occurrence of voluntary liquidation.

Firm performance

A better firm performance – reflected in a higher profitability and/or a higher efficiency – negatively impacts the probability of a successful liquidation procedure (Leroy et al., 2009; Maksimovic and Philips, 2001), as it is associated with a higher going concern value. In better performing firms, liquidation causes more profit opportunities to be lost. Therefore, when performance is relatively high and the firm has reasonable prospects, voluntary liquidation becomes less efficient, while acquisition and merger become more attractive as exit alternatives (Kim and Schatzberg, 1987; Hite et al., 1987).

Further, a better performance has a positive effect on the probability of a successful restructuring exit, because it positively influences the firm's going concern value and the probability of finding a suitable partner for takeover. First, as better performing firms generally have a higher going concern value, they are more likely to be sold at a reasonable price. This makes an acquisition a more attractive exit option (Astebro and Winter, 2001). Second, a higher performance is likely to increase the probability of finding an acquisition partner. When a firm is more profitable, it is more likely to find a buyer who is willing to buy the firm at a correct price. Moreover, towards industry rivals, a high performance may act as an enhancer of credibility that the distressed firm will continue production if there is no acquisition, which may increase the willingness of industry rivals to consider a takeover of the distressed firm and negotiate a reasonable price for the firm (Kanatas and Qi, 2004).

Consequently, as a result of its negative effect on the probability of a successful liquidation procedure and positive effect on the probability of a successful restructuring exit, a high performance indicates a lower relative efficiency of voluntary liquidation, compared to a restructuring exit.

Besides the determinants considered in this study, other factors may impact the relative efficiency of voluntary liquidation compared to a restructuring exit. For example, future growth opportunities (Erwin and McConnel, 1997; Ghosh et al., 1991), asset composition, degree of inside ownership (Ghosh et al., 1991; Fleming and Moon, 1995) and hostile takeover pressure (Fleming and Moon, 1995) may affect the probability of a successful liquidation procedure and/or the probability of a successful restructuring exit. Further, the market power of the distressed firm, the opportunities for economies of scale and scope, the opportunities for knowledge transfer and learning, and the transaction cost efficiency may impact the probability of a successful acquisition or merger. However, due to data availability restrictions, these factors are not included as indicators of the relative efficiency of voluntary liquidation.

4. RESEARCH METHOD

This study on the determinants of the exit type after economic distress is conducted using an extensive sample of distress-related firm exits employing a nested logit methodology.

4.1. Sample of distress-related exits

This study on exit-type determinants is based on a large Belgian sample of 6,118 distress-related exits of mature firms. The sample of distress-related exits is based on a comprehensive dataset of all exits in the period 1998–2000[2] and is provided by the National Bank of Belgium (NBB). For each Belgian firm and on a yearly basis, the NBB 'Balanscentrale' registers the annual account and all juridical information[3]. From this dataset of exits, new or starting-phase firms less than five years old at the time of exit are excluded. Sole proprietorships, not-for-profit firms, public organizations and companies with a social aim, and firms with a special main business activity—firms providing financial intermediation and insurance, portfolio companies and management activities of holdings, extra-territorial organizations, real estate firms and enterprises with activities located only in a foreign country—are also excluded. These types of firms have a specific nature and are likely to have specific exit paths, with distinct determinants. It is obvious that we could not apply insights on the exit-type determinants of these firms generally to all other firms.

Signs of distress precede all exits in the sample. The first sign of distress is viewed as the starting point of the exit path. In the literature, there is yet no consensus on the most appropriate distress criterion. Possible indicators of financial distress include several years of negative net operating income, bottom-line and accumulated losses, negative working capital, retained earnings deficits, share sales to private investors, capital restructuring or reorganization, negative shareholder's funds, suspension of dividend payments, and major restructurings or layoffs (McKeown et al., 1991; McLeay and Omar, 2000; Platt and Platt, 2002; Rosner, 2003). In this study, a sign of distress is defined as an annual account with negative recurring profit after taxes, that is, when operating revenues are insufficient to cover (1) operating expenses, such as the expenses for goods and services needed for production (commodities, accessories, raw materials and services), the costs of personnel, write-offs and depreciations of fixed assets (land, plant and equipment, and licenses) and depreciation of inventories, orders in progress and accounts receivable; (2) the financial costs of debt; and (3) taxes.

Government subsidies, such as turnover subsidies and interest subsidies, are not taken into account. Table A.1 in the Appendix provides details on the calculation of recurring profit after taxes. In contrast to net profit after taxes, recurring profit after taxes does not consider extraordinary results (i.e., exceptional revenues and expenses), financial revenues and financial expenses other than expenses related to debt[4]. It has an operational content because it reflects the excess of revenues over expenses derived from normal business activities. As the exceptional revenues and expenses are not included in the calculation of recurring profit, this indicator of distress is also less influenced by earnings management practices. Because of its close relatedness to the concept of 'economic added result' (Van Caillie and Dighaye, 2002) and 'revenue productivity' (Becchetti and Sierra, 2002), the recurring profit criterion can be seen as a mirror of firm efficiency and firm success. This soft definition of distress allows for the study of a broad spectrum of distress-related exits, including 'impulsive firm' exits as an outcome of an excessive fast-growth strategy[5] (Argenti, 1976). The sample excludes rapid, unexpected exits, which have little to do with a situation of distress. For example, "sudden bankruptcies" reflecting a strategic decision, where it is very likely that the firms have idiosyncratic reasons for the bankruptcy filing, which are not related to financial distress and are likely to be driven by strategic issues or even management fraud (Hill et al., 1996) are excluded, as well as "accidental bankruptcies", resulting from an unexpected event, such as a natural disaster (Davis and Huang, 2004).

This large dataset of distress-related exits is unique and offers considerable value-added to the existing literature on firm exit and business failure. First, as it concerns a complete sample, it minimizes possible selection biases. Second, it contains a large number of small and medium-sized privately owned enterprises (SMEs). These have been largely neglected in previous empirical work on exit paths and business failure, where the vast majority of research has dealt with large listed firms because of data availability issues and publicity around large firm failures. However, SMEs have been one of the major driving forces of worldwide economic growth, employment and prosperity during the last few decades. At the same time, during the past decade, many European (privately owned) SMEs are threatened by increased competition and the number of SME exiting because of distress is substantial. As it appears essential to gain insights into the exit-path dynamics in SMEs, the strong presence of privately owned SMEs in our dataset is of great importance. A third important feature of the dataset is its focus on established and more mature firms. During the past decade, an increasing number of failures of mature, nonstarting firms in most European countries have been observed.

Although firm exit previously mostly happened to new firms, the fierce competitive situation has created eliminations from more established firms. Nevertheless, numerous firm exit studies have focused on the investigation of new firms and largely ignored the exit path of more mature firms. This study will only analyze firms that have survived the first five years following their foundation. New firms, which generally have a distinct principal goal (Thornhill and Amit, 2003) and a specific kind of exit path, in which personal characteristics of the owner/manager play a major role and in which there is no gradual evolution toward exit (Pompe and Bilderbeek, 2005), are excluded from the analysis.

Table 1 shows the composition of the sample of distress-related exits concerning the specific legal procedure. The sample contains 2,533 cases of involuntary exit (41.4%), 2,700 cases of voluntary liquidation (44.13%) and 885 restructuring exits (14.47%). The involuntary exits mainly involve cases of bankruptcy but also a few cases of judicial winding-up and compulsory liquidation. In addition, we also consider firms operating under a juridical reorganization procedure known as a 'moratorium on payments'6, where firms have (1) stopped depositing annual accounts for a period of at least two years after filing for a reorganization procedure (indicating the total disappearance of the firm) or (2) where their restructuring plan has not been successfully completed, involving a 'recall' of the moratorium on payments. The 2,700 cases of voluntary liquidation include cases filed at the Court of Commerce as an 'early dissolution/liquidation' (indicating that the liquidation procedure is being executed) or 'closure of liquidation' (indicating that the liquidation procedure is completely terminated). Finally, the 885 restructuring exits mainly include acquisitions, but there are also a few mergers and splits. Of the distress-related exits in our sample, 47.29% are in the trade industry, including wholesale, retail, and hotel, restaurant and catering activities, 31.64% involve manufacturing firms with activities in manufacturing, agriculture or construction, and 21.07% are in the service industry, including personal, business and transport services. Except for five listed firms, all exits in our sample concern privately owned firms. It should be stressed that because of the limitation of the preexit window up to fiscal year 1990, the maximum duration of the exit paths in our sample is 11 years. The mean (median) exit-path length is 6.21 years (6.59 years). A firm enters our dataset at time t = 1 as the year where the firm experiences distress for the first time or the starting point of the exit path. The firm is then observed annually until it finally exits. The last observation is the observation at the time of exit (i.e., between t=1 and t =11).

Insert Table 1 About Here

The survival curves in figure 1 reflect the distribution of the exit-path length since the first sign of distress for all exits of a given type that occur within 11 years of the first sign of distress. The survival curves in figure 1 are based on the survival rates for each exit alternative or the percentage of firms that exit after time unit t conditional on having survived up to time t, starting with 100% (all firms enter the dataset) and ending with 0% (all firms have exited and left the dataset after t = 11). First, we find that early exits happen more frequently in the form of a voluntary liquidation or a restructuring exit and less frequently in the form of an involuntary exit. Overall, restructuring exits are associated with longer exit paths, and this is confirmed with statistical testing. A Kruskal–Wallis test ($p = 0.001$) indicates that the distribution of the exit timing in the subsamples of involuntary exits, voluntary liquidations and restructuring exits differs. Subsequently, nonparametric Mann–Whitney tests show that the restructuring exits are preceded by significantly longer exit paths when compared to the involuntary exits and voluntary liquidations ($p = 0.000$ compared to involuntary exits and $p = 0.003$ compared to voluntary liquidations).

Insert Figure 1 About Here

4.2. Method of analysis

We employ a binomial nested logit (NL) model to analyze the data (Jones and Hensher, 2007). In the context of this study, the NL approach offers a considerable advantage over standard multinomial logistic regression (MLR). One motivation for using a NL method is that the one-stage design of MLR may not reflect reality. A two-stage or 'nested' design is more appropriate for the exit setting with a clear distinction between involuntary and voluntary exits. We apply a two-stage nested logit model with two well-separated nests corresponding to the voluntary or involuntary nature of the exit type. In the first step, involuntary exit is considered as the alternative to voluntary exit and, in the second step, provided that the exit is of a voluntary nature, voluntary liquidation is seen as the exit alternative to a restructuring exit. A second motivation for a NL model is that it partially relaxes the IID and IIA assumptions of MLR[7]. Through partitioning or 'nesting', any potential differences in the sources of unobserved heterogeneity can be investigated.

NL also recognizes the existence of different variances across exit alternatives and correlation among certain subsets of exit types. Figure 2 shows the two-stage nested tree structure used in this study. The two voluntary exit alternatives—voluntary liquidation and restructuring exit— are assumed to be linked to each other through a composite exit alternative called 'voluntary exit'. The top level of the tree (Level 2) involves the distinction between involuntary exit and voluntary exit, while the bottom level (Level 1) involves the choice between voluntary liquidation and restructuring exit. The link between the two voluntary exit types – the level of correlation in the unobserved influences – is reflected in the inclusive value (IV) index of the composite exit alternative and is used as an additional explanatory variable in the NL model.

Insert Figure 2 About Here

The NL model consists of two binary logistic models. The binary logistic model for Level 2 of the tree structure models the log-odds of voluntary exit relative to involuntary exit, while the model corresponding to Level 1 models the log-odds of voluntary liquidation relative to restructuring exit, conditional on voluntary exit. Both binary logistic models predict the exit type (conditional on the fact that the firm exits) by means of distinct explanatory and control variables and are stratified by exit-path length[8]. The binary logistic model for Level 1 is given by:

$$\ln\left(\frac{P(voluntary\ liquidation \mid voluntary\ exit)}{P(restructuring\ exit \mid voluntary\ exit)}\right) = \alpha_t + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_n x_n \qquad (1)$$

where α_t is the intercept for exit after path length t; x_i is variable i (with i = 1,2,…,n) and β_i is the coefficient for variable x_i. Based on the conditional probabilities, the inclusive value is calculated as:

$$IV = \log(\exp(\alpha_t + \beta x) + 1) \qquad (2)$$

where α_t is the intercept for exit after path length t; x is the vector of n variables x_i and β is the vector of n coefficients . The parameter estimate of the IV index can be seen as the statistical test for the relevance of the interdependency. If the IV index is not significant, no nested specification is needed and standard MLR could suffice. The second binary logistic model for Level 2, which takes into account the inclusive value IV calculated from the first binary logistic model, is:

$$\ln\left(\frac{P(voluntary\ exit)}{P(involuntary\ exit)}\right) = \mu_t + \gamma_1 IV + \gamma_{21} x_1 + \gamma_{22} x_2 + \ldots + \gamma_{2n} x_n \qquad (3)$$

where μ_t is the intercept for exit after path length t; IV is the inclusive value; γ_1 is the coefficient for inclusive value IV; x_i is variable i (with i = 1,2,…,n) and γ_{2i} is the coefficient for variable x_i.

4.3. Variables

All explanatory and control variables are measured at the first sign of distress—the starting point of the exit path—and at the time of exit. The explanatory variables or indicators of the available and potential slack resources and the relative efficiency of voluntary liquidation, as compared to a restructuring exit are: cash holdings, strength of group relations, leverage, business group membership, firm size, secured debt level, and performance. The level of cash holdings (CASH) is measured by the amount of cash and cash equivalents divided by total assets. Cash equivalents include marketable securities and bank balances on current accounts. The strength of group relations (GROUP) is measured by the level of financial interactions with related firms and firms with holding interests as a percentage of total assets. These interactions involve (1) investments in participations and in claims (i.e. financial fixed assets), (2) claims, (3) monetary deposits and (4) debts. It is important to note that the group relations are not restricted to parent-subsidiary relations, but also involve financial interactions with other subsidiaries from the same group and with companies in which the firm holds equity participations. In the context of this study, where the majority of firms are small, financial interactions with related firms may be an important source of slack. Leverage (LEVERAGE) is measured by the ratio of the book value of both long-term and short-term debts on total assets. Business group membership is reflected by a dummy variable D_NOGROUP, which takes a value of one if group relations are absent and zero otherwise.

We use this dummy variable reflecting absence of business group membership, to avoid multicollineaity with the continuous variable GROUP. Also, the simultaneous inclusion of both the variable GROUP and the dummy variable D_NOGROUP in our models allows to eliminate biases driven by a strong presence of firms with no group relations, as more than 75% of the firms have no group relations. In addition, Firm size (SIZE) is measured by the natural log of the book value of total assets (in 1.000 €), which is a common size proxy. The log transformed variable is used because it is reasonable to assume that the marginal effect of size is stronger for small firms. The secured debt level (SECURED) is measured by the percentage of total debts that are guaranteed by business securities on the firm's assets. Firm performance is observed through productivity or efficiency and profitability. Productivity (PRODUCTIVITY) is measured by the ratio of gross value added to total assets, while profitability (PROFITABILITY) is measured by EBIT on total assets[9].

Next to the indicators of slack resources and relative efficiency of liquidation, following control variables are included: firm age, absence of secured debts, and industry type. Firm age (AGE) is a variable that has appeared in many studies as an important predictor of business failure. Further, as more mature firms generally (1) are more efficient and more competent (Levinthal, 1991) as a result of learning effects, decreasing production costs, accumulation of skills and knowledge, more developed production technologies, and reputation building, (2) have more stable social relations (Stinchcombe, 1965) and (3) have more experience concerning the most appropriate size and composition of organizational slack (Sharfman et al., 1988)[10], we expect firm age to affect the probability of successful bankruptcy avoidance. Also, firm age may impact the probability of a takeover or merger. As older firms generally have a higher level of accurate publicly available firm information and, hence, a lower level of information asymmetry towards outsiders (Pagano et al., 1998), they may be better able to find an acquirer or merger partner. Moreover, firm age may affect the probability of liquidation through a correlation with the age of the firm's owner. In firms with an owner approaching retirement age, the probability of liquidation may be higher (Prantl, 2003). Firm age is measured as the number of years of operational activity. We further include a dummy variable reflecting absence of secured debts (D_NOSECURED). This dummy variable takes the value of one where debts are totally unsecured and zero otherwise. D_NOSECURED is introduced simultaneously with the variable SECURED, because of the high frequency (more than 75%) of zero observations for the level of secured debt. Also, it allows to separately asses the impact of having no secured debts or no secured creditors on the exit type. Further, the industry type may also influence the eventual exit type of a distressed firm.

For example, according to organization theory, the amount and type of slack that is stored inside a firm may be determined by the industry in which the firm operates[11] (Sharfman et al., 1988). Further, the industry may influence the relative efficiency of voluntary liquidation and restructuring exit. As industry type determines asset liquidity (Schlingemann et al., 2002; Praet, 2008), it may, in turn, influence the relative efficiency of both voluntary exit systems. Second, through the evolution of industry demand, the industry type may impact the efficiency of voluntary liquidation versus acquisition: a declining industry demand is likely to increase the efficiency of liquidation. For these reasons, industry dummies are included as control variables. We distinguish three main industry types: manufacturing (i.e., manufacturing, agriculture and construction), trade (i.e., wholesale, retail and hotel, restaurant and catering activities) and services (i.e., personal, business and transport services). We use a binary variable D_TRADE that takes a value of one if the exit concerns a trade firm and a binary variable D_MANUFACTURING that takes a value of one if the exit considers a manufacturing company. Finally, the exit timing or exit-path length (t) is considered as a factor that may influence the results. For each exit case, we record the time since the first sign of distress (t), which has a value between 1 and 11 by design. The inclusion of interactions between the exit timing and the various firm characteristics allows us to assess whether the effect of a particular factor on the occurrence of a certain exit type differs between long and short exit paths.

It should be noted that, although the environmental conditions underlying the situation of distress (for example, a declining demand, strong competitive entry) and the primary factors driving distress (for example, managerial incompetence, changes in technology or consumer tastes, or competitive actions) may affect firm strategy and the type of exit that is chosen, we have no information on these environmental variables. As a result, we are unable to control for these effects. Additionally, we are unable to control for a possible effect of information asymmetry and poor monitoring on the exit type, because we lack information on information asymmetries (for example, R&D investment, degree of analyst coverage and disclosure) and the degree of monitoring (for example, number of outside block holders, number of insiders in the board of directors and the level of stock held by blockholders).

The main sources of information for the explanatory variables are the annual accounts of the firms. Variables are measured at the first signs of distress and in the exit year[12]. Exit-year observations involving accounts that closed after the legal exit are removed from the analysis because these observations are likely distorted by transactions in the context of the (impending) exit procedure. We substitute missing and removed exit-year observations with observations from the preceding year (i.e., prior to the exit year).

This assumes the previous year's annual accounts accurately reflect the financial situation of the firm at the time of exit. After replacement, 2,137 exit-year observations (34.93%) remain missing.

4.4. Sample description

Table 2 provides descriptive statistics for the explanatory variables measured at the first sign of distress or at the start of the exit path (i.e., time t = 1), including the control variables firm age, exit timing, absence of secured debts and the binary variables reflecting industry type[13]. The table compares voluntary and involuntary exits, and voluntary liquidations and restructuring exits. A variance analysis for the three exit types, including one-way analysis of variance (ANOVA) and Welch tests, indicate that most firm characteristics differ significantly across the exit types, except for the variables measuring performance. Mann-Whithey U-tests and t-tests are used to compare voluntary exits to involuntary exits, and voluntary liquidations to restructuring exits. Compared to firms with a voluntary exit, companies with an involuntary exit have lower cash holdings, fewer group relations, a higher current leverage, a smaller firm size and a higher secured debt level and they are younger at the first sign of distress. Voluntary liquidations, as compared to restructuring exits, are associated with larger cash holdings, weaker group relations, a smaller firm size, a lower profitability and a shorter exit path. Finally, Chi-square tests for the subsamples of involuntary and voluntary exits and for voluntary liquidations and restructuring exits, point out that a higher percentage of firms with involuntary exits have no group relations, while the restructuring exits includes a higher percentage group firms. Further, in the subgroup of involuntary exits, relatively fewer firms have no secured debts. Finally, the subsample of involuntary exits includes more trade firms and manufacturing companies and the subsample of restructuring exits includes fewer trade firms. There are no indications of multicollinearity among the independent variables: the bivariate correlations are low with a maximum correlation coefficient of 0.428 for firm size and group relations, measured at the time of exit.

Insert Table 2 About Here

5. ANALYSIS AND DISCUSSION OF THE RESULTS

The first binary logistic model estimates the probability of voluntary exit compared to involuntary exit. We introduce the variables cash holdings (CASH), strength of group relations (GROUP) and current leverage (LEVERAGE) as explanatory variables and we consider all other variables – the explanatory variables indicating the relative efficiency of voluntary liquidation and the control variables – as control variables. The inclusion of the interactions between the exit timing (t) and the explanatory and control variables as additional variables is done by backwards stepwise analysis. Only the significant interactions—indicating that the effect of a particular variable on the occurrence of a certain exit type significantly changes over the exit-path length—are maintained in the model. No other interactions are allowed. The second binary logistic model, modeling the probability of voluntary liquidation as compared to restructuring exit, is developed in a similar way. This model includes business group membership (D_NOGROUP), firm size (SIZE), secured debt level (SECURED), leverage (LEVERAGE), cash holdings (CASH) and performance (PRODUCTIVITY and PROFITABILITY) as explanatory variables and all other variables as control variables. The IV index is significantly different from 1.0 for all models. As a result, the IIA assumption does not hold. This statistically justifies the choice for the NL method against the MLR approach.

5.1. Voluntary exit versus involuntary exit

The results of the binary logistic model for Level 2 of the NL model are reported in Table 3. We report the analysis of two different models. In the first model, the firm variables are measured at the first sign of distress (i.e., t = 1), while in the second model, the firm variables are measured at the time of exit. The first model (N = 6,057), using firm variables measured at the first sign of distress, correctly classifies 65.22% of the observations. The performance of the second model (N = 3,922) is even higher, correctly classifying 79.92% of observations. For each model, Table 3 reports the beta coefficients of the variables, the odds ratios (i.e., exponentiated values of the beta coefficients), the standard errors and the p-values or significance levels.

Insert Table 3 About Here

In line with Hypothesis 1, firms with larger cash holdings have a higher probability of a voluntary exit and a lower probability of an involuntary exit. This provides evidence that high available slack resources, both at the first sign of distress and at exit, reduce the probability of an involuntary exit. In addition, as suggested in Hypothesis 2, firms with strong group relations are more likely to avoid involuntary exit and opt for a voluntary exit. These firms have easy access to additional slack resources or a high level of potential slack resources. In addition, high leverage, indicating lower potential slack, decreases the probability of a voluntary exit. As a result, this study provides evidence that a high potential slack decreases the probability of involuntary exit. It should be noted that current leverage only determines the exit type when observed at the start of the exit path. Accordingly, when experiencing distress for the first time, a low level of debt contributes to the successful avoidance of involuntary exit. Potential slack should be mobilized quickly, however, as it does not shield a firm against bankruptcy at the time of exit. Logically, creditors are not inclined to provide additional credit when exit is near.

Further, several control factors significantly impact whether a distressed firm is able to voluntarily exit or whether the firm is forced into bankruptcy. First, absence of business group membership is found to have a negative effect on the likelihood of a voluntary exit relative to an involuntary exit. This provides evidence that stand-alone firms, as compared to group firms, are more likely to exit involuntarily. Alternatively, business group membership appears to stimulate successful bankruptcy avoidance. In addition, older firms and firms without secured debts have a higher probability of a voluntary exit and a lower probability of an involuntary exit, consistent with earlier studies. Older firms have more capabilities to avoid involuntary exit. The effect of secured debts might be explained by the fact that secured creditors may force managers of distressed firms to file for an involuntary exit, because of their secured position (Leyman and Schoors, 2008). When a distressed firm has no secured creditors, there is less outside pressure to file for bankruptcy. Firm size, profitability and industry type do not allow to distinguish between involuntary and voluntary exits.

Finally, based on the interaction effects, the exit timing is found to influence the eventual exit type of a distressed firm.

In particular, in the case of early exit, the effects of available and potential slack on the exit type are more pronounced: the positive effect of cash holdings and the negative effect of leverage on the probability of voluntary exit is stronger. This provides evidence of early involuntary exits driven by low slack resources.

5.2. Voluntary liquidations versus restructuring exits

Table 4 reports the results of the binary logistic model for Level 1 of the NL model. The firm variables are again measured at the first sign of distress and at the time of exit. The percentage correctly classified by this model is 77.09% when using observations at the first sign of distress (N = 3,526) and 82.7% when using observations at the time of exit (N = 3,103).

The results support hypotheses 3 in several ways. First, independent firms are more likely than group firms to liquidate rather than to restructure, as expected. Further, a larger firm size, indicating a lower relative efficiency of voluntary liquidation, decreases the probability of liquidation and increases the likelihood of a restructuring exit. Finally, a higher secured debt level and larger cash holdings increase the probability of voluntary liquidation. Consequently, the results offer strong support to hypothesis 3 concerning the positive effect of the relative efficiency of voluntary liquidation on the probability of voluntary liquidation, as an alternative to a restructuring exit.

Insert Table 4 About Here

Based on the arguments concerning the relative efficiency of the exit systems, a negative effect of leverage on voluntary liquidation is expected. The results show, however, that a high leverage at the time of exit increases the probability of voluntary liquidation, while leverage at the first sign of distress does not impact the exit type. This can be explained by the fact that, when firms approach exit, the advanced stage of deterioration of financial health is likely to involve exceedingly high debt levels, which in turn may cause difficulties in finding a suitable takeover or merger partner. A very high leverage of a target firm may cause the leverage of the combined firm to be much higher than the original firm, which may significantly decrease the (future) borrowing capacity of the combined firm.

As a result, firms with very high debt levels are less attractive takeover targets and less advantageous merger partners (Pastena and Ruland, 1986; Palepu, 1986; Dietrich and Sorensen, 1984).

In addition, a high leverage at the time of exit may cause the creditors to oppose to a transfer of property associated with acquisition or merger.

Absence of secured debts and industry type further influence the voluntary exit type. Although a high level of secured debt stimulates voluntary liquidation, having no secured debt also appears to drive voluntary liquidation. These findings suggest that firms without secured debt do not necessarily have a low liquidation value. The role of secured debt hence warrants further research. The positive effect of trade activities on voluntary liquidation may result from wholesale and retail firms being less desirable candidates for acquisition by healthy industry rivals (Jensen, 1988; Burt and Limmack, 2001). As the interest in mergers and takeovers in retailing is mainly based on the potential impact on market concentration and market power, the potential benefits to be gained from a merger or acquisition of a distressed retail company, suffering from insufficient demand for its products, are relatively low (Burt and Limmack, 2001). Firm age and strength of group relations do not affect the type of voluntary exit. Finally, there is one significant interaction effect, namely between exit timing and group relations. The positive effect of the strength of group relations on liquidation is stronger when exit is delayed. This might indicate that groups first try to restructure subsidiaries and only liquidate them when that proves to be impossible.

5.3. Sensitivity analysis

As a sensitivity analysis, the results of the two-level NL model are compared to the MLR model (given in Table A.2 in the Appendix), where voluntary liquidations and restructuring exits are simultaneously compared to involuntary exits, which are regarded as the ‘base exit alternative’. The main conclusions from the MLR model are in line with the conclusions from the NL model. That is, the probability of an involuntary exit is higher for firms with a low level of available and potential slack resources: firms with small cash holdings, weak group relations and high leverage. Further, the results of the MLR model show that when compared to an involuntary exit, the likelihood of a voluntary liquidation is higher for small firms, while large firms are more likely to exit by a restructuring exit. Furthermore, additional NL models are estimated including two additional control factors.

A first factor reflects employee representation in the form of works council, which is compulsory for larger Belgian firms with at least a hundred employees. As the employee representatives may steer upon an exit type that is most favorable for the employees and try to avoid exit types that may put them at a disadvantage, we may expect that the presence of a works council affects the eventual exit type. Further, we take into account a possible effect of the replacement of missing exit observations by the preceding observation by including a binary variable that takes a value of one where missing exit observations are replaced. The extended NL models do not alter the conclusions, hinting that the results are robust.

5.4. Overview of exit-type determinants

Figure 3 presents an overview of the most significant determinants of exit type. The determinants of which the effects are in line with the hypotheses concerning available and potential slack resources (Hypothesis 1 and Hypothesis 2) and regarding the relative efficiency of voluntary liquidation as an exit system (Hypothesis 3) are presented within the frame.

Insert Figure 3 About Here

6. CONCLUSIONS

This study provides new insights on the determinants of distress-related involuntary and voluntary exits preceded by at least one year of economic distress. A two-stage nested logit model considering various firm characteristics measured at the start of the exit path—when the first sign of distress is noticed—and at the time of exit indicates the determinants of exit type. Based on a unique sample of 6,118 distress-related firm exits in Belgium, we first show that it is important to consider the exit outcome of a distressed firm as a two-stage process. In a first stage, there is a fundamental distinction between voluntary exits, being a voluntary liquidation or a restructuring exit by acquisition, merger or split, and involuntary exits as the most unfavorable exit alternative. In this stage, firms usually try to avoid involuntary exit, as it is the least favorable option for most stakeholders. In a second stage, and provided that the exit is of a voluntary nature, voluntary liquidation is considered as an

alternative to a restructuring exit (mainly acquisition). Here, a firm can voluntarily decide about the desired exit mode, being a voluntary liquidation or a restructuring exit in the form of an acquisition, merger or split.

This study shows that distressed firms with a higher level of available and potential slack resources are more likely to avoid an involuntary exit and have a higher probability of a voluntary exit. As firms with a lot of cash and a strong solvency position obviously cannot exit through bankruptcy – the judicial prescriptions concerning bankruptcy filing involve recurring poor liquidity and solvency– this finding may not seem surprising. However, for firms with low cash holdings and a high debt level, bankruptcy is not the only exit as an outcome of distress. Firms can as well exit by voluntary liquidation, by an acquisition by another firm or by a merger. In this respect, this study finds large-scale empirical evidence that, with distress, firms with a lower level of available organizational slack as reflected by small cash holdings, are less likely to avoid bankruptcy and are less likely to decide on their exit process. Further, firms with a lower level of potential slack resources, as indicated by weak group relations and smaller future borrowing capacity—a high current leverage—are more likely to experience a bankruptcy, whereas a higher level of potential slack drives voluntary exit. Our findings are consistent with Sharfman et al. (1988), Bromily (1991), Cheng and Kesner (1997), Tan and Peng (2003), and earlier studies of Cyert and March (1963), Thompson (1967) and Pfeffer and Salancik (1978), who maintain that, in a situation of distress, slack resources act as a buffer. In line with organization theory, this study reinforces the importance of both available and potential slack resources in the avoidance of involuntary exit. Although organizational slack is sometimes claimed to have adverse effects on firm efficiency, slack resources appear to be important in a context of financial distress, because they may allow offsetting an impending bankruptcy. Furthermore, the current findings indicate that increasing leverage with a view to increase cash and buy back shares so as to eventually enhance the probability of being acquired by another firm may be a risky strategy. In fact, this behaviour may strongly increase the risk of involuntary bankruptcy and, hence, eliminate the possibility to opt for a more favourable, voluntary exit.

Further, this study provides evidence that, given that a firm voluntarily exits and considers voluntary liquidation as the alternative to a restructuring exit, the relative efficiency of both exit options will determine the type of voluntary exit. A high relative efficiency of voluntary liquidation compared to restructuring exit increases the probability of voluntary liquidation and reduces the chances of a restructuring exit. The finding that an absence of group relations, small firm size, a high secured debt level and large cash holdings contribute

to voluntary liquidation is consistent with strategy literature, suggesting that efficiency-related aspects – such as the liquidation value and the probability of a successful liquidation procedure – will determine the motivation of the owner(s) to liquidate a distressed firm (Caves and Porter, 1976; Porter, 1976; Gimeno et al., 1997). On the contrary, the firm will exit by a restructuring exit, when the relative efficiency of acquisition or merger as a possible exit alternative is higher.

Limitations

While insightful, our findings suffer from a number of limitations. First, as result of the research design, which includes observation at the first sign of distress and at the time of exit, this study provides no further insights into the way in which slack resources are managed over the course of the exit path and their dynamic role in determining exit type. Therefore, future studies should examine how firms manage their slack resources after a first sign of distress, over the whole exit path. Second, we narrowed our study to exits over the 1998-2000 period and, as a consequence, the generalizability of our findings may be limited. It may be beneficial for future researchers to include exit data from other years and from a more recent period, including the recessionary period starting from 2008. Third, we relied solely on available slack and potential financial slack to examine the effect of slack resources on the exit type. Low-discretion slack resources or absorbed slack resources, such as excess machine capacity, inventories of finished goods, work in progress, accounts payable and accounts receivable, are not investigated, although they may be important dimensions of organizational slack (Bourgeois and Singh, 1983; Sharfman et al., 1988; Bromiley, 1991).

Furthermore, we do not compare distress-related exits to distressed firms that survive, with only distress-related exits and their exit type investigated. While one could argue that our study has a limited contribution for this reason, we claim there are benefits to be gained from the in-depth study of distress-related exits. The most important benefit is that a detailed analysis of distress-related exits, including the careful analysis of firms that are unable to avoid bankruptcy, allows for learning from firms that have made mistakes and exit with a less-than-efficient exit outcome. This contributes in turn to increasing our understanding of the eventual success of firms that learn from the experiences and mistakes of others and may even allow the development of better models of value creation (McGrath, 1999).

Future research

We hope that our efforts in investigating the effect of slack resources in the context of distress-related exit encourage other researchers to further explore the means by which managers can avoid involuntary exit and, instead aim at a voluntary type of exit. Besides slack resources, which are the focal point of discussion in this study, other activities can help managers avoiding involuntary exit in a situation of distress. Given the recent recessionary situation in the global economy, we believe that additional investigations concerning tools to avoid involuntary exit are necessary. Further, future empirical research on distress-related exit could be focused on the identification of a number of common exit paths leading to involuntary exit, voluntary liquidation and restructuring exit, based on sequences of events concerning the exit-type determinants revealed in this study. Future research could also be devoted to the initial phase of distress-related failure paths: that is, the period preceding the first sign of distress. This would involve the identification of the causes of distress.

NOTES

1 In contrast to organization theory, agency theory suggests that financial slack has adverse consequences s for a firm, as it may result in agency problems (increased inefficiencies, decreased risk-taking and lower performance) in the absence of sufficient monitoring or governance devices (Fama, 1980; Jensen and Meckling, 1976). In the context of this study on distress-related firm exit, we suggest that the basics of agency theory may not be perfectly suited to explain firm behavior. As distressed firms try to survive, the reasoning underlying organization theory appears to provide a better rationale. This is in line with Daniel et al. (2004), who also suggest that slack resources should be considered in the context of a resource-based view and the behavioral theory of the firm. Moreover, as our study mainly concerns privately owned firms in which ownership and control is no separated, agency-related resource conflicts are not present.

2 This particular three-year exit period is chosen because: (1) we do not want to limit our study to one particular year; (2) we aim to study as many preexit years as possible, taking into account that we can only find reliable, systematic annual account information for fiscal years after 1989; and (3) we are able to check the evolution of juridical situations in the postexit period.

3 In Belgium, all firms, even small companies, deposit their annual accounts with the NBB in a standardized format, including balance sheets, profit-and-loss accounts and additional disclosures. These annual accounts in a complete (for large firms) or abbreviated (for small firms) form yields very detailed information on the firm's financial situation.

4 Contrary to a negative recurring profit after taxes, which is a sign of real distress, a net loss does not necessarily point to real distress. A net loss could simply be the result of low financial revenues (for example, low revenues from participation in other firms), high financial expenses (for example, large depreciations of deposits and cash equivalents), low extraordinary revenues and/or high extraordinary expenses (for example, exceptional write-offs or losses from the disposal of assets or business segments). Moreover, firms often report negative extraordinary results so as to decrease net profit in an attempt to avoid taxes.

5 Analyses have shown that most firms in our sample, once having experienced a negative recurring result, also have negative recurring results in subsequent years.

6 Similar to reorganization procedures in other countries—'Chapter 11' in the U.S., 'administrative receivership' in the U.K., 'collective procedure' in France (Kaiser, 1996;

Couwenberg, 2001)—the Belgian procedure of moratorium on payments permits a firm with (impending) payment problems to take legal shelter from its creditors for a certain period during which it can implement a reorganization plan. It is important to note that although the basic intention of the Belgian reorganization procedure is to help firms recover from a situation of distress, it is strongly oriented toward bankruptcy. It is rarely used, but is usually unsuccessful and followed by bankruptcy (Research Reports of Graydon NV). As outsiders and employees generally interpret a filing as a signal of a forthcoming bankruptcy, only firms with serious problems with payments and continuing operations will file for a moratorium on payments. We note the similarly low popularity and success rate of reorganization procedures in many other European countries (Couwenberg, 2001).

7 The IID assumption implies independent and identically distributed error structures, and the IIA assumption implies independence of irrelative alternatives (i.e. the ratio of the probabilities of two exit alternatives is independent of the presence of the other exit alternative) (Train, 2003).

8 Stratification involves the inclusion of an intercept for each exit-path duration t (i.e., between 1 and 11). As a result, the models predict the type of exit occurring after path length t by means of different explanatory variables. Stratification allows for the use of more data compared to estimating a separate model for each exit-path duration.

9 Productivity and profitability can also be measured by using operational assets (i.e. establishment costs, intangible fixed assets, property, plant and equipment, inventory, accounts receivable within one year, and transferred accounts) instead of total assets as the denominator. Sensitivity analyses for these alternative measures reveal no changes in the conclusions. We do not use a sales-based productivity and profitability measures, because only large firms are required to declare the level of sales in Belgium.

10 Note that all firms in our population have survived the critical starting phase of 5 years.

11 For example, when compared to manufacturing firms, service firms generally have less slack cash. This is because service firms usually generate sufficient cash flow and are able to absorb fluctuations in demand through increasing production, adding personnel, or decreasing inventory (Sharfman et al., 1988).

12 81.5% of the exit observations are missing because firms often stop depositing annual accounts when approaching exit. In addition, companies may occasionally change their reporting periods and have shorter or longer reporting periods. All observations in the

dataset are rescaled for these irregularities so that they represent a period of exactly 12 months.

13 Note that the values for exit timing or exit path length may be biased downward, due to the restriction of the preexit observation window up to fiscal year 1990.

REFERENCES

Argenti J.1976. Corporate collapse: the causes and symptoms. McGraw-Hill: London.

Astebro T., Winter J.K. 2001. More than a dummy: the probability of failure, survival and acquisition of firms in financial distress. Working paper, Joseph L. Rotman School of Management, University of Toronto.

Ayotte K., Morrison E.R. 2008. Creditor control and conflict in Chapter 11. Columbia Law and Economics Research Paper No. 321, Northwestern Law & Econ Research Paper No. 08-16.

Balcaen S., Manigart S., Ooghe H. 2009. From distress to exit: Determinants of the time to exit. Working Paper Series of Faculty of Economics and Business Administration, Ghent University, paper 09/588 and Working Paper Series of Vlerick Leuven-Ghent Management School, paper 2009/12.

Baum C.F., Caglayan M., Ozkan N., Talavera O. 2006a. The impact of macroeconomic uncertainty on non-financial firms' demand for liquidity. Review of Financial Economics 15 (4): 289-304.

Baum C.F., Schäfer D., Talavera O. 2006b. The effects of industry-level uncertainty on cash holdings: the case of Germany. Boston College Working Papers in Economics 637, Boston College.

Becchetti L., Sierra J. 2002. Bankruptcy risk and productive efficiency in manufacturing firms. Journal of Banking and Finance 27(11): 2099-2120.

Berger P.G., Ofek E. 1996. Bust-up takeovers of value-destroying diversified firms. Journal of Finance 51:1175-1200.

Bergström C., Eisenberg T., Sundgren S. 2002. Secured debt and the likelihood of reorganization. International Review of Law and Economics 21 (4): 359-372.

Bharath S., Paolo P., Guojun W. 2006. Does information asymmetry drive capital structure decisions? Working Paper, University of Michigan.

Bharath S., Dahiya S., Saunders A., Srinivasan A. 2007. Lending relationships and loan contract terms: does size matter? Journal of Financial Economics 85 (2): 368-419.

Bolton P., Scharfstein D. 1996. Optimal debt structure and the number of creditors. Journal of Political Economy 104 (1): 1-25.

Bourgeois L. 1981. On the measurement of organizational slack. Academy of Management Review 6 (1): 29-39.

Bourgeois L., Singh V. 1983. Organizational slack and political behavior within top management teams. Academy of Management Journal 2 (2): 43–47.

Bromily P. 1991. Testing a causal model of corporate risk-taking and performance. Academy of Management Journal 34 (1): 37–59.

Buehler S., Kaiser C., Jaeger F. 2006. Merge or fail? The determinants of mergers and bankruptcies in Switzerland, 1995-2000. Economics Letters 90 (1): 88-95.

Bulow J., Shoven J. 1978. The bankruptcy decision. Bell Journal of Economics 9 (2): 437-456.

Burt S., Limmack R. 2001. Takeovers and shareholder returns in the retail industry. International Review of Retail, Distribution and Consumer Research 11(1): 1-21.

Caves R.E., Porter M. 1976. Barriers to Exit. In: Masson R.T., Qualls P.D. (eds.), Essays on industrial organization, in honor of Joe S., Cambridge, Massachusetts: Ballinger Press: 39-69.

Cefis E., Marsili O. 2007. Going, going, gone: Innovation and exit in manufacturing firms. Erasmus Research Institute of Management Report Series ERS-2007-015-ORG, Erasmus University.

Chari V.V., Jagannathan R., Ofer A.R. 1988. Seasonalities in security returns: the case of earnings announcements. Journal of Financial Economics 21: 101-121.

Cheng J.L.C., Kesner I.F. 1997. Organizational slack and response to environmental shifts: The impact of resource allocation patterns. Journal of Management 23 (1): 1-18.

Clark K., Ofek E. 1994. Mergers as a means of restructuring distressed firms: an empirical investigation. Journal of Financial and Quantitative Analysis 29 (4): 541-565.

Couwenberg O. 2001. Survival rates in bankruptcy systems: overlooking the evidence. European Journal of Law and Economics 12 (3): 253-273.

Cyert R. M., March J.G. 1963. A behavioral theory of the firm. Blackwell Publishers Inc: Massachusetts.

Daniel F., Lohrke F.T., Fornaciari C.J., Turner R.A. 2004. Slack resources and firm performance: a meta-analysis. Journal of Business Research 57: 565– 574.

Daubie M., Meskens N. 2002. Business failure prediction: a review and analysis of the literature. In New Trends in Banking Management, Zopounidis C. (ed), Physica-Verlag Springer: Heidelberg; 71-86.

Davis A.H.R., Huang X. 2004. The stock performance of firms emerging from Chapter 11 and accidental bankruptcy. Paper presented at the 2004 FMA Meeting, New Orleans, USA.

Deloof M., Jegers M. 1996. Trade credit, product quality, and intragroup sales: some European evidence. Financial management 25 (3): 33-43.

Dewaelheyns N, Van Hulle C. 2006. Corporate failure prediction modelling: distorted by business groups' internal capital markets? Journal of Business Finance and Accounting 33(5&6): 909-931.

Dewaelheyns N., Van Hulle C. 2008. Filtering speed in a continental European reorganization procedure. Forthcoming in International Review of Law and Economics.

Diamond D. W. 2004. Presidental address, committing to commit: Short-term debt when enforcement is costly. Journal of Finance 59 (4): 1447-1479.

Diamond D.W., Verrecchia R.E. 1991. Disclosure, liquidity, and the cost of capital. Journal of Finance 46 (4): 1325-1359.

Dietrich J.K., Sorensen E. 1984. An application of logit analysis to prediction of merger targets. Journal of Business Research 12: 393-402.

Dimitras A., Zanakis S., Zopudinis C. 1996. A survey of business failures with an emphasis on failure prediction methods and industrial applications. European Journal of Operational Research 90 (3): 487-513.

Dunk A., Nouri H. 1998. Antecedents of budgetary slack: A literature review and synthesis. Journal of Accounting Literature 17: 72-97.

Erwin G.R., McConnell J.J. 1997. To live or let die? An empirical analysis of piecemeal voluntary corporate liquidations. Journal of Corporate Finance 3 (4): 325-354.

Fama E.F. 1980. Agency problems and the theory of the firm. Journal of Political Economy 88 (2): 288-307.

Fleming M.J., Moon J.J. 1995. Preserving firm value through exit: The case of voluntary liquidations. Federal Reserve Bank of New York Staff Report No. 8, December 1995.

Franks J., Sussman, O. 2005. Financial distress and bank restructuring of small to medium size UK companies. Review of Finance 9(1): 65-96.

Ghosh C., Owers J.E., Rogers R.C. 1991. The financial characteristics associated with voluntary liquidations. Journal of Business Finance and Accounting 18(6): 773-789.

Gimeno J., Folta T.B., Cooper A.C., Woo C.Y. 1997. Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms. Administrative Science Quarterly 42 (4): 750-783.

Hambrick D.C., D'Aveni R.A. 1988. Large corporate failures as downward spirals. Administrative Science Quarterly 33 (1): 1-23.

Hannan M.T., Freeman J. 1989. Organizational Ecology. Harvard University Press: Cambridge.

Harhoff D., Stahl K., Woywode M. 1998. Legal form, growth and exit of West German firms - Empirical results for manufacturing, construction, trade and service industries. Journal of Industrial Economics 46(4): 453-488.

Hill N.T., Perry S.E., Andes S. 1996. Evaluating firms in financial distress: An event history analysis. Journal of Applied Business Research 12 (3): 60-71.

Hite G.L., Owers J.E., Rogers R.C. 1987. The market for interfirm asset sales : Partial sell-offs and total liquidations. Journal of Financial Economics 18 (2): 229-252.

Jensen M.C. 1988. Takeovers: their causes and consequences. Journal of Economic Perspectives 2 (1): 21-48.

Jensen M.C., Meckling W.H. 1976. Theory of the firm: managerial behaviour, agency costs and ownership structure. Journal of Financial Economics 3 (4): 305-360.

Jensen M.C., Ruback R.S. 1983. The market for corporate control: The scientific evidence. Journal of Financial Economics 11: 5-50.

Jones S., Hensher D.A. 2007. Modelling corporate failure: A multinomial nested logit analysis for unordered outcomes. British Accounting Review 39 (1): 89-107.

Kaiser K.M.J. 1996. European bankruptcy laws: implications for corporations facing financial distress. Financial Management 25(3): 67-85.

Kanatas G., Qi J. 2004. Imperfect competition, debt, and exit. Financial Management, 33 (2): 29-49.

Kim E.H., Schatzberg J.D. 1987. Voluntary corporate liquidations. Journal of Financial Economics 19 (2): 311-328.

Köke J. 2002. Determinants of acquisition and failure: evidence from corporate Germany. Structural Change and Economic Dynamics 13 (4): 457-484.

Latham S.F., Braun M.R. 2008. The performance implications of financial slack during economic recession and recovery. Journal of Managerial Issues 2008 (Spring).

Laitinen E.K. 1991. Financial ratios and different failure processes. Journal of Business Finance and Accounting 18 (5): 649-673.

Laitinen E.K. 1992. Prediction of failure of a newly founded firm. Journal of Business Venturing 7 (4): 323-340.

Laitinen E.K. 1993. Financial predictors for different phases of the failure process. Omega International Journal of Management Science 21 (2): 215-228.

Laitinen E.K. 1994. Traditional versus operating cash flow in failure prediction. Journal of Business Finance and Accounting 21 (2): 195-217.

Lang L.H.P., Poulson A.B., Stulz R.M. 1995. Asset sales, firm performance, and the agency costs of managerial discretion, Journal of Financial Economics 37 (1):3-37.

Lean J., Tucker J. 2001. Information Asymmetry, Small Firm Finance and the Role of Government. Journal of Finance and Management in Public Services 1: 43-60.

Leroy H., Manigart S., Meuleman M. 2009. The planned decision to transfer an entrepreneurial company. Working Paper Series of Faculty of Economics and Business Administration, Ghent University, paper 09/577 and Working Paper Series of Vlerick Leuven-Gent Management School, paper 2009/13.

Levinthal D.A. 1991. Random walks and organizational mortality. Administrative Science Quarterly 36 (3): 397-420.

Leyman B., Schoors K. 2008. Bank debt restructuring under Belgian court-supervised reorganization. Working Paper Series, Faculty of Economics and Business Administration, Ghent University, Paper 08/508

Luoma M., Laitinen E.K. 1991. Survival analysis as a tool for company failure prediction. Omega International Journal of Management Science 19 (6): 673-678.

Mata J., Portugal P. 2002. The survival of new domestic and foreign-owned firms. Strategic Management Journal 23 (5): 323-343.

Maksimovic V., Phillips G. 2001. The market for corporate assets: who engages in mergers and asset sales, and are there any gains? Journal of Finance 56 (6): 2019-2065.

McGrath R. G. 1999. Falling forward: Real options reasoning and entrepreneurial failure. Academy of Management Review 24 (1): 13–30.

McKeown J.C., Mutchler J.F., Hopwood W.S. 1991. Towards an explanation of auditor failure to qualify the opinions of bankrupt companies. Auditing: A Journal of Practice and Theory, Suppl.: 1-13.

McLeay S., Omar A. 2000. The sensitivity of prediction models tot the non-normality of bounded an unbounded financial ratios. British Accounting Review 32 (2): 213-230.

Mikkelson W.H., Partch M.M. 1989. Managers' voting rights and corporate control. Journal of Financial Economics 25 (2): 263-290.

Miller K., Leiblein M. 1996. Corporate risk–return relations: returns variability versus downside risk. Academy of Management Journal 39 (1): 91–122.

Myers S. C., Majluf N. S. 1984. Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics 13 (2): 187–221.

Pagano M., Panetta F., Zingales L. 1998. Why do companies go public? An empirical analysis. Journal of Finance 53 (1): 27-64.

Palepu K. 1986. Predicting takeover targets: A methodological and empirical analysis. Journal of Accounting and Economics 8 (1): 3-35.

Pastena V., Ruland W. 1986. The merger/bankruptcy alternative. Accounting Review 61 (2): 288–301.

Peel M.J., Wilson N. 1989. The liquidation/merger alternative: some results for the UK corporate sector. Managerial and Decision Economics 10 (3): 209-220.

Pfeffer J., Salancik G.R. 1978. The external control of organizations: A resource dependence perspective. Harper & Row: New York.

Pompe P.P.M., Bilderbeek J. 2005. The prediction of bankruptcy of small- and medium-sized industrial firms. Journal of Business Venturing 20 (6): 847-868.

Platt H.D., Platt M.B. 2002. Predicting corporate financial distress: reflections on choice-based sample bias. Journal of Economics and Finance 26 (2): 184-199.

Praet A. 2008. Voluntary firm restructuring: why do firms sell or liquidate their subsidiaries? HUB research paper 2008/47, Centre For Economics and Management, European University College Brussels, Belgium.

Prantl S. 2003. Bankruptcy and voluntary liquidation: evidence for new firms in East and West Germany after unification. ZEW Discussion Paper 03-72, Centre of European Economic Research, Mannheim, Germany.

Reuer J., Lieblein M.J. 2000. Downside risk implications of multinationality and international joint ventures. Academy of Management Journal 43 (2): 203-214.

Ringlstetter M. 1995. Konzernentwicklung - Rahmenkonzepte zu Strategien, Strukturen und Systemen. Verlag Barbara Kirsch: München.

Rosner R.L. 2003. Earnings manipulation in failing firms. Contemporary Accounting Research 20 (2): 361–408.

Schary M. A. 1991. The probability of exit. RAND Journal of Economics 22: 339-353.

Schlingemann F.P., Stulz R.M., Walkling R.A.. 2002. Divestitures and the liquidity of the market for corporate assets. Journal of Financial Economics 64 (1): 117-144.

Scott J. H. 1976. A theory of optimal capital structure. Bell Journal of Economics 7 (1): 33-54.

Sharfman M., Wolf G., Chase R., Tansik D. 1988. Antecedents of organizational slack. Academy of Management Review 13 (4): 601–614.

Shin H.H., Stulz R. 1998. Are Internal Capital Markets Efficient? Quarterly Journal of Economics 113 (2): 531-553.

Singh J. 1986. Performance, slack, and risk taking in organizational decision making. Academy of Management Journal 29 (3): 562–585.

Shleifer A., Vishny R.W. 1992. Liquidation values and debt capacity: A market equilibrium approach. Journal of Finance 47 (4):1343-1366.

Shrieves R.E., Stevens D.L. 1979. Bankruptcy avoidance as a motive for merger. Journal of Financial and Quantitative Analysis 14 (3): 501-515.

Stinchcombe A.L. 1965. Organizations and social structure. In: Handbook of organizations, March J. (ed). Rand McNally: Chicago; 142-193.

Stulz R.M. 1988. Managerial Control of Voting Right: Financing Policies and the Market for Corporate Control. Journal of Financial Economics 20: 25-54.

Sullivan C.E., Crutchley D., Johnson J. 1997. Motivation for voluntary corporate liquidations: distress, agency conflicts, and shareholder gain. Quarterly Journal of Business and Economics 36(2): 3-18.

Tan J., Peng M.W. 2003. Organizational slack and firm performance during economic transitions: Two studies from an emerging economy. Strategic Management Journal 24 (13): 1249-1263.

Thompson J.D. 1967. Organizations in action. McGraw Hill: New York.

Thornhill S., Amit R. 2003. Learning about failure: bankruptcy, firm age and the resource-based view. Organization Science 14 (5): 497-509.

Titman S. 1984. The effect of capital structure on a firm's liquidation decision. Journal of Financial Economics 13 (1): 137-151

Train K., 2003, Discrete choice methods with simulation. Cambridge: Cambridge University Press.

Van Caillie D., Dighaye A. 2002. The concept of « economic added result », a new tool to prevent bankruptcy? Paper presented at the EAA Congress, April 2002, Copenhagen, Denmark.

Van Wymeersch Ch., Wolfs A. 1996. La trajectoire de faillite des entreprises: une analyse chronologique sur base des comptes annuels. Working Paper 172, Université Notre-Dame de la Paix.

Vermaelen T. 1981. Common stock repurchases and market signaling: An empirical study. Journal of Financial Economics 9 (2): 139-183.

Voss G.B., Sirdeshmukh D., Voss Z.G. 2008. The effects of slack resources and environmental threat on product exploration and exploitation. Academy of Management Journal 51(1): 147–164.

Wheelock, D. C., Wilson P.W. 2000. Why do banks disappear? The determinants of U.S. bank failures and acquisitions. Review of Economics and Statistics 82 (1): 127-138.

Williamson O. 1988. Corporate finance and corporate governance. Journal of Finance 43 (3): 567-591.

Zeghal D. 1984. Firm size and the information content of financial statements. Journal of Financial and Quantitative Analysis 19 (3): 299-310.

APPENDIX

Table A.1: Calculation of the recurring profit/loss after taxes

	Abbreviated scheme annual accounts		***Complete scheme annual accounts***	
	Annual account section number	***Description***	***Annual account section number***	***Description***
Gross Margin	*| 70/61 | or | 61/70 |*	*Gross margin*	*(| 70/74 | – | 740 |) – | 60 | – | 61 |*	*Value of production (turnover less subsidies) – Intermediary consumption (commodities, raw materials, accessories, various goods and services)*
Operating expenses				
• *Costs of personnel*	*<62>*	*Remunerations, social contributions and pensions*	*<62> + <635>*	*Remunerations, social contributions, pensions* *Pension provisions*
• *Write-offs and depreciations of fixed assets*	*| 630 |*	*Write-offs and depreciations on fixed assets: land, plant and equipment, establishment costs and intangible assets*	*| 630 |*	*Write-offs and depreciations on fixed assets: land, plant and equipment, establishment costs and intangible assets*
Non-operating expenses				
• *Financial costs of debts (excluding interest subsidies)*	*– <65> + <656>*	*Financial costs, excluding financial provisions*	*| 650 |* *| 653 |*	*Financial cost of debts* *Discount on receivables*
• *Depreciations on current non-financial assets*	*+ <631/4>*	*Depreciations on inventories, orders in progress and accounts receivable*	*+ <631/4>*	*Depreciations on inventories, orders in progress and accounts receivable*
• *Provisions for operational risks and costs*	*+ <635/7>*	*Provisions*	*+ <635/7> – <635>*	*Provisions, excluding provisions for pensions*
Taxes				
Taxes on profits	*– <67/77>*	*Taxes on the result*	*| 9134 | + | 640 |*	*Taxes on the result of the fiscal year* *Taxes on operations (i.e. real estate taxes, taxes on cars and trucks, …)*
Recurring profit after taxes	*[| 70/61 | – | 61/70 |] – [<62> + | 630 | – <65> + <656> + <631/4> + <635/7> – <67/77>]*		*[(| 70/74 | – | 740 |) – (| 60 | + | 61 |)] – [<62> + <635> + | 630 | + | 650 | + | 653 | + <631/4> + <635/7> – <635> + | 9134 | + | 640 |]*	

Table A.2: Regression results of the multinomial logistic regression model for voluntary liquidations and restructuring exits versus involuntary exits, using observations at the first sign of distress and at the time of exit

	First sign of distress	**Time of exit**
	N = 6,058	**N = 3,924**
	b coeff	**b coeff**
Voluntary liquidations		
Intercept	*–134.268***	*–143.238***
CASH	*4.733***	*3.926***
GROUP	*1.963***	*1.815***
LEVERAGE	*–1.962***	*0.000*
D_NOGROUP	*–0.127*	*–0.053*
SIZE	*–0.112***	*–0.212***
SECURED	*0.600***	*0.986**
PRODUCTIVITY	*–0.005*	*–0.092***
PROFITABILITY	*–0.001*	*0.005*
AGE	*0.020***	*0.075***
D_NOSECURED	*0.621***	*1.574***
D_TRADE	*0.022*	*0.105*
*AGE*t*		*–0.006***
*PRODUCTIVITY*t*		*0.014***
*D_NOGROUP*t*	*0.009*	*0.074*
*CASH*t*	*–0.379***	
*LEVERAGE*t*	*0.165***	
Restructuring exits		
Intercept	*–133.051***	*–137.578***
CASH	*2.802**	*2.136***
GROUP	*1.545***	*0.472*
LEVERAGE	*–2.196***	*–0.003*
D_NOGROUP	*–1.925***	*–2.661***
SIZE	*0.299***	*0.398***
SECURED	*0.086*	*0.135*
PRODUCTIVITY	*–0.003*	*–0.085**
PROFITABILITY	*0.000*	*0.005*
AGE	*0.015***	*0.051**
D_NOSECURED	*0.367**	*0.950***
D_TRADE	*0.225***	*0.062*
*AGE*t*		*–0.004*
*PRODUCTIVITY*t*		*0.013**
*D_NOGROUP*t*	*0.142***	*0.189***
*CASH*t*	*–0.292*	
*LEVERAGE*t*	*0.249***	
Goodness-of-fit		
Cox and Snell	*0.191*	*0.382*
Nagelkerke R²	*0.220*	*0.445*
McFadden R²	*0.105*	*0.247*
LR-test (p-value)	*0.000*	*0.000*
% correct classification	*57.5%*	*68.2%*[a]

*Asterisks indicate significance at the *0.05 and **0.01 level.*

[a] *The most correct classification is for voluntary liquidations (88.5%)*

Table 1: Composition of the sample

Exit type	Legal procedure	Number of firms	Percentage
Involuntary exit		*2,533*	*41.40%*
	** Bankruptcy*	*2,518*	*41.16%*
	** Compulsory liquidation*	*4*	*0.07%*
	** Moratorium on payments*	*11*	*0.17%*
Voluntary liquidation		*2,700*	*44.13%*
	** Early dissolution/liquidation*	*465*	*7.60%*
	** Closure of liquidation*	*2,235*	*36.53%*
Restructuring exit		*885*	*14.47%*
	** Acquisition*	*770*	*12.59%*
	** Merger*	*5*	*0.08%*
	** Split-up*	*110*	*1.80%*
TOTAL		*6,118*	*100.00%*

Figure 1: Distribution of exit path length for involuntary exits, voluntary liquidations and restructuring exits

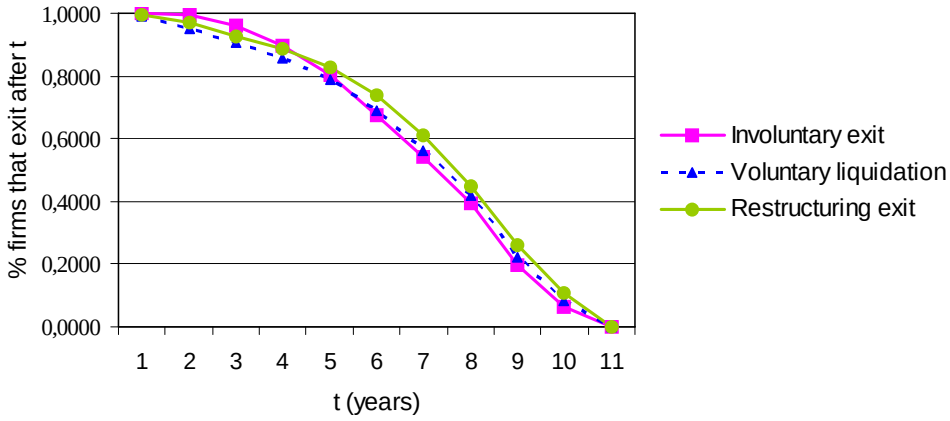

Figure 2: The two-stage nested tree structure

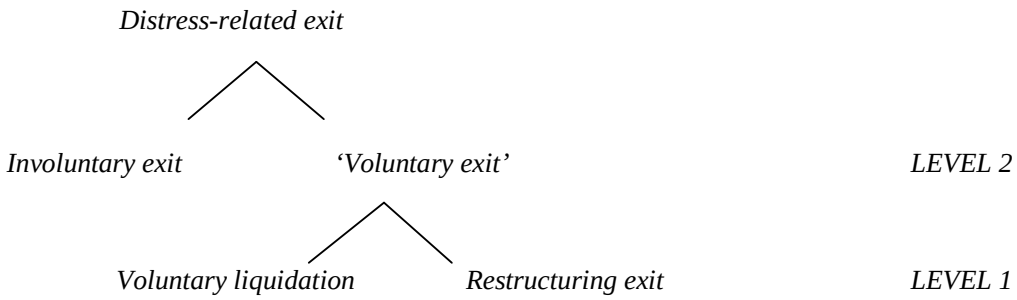

Table 2: Descriptive statistics of the explanatory and control variables at t = 1

	N	Mean (median) total sample	Mean (median) involuntary exit	Mean (median) voluntary exit	Sig. (p) Mann-Whitney U-test	Sig. (p) t-test	Mean (median) voluntary liquidation	Mean (median) restructuring exit	Sig. (p) Mann-Whitney U-test	Sig. (p) t-test	Sig. (p) ANOVA F-test	Sig. (p) Welch test
Explanatory variables												
CASH	*6118*	*0.096*	*0.072*	*0.113*	*0.000*	*0.000*	*0.127*	*0.070*	*0.000*	*0.000*	*0.000*	*0.000*
		(0.040)	*(0.027)*	*(0.052)*			*(0.061)*	*(0.033)*				
GROUP	*6118*	*0.056*	*0.017*	*0.083*	*0.000*	*0.000*	*0.055*	*0.168*	*0.000*	*0.000*	*0.000*	*0.000*
		(0.000)	*(0.000)*	*(0.000)*			*(0.000)*	*(0.000)*				
LEVERAGE	*6118*	*0.802*	*0.960*	*0.694*	*0.000*	*0.000**	*0.664*	*0.774*	*0.000*	*0.057**	*0.001*	*0.001**
		(0.766)	*(0.853)*	*(0.671)*			*(0.652)*	*(0.724)*				
SIZE as total assets (in thousands of €)	*6118*	*2164.399*	*977.722*	*3030.312*	*0.000*	*0.000*	*1999.515*	*6066.951*	*0.000*	*0.000*	*0.000*	*0.000*
		(263.597)	*(252.095)*	*(270.634)*			*(207.536)*	*(831.098)*				
SECURED	*6118*	*0.092*	*0.112*	*0.079*	*0.000*	*0.000*	*0.075*	*0.088*	*0.000*	*0.078*	*0.000*	*0.000*
		(0.000)	*(0.000)*	*(0.000)*			*(0.000)*	*(0.000)*				
PRODUCTIVITY	*6118*	*0.547*	*1.641*	*0.918*	*0.000*	*0.555**	*0.891*	*0.999*	*0.000*	*0.067**	*0.060*	*0.084*
		(0.350)	*(0.787)*	*(0.448)*			*(0.505)*	*(0.270)*				
PROFITABILITY	*6118*	*-0.282*	*–0.315*	*–0.415*	*0.000*	*0.298**	*–0.523*	*–0.084*	*0.000*	*0.011*	*0.673*	*0.075**
		(0.000)	*(–0.006)*	*(0.007)*			*(0.004)*	*(0.014)*				
Control variables												
AGE (years)	*6118*	*10.376*	*8.748*	*11.713*	*0.000*	*0.000*	*11.347*	*12.818*	*0.073*	*0.003*	*0.000*	*0.000*
		(6.840)	*(5.230)*	*(8.160)*			*(8.059)*	*(8.620)*				
t (years)	*6118*	*7.54*	*7.53*	*7.54*	*0.037*	*0.791*	*7.47*	*7.77*	*0.003*	*0.001*	*0.004*	*0.005*
		(8.00)	*(8.00)*	*(8.00)*			*(8.00)*	*(8.00)*				
	]	**N (%) non-zero values total sample**	**N (%) non-zero values involuntary exit**	**N (%) non-zero values voluntary exit**	**Sig. (p) χ^2 test**		**N (%) non-zero values voluntary liquidation**	**N (%) non-zero values restructuring exit**	**Sig. (p) χ^2 test**			
Explanatory variables												
D_NOGROUP	*6118*	*5,352*	*2,373*	*2,979*	*0.000*		*2,406*	*573*	*0.000*			
		(87.480%)	*(93.683%)*	*(83.096%)*			*(89.111%)*	*(64.746%)*				
Control variables												
D_NOSECURED	*6118*	*4,561*	*1,739*	*2,822*	*0.000*		*2,178*	*644*	*0.000*			
		(74.550%)	*(68.654%)*	*(78.717%)*			*(80.667%)*	*(72.768%)*				
D_TRADE	*6118*	*2,893*	*1,249*	*1,644*	*0.008*		*1,276*	*368*	*0.003*			
		(47.287%)	*(49.3%)*	*(45.9%)*			*(47.3%)*	*(41.6%)*				
D_MANUFACTURING	*6118*	*1936*	*864*	*1,072*	*0.000*		*821*	*251*	*0.249*			
		(31.644%)	*(34.110%)*	*(29.902%)*			*(30.407%)*	*(28.361%)*				

* As indicated by Levene's test for equality of variances ($p > 0.05$), equal variances are assumed.

Table 3: Results of the NL model for Level 2 (voluntary exit versus involuntary exit)

	First sign of distress				*Time of exit*			
	b coeff	***exp(b)***	***standard error***	***p-value***	***b coeff***	***exp(b)***	***standard error***	***p-value***
IV	*–0.0157*	*0.9844*	*0.3107*	*0.9598*	*0.1128*	*1.1194*	*0.1633*	*0.4899*
Available slack resources								
CASH	*4.4076***	*82.0723*	*0.9696*	*<0.0001*	*3.4538***	*31.6203*	*0.4403*	*<0.0001*
Potential slack resources								
GROUP	*1.7948***	*6.0183*	*0.3172*	*<0.0001*	*0.9091***	*2.4821*	*0.3497*	*0.0093*
LEVERAGE	*–2.2562***	*0.0772*	*0.2808*	*<0.0001*	*–0.00003*	*1.0000*	*0.000078*	*0.6744*
Control variables								
D_NOGROUP	*–1.0125**	*0.3633*	*0.4219*	*0.0164*	*–2.0064***	*0.1345*	*0.6271*	*0.0014*
SIZE	*–0.0104*	*0.9897*	*0.0957*	*0.9132*	*0.0107*	*1.0108*	*0.0767*	*0.8895*
SECURED	*0.4817 **	*1.6188*	*0.2380*	*0.0430*	*0.6260*	*1.8701*	*0.3442*	*0.0689*
PRODUCTIVITY	*–0.0048*	*0.9952*	*0.0030*	*0.1156*	*–0.0871***	*0.9166*	*0.0311*	*0.0051*
PROFITABILITY	*–0.0014*	*0.9986*	*0.0042*	*0.7388*	*0.0036*	*1.0036*	*0.0047*	*0.4434*
AGE	*0.0204***	*1.0206*	*0.0030*	*<0.0001*	*0.0668***	*1.0691*	*0.0178*	*0.0002*
D_NOSECURED	*0.5789***	*1.7841*	*0.1301*	*<0.0001*	*1.2701***	*3.5612*	*0.1637*	*<0.0001*
D_TRADE	*–0.0871*	*0.9166*	*0.0779*	*0.2633*	*–0.0998*	*0.9050*	*0.0865*	*0.2488*
Interactions with exit timing								
*CASH*t*	*–0.3415***	*0.7107*	*0.1057*	*0.0012*				
*LEVERAGE*t*	*0.2465***	*1.2795*	*0.0323*	*<0.0001*				
*D_NOGROUP*t*	*0.0703*	*1.0728*	*0.0471*	*0.1354*	*0.1514 **	*1.1635*	*0.0711*	*0.0333*
*AGE*t*					*–0.0055***	*0.9945*	*0.0021*	*0.0083*
*PRODUCTIVITY*t*					*0.0129***	*1.0130*	*0.0045*	*0.0040*

Asterisks indicate significance at the *0.05 and **0.01 level.

Table 4: Results of the NL model for Level 1 (voluntary liquidation versus restructuring exit)

	First sign of distress				*Time of exit*			
	B coeff	***exp(b)***	***Standard error***	***p-value***	***b coeff***	***exp(b)***	***Standard error***	***p-value***
Relative efficiency of liquidation, compared to restructuring exit								
D_NOGROUP	*0.9548***	*2.5982*	*0.1270*	*<0.0001*	*2.0501***	*7.7687*	*0.1743*	*<0.0001*
SIZE	*–0.2909***	*0.7476*	*0.0131*	*<0.0001*	*–0.5638***	*0.5690*	*0.0208*	*<0.0001*
SECURED	*0.8417***	*2.3203*	*0.3252*	*0.0096*	*0.7026*	*2.0190*	*0.4587*	*0.1256*
LEVERAGE	*–0.0720*	*0.9305*	*0.0392*	*0.0664*	*0.0088***	*1.0088*	*0.0012*	*<0.0001*
CASH	*2.0472 ***	*7.7462*	*0.3705*	*<0.0001*	*2.1769***	*8.8189*	*0.2756*	*<0.0001*
PRODUCTIVITY	*–0.0029*	*0.9971*	*0.0067*	*0.6679*	*–0.0007*	*0.9993*	*0.0013*	*0.5780*
PROFITABILITY	*–0.0015*	*0.9985*	*0.0112*	*0.8943*	*0.0001*	*1.0001*	*0.0011*	*0.8967*
Control variables								
AGE	*0.0019*	*1.0019*	*0.0036*	*0.5931*	*0.0056*	*1.0056*	*0.0045*	*0.2125*
D_NOSECURED	*0.5559***	*1.7435*	*0.1442*	*0.0001*	*0.8743***	*2.3972*	*0.1884*	*<0.0001*
GROUP	*0.2880*	*1.3338*	*0.2115*	*0.1733*	*0.5627*	*1.7554*	*0.5913*	*0.3412*
D_TRADE	*0.2592 ***	*1.2959*	*0.0853*	*0.0024*	*0.0442*	*1.0452*	*0.1040*	*0.6707*
Interactions with exit timing								
*GROUP*t*					*0.1472**	*1.1586*	*0.0662*	*0.0263*

*Asterisks indicate significance at the *0.05 and **0.01 level*

Figure 3: Determinants of exit type