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The effect of Ownership Concentration on Financial Recovery Time of Western European non-financial firms in Financial Distress

Master Thesis Business Administration in Financial Management

Name: Thierry Wetting
Student number: S2031590
Email address: t.wetting@student.utwente.nl

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Abstract

Firms in financial distress have a big negative impact on all stakeholders. Hence, these firms want to recover to a healthy financial performance, especially to prevent default. The speed of recovery matters, since the firm can suffer from new investments and experiencing more financing constrains because of the higher risk exposure. Improved firm performance is crucial to achieve a shorter firm recovery. Prior studies regarding the agency theory, suggest that a higher ownership concentration would lead to a better firm performance. This study expands the literature in the field of the influence of ownership concentration on firm performance at 67 non-financial firms in Western European countries. According to the results, a higher ownership concentration leads to a shorter firm recovery. This would suggest that the findings of the agency theory are applicable during the setting of this study.

Supervisors: E.J. Sempel, R. Kabir

Keywords

Ownership concentration, financial distress, firm recovery, agency theory, corporate governance.

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1. Introduction

1.1 Background information

Creating and safeguarding firm value is desirable for every stakeholder. Baimwera & Muriuki (2014) mention that firm value consists of the sum of the market value of firm equity and debt market value. Firm value reflects the financial firm performance. A healthy firm performance ensures continuity of the firm, retains employment, ensures that creditors could be paid and ensures that shareholders are rewarded. This appearance creates trust for stakeholders. However, the opposite is an alternative scenario in which the financial performance is seen as unhealthy. When this retain for a certain period, firms could enter a pre-liquidation stage; the financial distress stage.

Firms in financial distress have a big impact on all stakeholders. According to Brigham & Daves (2003), a firm enters the financial distress stage when they are faced with systematically negative financial firm performance. This is in line with the study of Bum (2007), who describes the term financial distress as the situation in which firms are unable to meet its short-term and long-term financial obligations. The presence of a firm in financial distress has a negative effect on job security, claims of lenders and shareholders' equity. Almeida & Philippon (2006) mention the additional threats of the stagnation of suppliers due to overdue payments, which may result in the cancellation of orders by customers.

There are several causes why firms get into financial distress. Slatter & Lovett (1999) explain that the underlying causes could be divided into two types; endogenous and exogenous causes. Endogenous causes emerge due to bad internal decision-making and operations of firms. This could be due to a low-quality management, insufficient quality in marketing and financial control, high expenses, excessive production volume and lack of commitment. Exogenous causes refer to external factors. This relates to a negative change in market sentiment, or political decisions. These are situations in which firms cannot always have direct control on these inherent factors. Currently, many firms are hampered by the COVID-19 pandemic, which has a major impact on the financial consequences.

Firms in financial distress want to recover to a healthy financial performance, especially to prevent the worst-case scenario; a liquidation. The speed of recovery matters. According to Alti (2003), firms in financial distress can suffer from new investments and according to Cowling et al. (2012) firms experience more financing constrains because of the higher risk exposure. The firm performance, which reflects the firm value, is determined by various firm - specific factors. According to studies like from Studies like Kemper et al. (2013), Symeou (2010) and Zeitun and Tian (2007), and Kuntluru et al. (2008) the most relevant factors are; liquidity, firm size, firm age, financial leverage. But also, according to several studies like to Mardiyah (2001) and Khatab et al. (2011), the way how a firm is run by the management; corporate governance. These managers will make decisions in which the company and other stakeholders can benefit the most. Most of the existing literature, such as Berle and Means (1932), are in line with that corporate governance refers to the core system which consists of the establishment of business decisions and controlling. Shleider (1997) adds that the corporate framework exists of the relationship of participants among the board of directors, top management and shareholders. Corporate governance identifies how shareholders control the managers' actions and how the

responsibilities are divided. Shareholders and managers have control over the decision-making and entire performance of the firm, which reflects the profitability and eventually the firm size. For that reason, corporate governance can have a major influence on whether especially the endogenous causes are present. Firms in financial distress are dependent on corporate governance in terms of the way how decision-making leads to an enhancing recovery.
However, according to Sen (1987), corporate governance is related to the agency theory, since the involvement of the two parties during the decision-making; shareholders (or principles) and managers (or agents). Shareholders are entitled to certain voting rights, which can affect the decision-making of the firm. They have interests that may be align, but also could misalign with the managers of the firm. In the case of the latter, the so-called principles – agent conflict occur. These misalignments cause agency costs, which are not preferable during a financial distress. The strength of these ownership voting rights, is inherent to the independence level of the firm with regards to presence of low or high ownership concentration. The question is whether the presence of low or high ownership concentration, leads to a faster recovery of firms in financial distress.

In the next part will be described what research question has been established for this study, which setting is used and how this study contributes to the literature and practical purposes.

1.2 Study objective and contribution

The setting of firms in financial distress is differentiating compared to other studies, because prior studies mainly focused on the relationship between the ownership concentration and financial firm performance during healthy financial circumstances. In addition, prior studies mainly focused on non-European stock listed financial firms. However, the recent published European study of Horobet et al. (2019), describes that the effect of ownership concentration level on firm performance differs between non - financial firms from Western-European countries and Eastern-European countries. Firms among the Western-European showed stable and significant results, in contrast to Eastern - European Countries. In order to reduce the chance of exogenous causes, this study focused on Western European countries. This study expands the existing literature among knowledge how ownership concentration could affect the financial performance of financial distressed firms. These firms are non-financial stock listed firms located in Western Europe. The way to measure whether ownership concentration could affect financial distressed firms, is to monitor the recovery time. For that reason, recovery time is the dependent variable and ownership concentration the independent variable in this study.

Through this study, managers and shareholders of non-financial stock listed firms in Western-European countries can anticipate on how the ownership concentration can affect the firm performance in order to enhance the recovery time during a financial distress. They are provided with study-based information which adapts the setting of West-European non-financial firms, instead of the existing literature from mostly outside the continent. This creates more knowledge in the field, which can used for the strategy determination of non-financial firms, but it also provides further development for other studies.

The study question for the study is as follows: *'How does the ownership concentration level affect the financial firm recovery time of non-financial listed firms in Western-Europe during a financial distress stage?'*

This study contains some limitations, which influence the scope of the study. The study only focuses on non-financial firms, located in Western European countries: Austria, Belgium, France, Germany, Ireland, Luxembourg, Netherlands and United Kingdom.
In addition, the timeframe of this study is from 2013 till 2019, which prevents exogenous causes, such as the financial crisis. Last but not least; since the Orbis database has been used to create a sample for this study, only firms which where adopted in the Orbis database are adopted.

1.3 Outline of the study

In chapter two, literature review provides insight into the agency theory which is related to the total ownership and the definitions of financial distress. In addition, the relationships between shareholder concentration level and financial distress are described. Finally, hypotheses are established and described. Chapter three describes the study method. In that chapter, the variables, methodology are elaborated. The sample and data are described in chapter four. Chapter five describes the results of this study. Chapter six starts with a discussion about the results, followed by the limitations and recommendations. Last but not least, in chapter seven the conclusions of the study are described.

2. Literature review

In this chapter, prior studies and literature are used to define ownership concentration, financial firm performance. This chapter also provides insight how firm independence is related with ownership concentration and which models can be used to determine whether a firm is in financial distress. The hypothesis are established at the end of this chapter.

2.1 Corporate Governance model

Most of existing literature, like Berle and Means (1932) are in line that corporate governance refers to the core system which consists of the establishment of business decisions and controlling. Shleider (1997) adds that the corporate framework exists of the relationship of participants among the board of directors, top management and shareholders. The interpretation of the factors regarding Corporate Governance differ per continent. This study focuses on non-financial firms in Western Europe. It is relevant to map out how corporate governance is structured in various regions. The European Corporate Model is elaborated in Table 1 and has been used in existing literature like Martynova & Renneboog (2011). The models are established in order to increase the economic efficiency. The Continental Europe corporate governance model, also called the German system, fits the best with the scope of this study. This model is characterized by high concentration of capital and the presence of parties like, banks and other stakeholders in order to increase the quality of the corporate governance. Shareholders play an important role in terms of control, since the common interests with the organization and the participation in its management and control. The relation between management and shareholders are often close, because of their common interests. Because of the close relationship between the management and shareholders, conflicts can also arise when their interests are not in line with each other. In the next part, the relationship between management and shareholders are described by the agency theory.

Table 1. The main features of corporate governance models

	Anglo-Saxon	**Continental Europe**	**Japanese**
Oriented towards	Stock market	Banking market	Banking market
Considers	Shareholders' property right	Shareholders' property right and company's relationships with its employees	Stakeholders' interests
Shareholders structure	Dispersed	Concentrated	Concentrated
Management	• Executive directors • Non-executive directors	• Supervisor Board • Board of Directors	• Board of Directors • Revision commission
Control system	External	Internal	Internal

2.2 Agency theory and Ownership Concentration

The literature among the relationship of the management and shareholders, belongs to the agency theory. According to Syed, et al. (2010) contain management and shareholders different behaviors and interests. The management prefer to make their own decisions in which they believe that the firm benefits the most. The shareholders got the mission to monitor whether the management of the firm follow up their interest to maximize their profit. According to Sen (1987) the principal – agent conflict arises when misalignment occur between the management (agents) and shareholders (principles). According to Chowdhury (2004), there are four causes for the arise of the principal – agent conflict: Separation of ownership form control, duration of involvement, information asymmetry and moral hazard. Separation of ownership form control leads to a decrease of monitoring level by principles on the agent, in which the agent uses the business property for their private purpose in order to increase their welfare. The duration of involvement appears when agents tend to increase their benefit when they work for a firm for a limited period. Information asymmetry appears when the information to the principles are not the same as the information which is known by the agent. Moral hazard appears when the managers are not aware of the risk which is attached to the investment decision of the principles.

These conflicts cause a cost increase, which are called agency costs. According to Jensen and Meckling (1976) consists agency costs of monitoring costs, bonding costs and residual loss. The contracts between the principles and the agents are fundamental, because it is the reference of all agreements between them. In general, by monitoring and bonding, the agency problems will be resolved or mitigated.

Shareholders want to monitor whether the management follow up their interests. Fama & Jensen (1983) indicate that the shareholders monitor the management in order to maximize the shareholders' wealth. They incur costs for control procedures and audits by the management. The firm can also make monitoring costs to ensure that the management follow up the shareholders' interest, by engaging the board to monitor these activities. Bonding cost are according to Jensen and Meckling (1976) attached to the management, because the cost incurred are used to operate according to the defined system. They can reassure investors, despite the separation of ownership and control, that they will work with diligence. Residual loss is the result of misalignment between the interests of the management and the shareholders. The inefficient decisions of the management result in a loss for the shareholders, because the wealth has not been maximized for them.

The higher the influence from shareholders, the less information asymmetry. This reduces costs and provides a more efficient result. Since the agency costs depend on the ownership concentration, the next section describes how agency costs relate to a dispersed and concentrated ownership structure.

2.3 Ownership Concentration

In this part, the theory behind the variable ownership concentration is elaborated.

2.3.1 Firm Independence and Ownership Concentration

The ownership concentration of a publicly listed non-financial firm can be low/dispersed or high/concentrated and could consist of different structures. This is inherent to the level of the

firm's independency. In order to determine the level of the firm's independency level, the presence of a low and a high ownership concentration and its structures must be evaluated. The 'BvD independence indicator', created by Bureau van Dijk, is used in several studies in order to measure the ownership concentration structure. It determines the degree of independence of a firm with regards to its shareholders. Since the BvD independence indicator has been implemented in the renowned Orbis database and has been applied in several prior studies, like the study of Horobet (2019), it is seen as a reliable proxy-indicator. Table 2 provides insight in the BvD independence indicator. In the next part, a connection has made between the ownership concentration in which with using the agency theory and to the ownership concentration, by using the BvD independence indicator.

2.3.2 Agency theory and Low Ownership Concentration

Shareholders with a low or dispersed ownership concentration corresponds, according to the BvD independence indicator, with an independent firm or a no majority ownership. In the case of an independent firm, shareholders containing less than 25% of direct or total ownership of the firm are present. This type is marked with indicator A. In the case of a no majority ownership, only shareholders with an ownership below the 50%, but above 25% are present. This type is marked with indicator B. In addition, a distinction is made between A/B +, A/B and A-/B- types of shareholders, see table 2. According to Leaven and Levine (2008) have shareholders with a low ownership concentration less incentive to align their interest with those of the management of the firm, compared to shareholders with a large or concentrated ownership concentration. The monitor costs are too high for this group compared to their incentive. For that reason, the management has more power in making decisions that act in their own interest. This is in line with the findings of Fama and Jensen (1983), since they indicate that dispersed shareholders want to avoid monitoring costs. The reason for that is that they can take advantage of the monitoring activities of other firms. The small fractions of shares of the shareholders do not outweigh the costs for the reduction of agency conflicts. The higher the shareholders' ownership concentration, the higher the incentive and available voting rights. This means that shareholders with a medium – low ownership concentration have more incentives and voting rights available than shareholders with a low ownership concentration. In figure 1 and 2 a comparison is made between low ownership concentration and high ownership concentration. Figure 2 indicates that shareholders with a high ownership concentration are dominant, because of the higher incentives and voting rights.

The next part elaborates more about a high concentrated ownership.

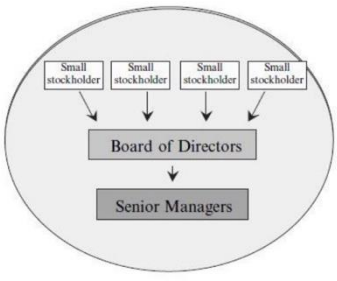

Figure 1 Low Ownership Concentration, Roe (2008)

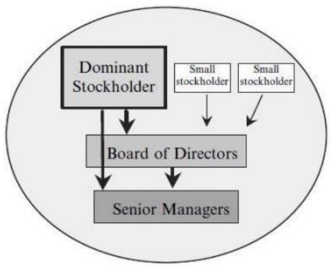

Figure 2 Including High Ownership Concentration, Roe (2008)

Table 2. BvD independence indicator

Indicator and Degree of Ownership structure	**Main Significance**	**Supplementary Clarifications**
A. Independent firm	Independent firms. Those with known recorded shareholders, each of them having less than 25% of direct or total ownership of the firm.	A+: Firms with six or more identified shareholders whose percentage is known. A: Firms with four or five identified shareholders whose percentage is known. A-: Firms with one to three identified shareholders whose percentage is known.
B. No majority ownership	Firms with known recorded shareholders with ownership below 50%, but with one or more shareholders with ownership percentages above 25%.	B+, B and B- are allocated similarly to A clarifications above.
C. Indirect majority ownership	Firms with known recorded shareholders that have a total or calculated ownership above 50%.	C+: Firms with a sum of direct percentage of ownership above 50.01% or higher. C: Assigned to firms in whose case an ultimate owner is mentioned in a source, although its ownership percentage is unknown.
D. Direct majority ownership	Firms with a recorded shareholder that has a direct ownership above 50%.	
U. Companies with an unknown degree of ownership concentration		

2.3.3 Agency theory and High Ownership Concentration

Shareholders with a high ownership concentration (figure 2) corresponds, according to the BvD independence indicator elaborated in table 2, when a firm consists of a recorded shareholder that consist of the sum or direct ownership above 50%. A distinction is made between C and D indicators. Indicator C indicates that the total or calculated ownership of shareholders is above 50%. Table 2 explains the distinction between C and C+. Indicator D is related to shareholders which contain a direct ownership of more than 50%. According to Patrick (2002),large shareholders got a higher incentive. This results in actively monitoring the management of the firm. Monitoring reduces the gap between the interest of the shareholders and the management. According to Shleifer and Vishny (1986) large shareholders have, because of their voting power, more control over the expenses and decisions the firm make. The control rights of large shareholders can reduce agency costs, since they not only effectively monitor the management, but also because of the ability to discipline or remove managers. Sen (1987) explains that the dominant power of large shareholders, could cause the principle-principle conflict. This is a conflict between the majority and the minority shareholders or between the majority shareholders. There are mainly two causes: a) decision-making cause and b) retention of earnings cause. Because of the power of large shareholders, the decision-making cause, leads to the fact that small shareholders have too less power. This ends up in the follow up of the decisions made by the large shareholders. The retention of earnings cause means that large shareholders choose to retain earnings in the firm for future projects, instead of a pay-out to all shareholders. Small shareholders may lose their earnings in this case. A conflict between the majority shareholders could occur when the own interest misaligns each other. This can even lead to hostile takeovers.

2.4 Financial Distress

Financial firm performance is crucial to know more about the financial condition of the firm. The existing literature defined financial firm performance and its importance, in order to understand when a firm ends up in a financial distress stage, but also when it is recovered.

2.4.1 Financial Firm Performance

The often used definition of financial firm performance among stakeholders of organizations would be the definition of Moullin (2003); ‘the evaluation how well organizations are managed and the value they deliver for customers, shareholders and other stakeholders.’ According to Dermirbag, Tatoglu, Tekinus, & Zaim (2006) performance management offers management to respond adequately to the outcomes in order to increase the financial firm performance. The success of a firm in terms of performance can be explained over a certain time horizon. Intrinsic, financial firm performance can be maximized by managing the aligning strategies, techniques and other business tools. According to Sudiyatno, Puspitasari & Kartika (2012), the financial firm performance plays a key role in the company’s stock market prices. In the case of positive firm performance, these positive signs attract investors, with an increasing firm value. The opposite occurs in the case of a negative financial firm performance. The greater the value,

the better the prospects for prospective investors. The value of a stock reflects the firm value, but not the intrinsic value of the firm at the same moment. It is most of the time important for the future expectations of the firm's value.

2.4.2 Financial Firm Performance Ratios

There are several financial firm performance ratios which are grouped into accounting-based and market-based ratios. This study focuses on the accounting-based ratios, which reflects the intrinsic firm performance in order to monitor the recovery of firms in financial distress. Prior studies, like Brigham and Ehrhardt (2005), have categorized the ratios of the accounting-based ratios. Table 3 shows the total list of the accounting-based ratios. The financial ratios are categorized.

According to Robinsons et al. (2015) liquidity ratios are indicators to measure whether the firm is able to meet its short-term liabilities. Profitability ratios indicate whether the firm generate profits as return on their invested money. It reflects the success or failure of the firm, based on the invested amount of money. Activity ratios indicate how well assets in a firm are used. The leverage ratio indicates the firm's debt levels. A high-debt ratio could carry more risk, because of the higher burdens for the firm. The value of the firm will be also lower valuated, since a high ratio can be at the expense of cash flows, which increases the risk of a firm going default.

The next part elaborates when a firm experiences financial distress and when it has been recovered.

2.4.3 Financial Firm Performance and Financial Distress

According to the previous section, performance measurements are crucial in order to find out the financial condition of the firm. For that reason, it is important to know when a firm experiences a financial distress and when it has been recovered. There are several financial performance indicators available, but the question is which of them are relevant to use.

Historically, different bankruptcy prediction models, predict the bankruptcy of firms in financial distress. The most famous models are the models of Altman (1968), Zmijewski (1984) and Ohlson (1980). According to several prior studies, the accuracy of these models can differ compared to each other. With the use of a financial distress model, an early warning will be provided to firms to anticipate bankruptcy. Because of the setting of this study, prior studies outside U.S., close to European studies, has been taken into account to determine which model is most appropriate to use for this study. According to Singh & Mishra (2016), Grice & Dugan (2003) and Husein and Pambekti (2014), the Zmijewski model is the most appropriate model to detect financial distress of firms and to predict the bankruptcy of firms. The study of Singh & Mishra even concluded that the overall accuracy of Altman, Ohlson, and Zmijewski original models are 61.53%, 64.1 and 79.49% respectively. Because of the higher accuracy of the Zmijewski, according to several studies, this model has been elaborated further in this study. In the next part, this model will be explained.

Table 3. Accounting-based ratios

Category	**Financial Performance Ratio**
Liquidity ratios	Current ratio
	Quick ratio
	Working capital to sales ratio
	Cash ratio
Profitability ratio	Gross profit ratio
	Operating profit margin
	Net profit margin
	Return on equity
	Return on assets
	Activity on assets
Activity ratio	Inventory turnover (times/days)
	A/R turnover (times)
	TA turnover
	FA turnover
Leverage ratio	Debt to assets
	Debt to equity
	Times interest earned

2.4.4 The Zmijewski model

The Zmijewski model is used in order to detect the recovery time of firms in financial distress. The model consists of the following formula:

$X\text{-score} = -4.336 – 4.513X_1+5.679x_2 – 0.004x_3$

The following financial ratios are adopted in the formula:

- X_1 = Return on Assets (ROA). Calculated by: Net Income/Total assets
- X_2 = Debt to assets. Calculated by: Total Debt/Total Assets
- X_3 = Current ratio. Calculated by: Current Assets / Current Liabilities

In figure 3, the model is further elaborated. In the left part, the financial ratios are illustrated. After filling in the X values in the formula, there can be determined whether a firm experiences financial distress. The right part of figure 3 illustrates two scenarios, explained by the study of Djamaluddin et al. (2017). The first scenario is that the outcome of the X-score of the formula, has a outcome of > 0. This indicates that the firm can be classified under unhealthy conditions or likely to lead financial distress with the chance of bankruptcy. The second scenario is that the outcome of the X-score of the formula, has a outcome of < 0. In this case, the firm is in a healthy condition. In the case that a firm experienced a stage of both, financial distress and the recovery to a healthy condition, the recovery time of the financial distress can be calculated. In order to know the recovery time of the firm, the time period between the outcome of X-scores > 0 and < 0, must be calculated. The condition of the Zmijewski model is that the X-score of the recovered firm must stay < 0 for at least one year after detection in order to eliminate temporary recoveries.

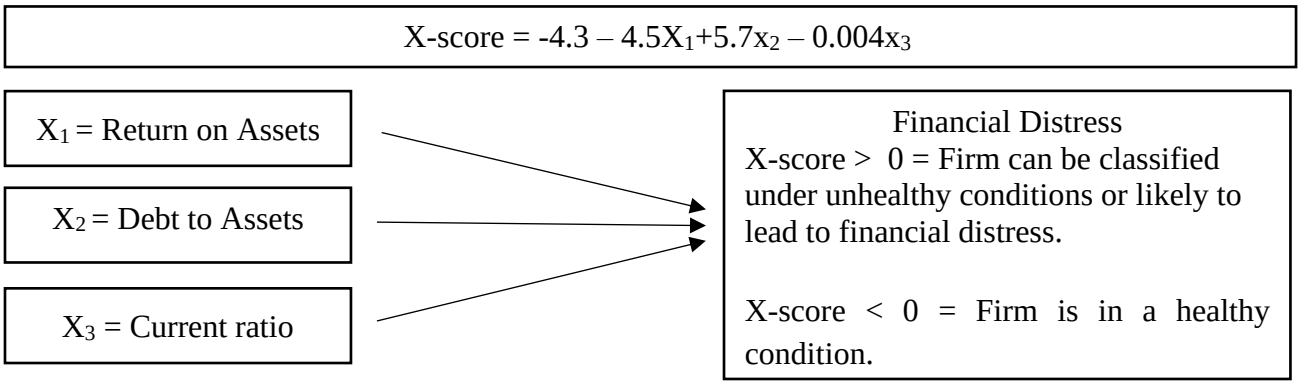

Figure 3 Zmijewski model, Djamaluddin et al. (2017)

2.4.5 Financial ratios of firms in financial distress

The financial ratios Return on Assets ($X_{1)}$, Debt to Assets ($X_{2)}$, and Current ratio ($X_{3)}$ of the Zmijewski model, are important elements to determine whether a firm is in financial distress. The X_1, X_2 and X_3 values can variate, depending on the financial situation of the firm. In this part, the behavior of financial ratios in relation to healthy and unhealthy financial firm conditions are further elaborated.

Return on Assets (X_1)
According to Robinsons et al. (2015), Return on Assets (X_1), is one of the profitability ratios (see table 3). This ratio describes the ratio between the amount of assets and the profit made with these assets. The higher the ratio, the better the profitability of the firm. In general, a firm with a ROA above 5.0 is considered as a healthy ratio. Although, firms in financial distress often perform below a ratio of 0.

Debt to Assets (X_2)
Debt to Assets ratio (X_2) is according to table 3, one of the leverage ratios. Robinsons et al. (2015) further explains that this ratio describes the ratio between the amount of debt and assets. In general, a ratio of 0.4 or below is considered as a good debt to assets ratio. The higher the ratio, the less the firm is able to pay short -and long-term debts.

Current ratio (X_3)
Current ratio (X_3) is according to table 3, one of the liquidity ratios. According to Robinsons et al. (2015), this ratio describes whether the firm can cover its short - term liabilities with its assets. A ratio above 1 indicates a healthy result. A ratio between 0 and 1 seems to be a unhealthy financial ratio.

2.4.5.1 Interest coverage ratio
Although the Zmijewski model is known for analyzing financial distress at firms, the theory has been around for quite some time. This means that more studies have gained a view of analyzing firms in financial distress. Platt and Platt (2006) also investigated the analysis of firms in financial distress. They concluded that firms with a negative interest coverage ratio are a relevant indicator to determine whether firms have ended up in financial distress. In general, an interest coverage ratio above 1.0 indicates that the firm can pay its interest charges in the coming year. This finding of Platt and Platt (2006) is also in line with the finding of Asquith, Gertner and Scharfstein (1994).

Because the interest coverage ratio provides a representative view of the operating cash flows of the firm, it will be used in addition to the Zmijewski model in order to provide a more reliable study. By including this ratio in this study, it has also been made possible to reflect on how the Zmijewski model and the interest coverage ratio relate to each other.

2.4.6 Characteristics of recovered financial distressed firms
Few studies have discussed the recovery of financial distressed firms. The decision to either file for liquidation or reorganization to recover could be affected by the shareholding ratio of the management, according to Kim and Kwok (2009). A firm in recovery could be due to the trust of a company's previous achievements, with the necessary commitment from management and shareholders. This is in line with the findings of Sudarsanam & Lai (2001), which state that the overall performance of recovered firms were significantly superior to non-recovered firms. But, firms with a higher level of leverage, face more uncertainty with regard to the access of investors which facilitates the firm’s development, indicates Kahl (2002). Lasfer et. al (2010) adds that a characteristic of recovered companies is that they undertake more financial and

cash conserving strategies as opposed to the non-recovered companies, which undertake more of asset-based and cash depleting strategies. They have also shown that 75% financial distressed UK firms did recover from a financial distress phase. This implies that the majority of the financially distressed companies survive, due to the successful choices and pressure made by the management and shareholders to regain financial health.
In the next part the influencing variables are described of financial firm performance.

2.4.7 Influencing variables on Financial Firm Performance

To guarantee the reliability of this study, the firm-specific variables that have a significant impact on the financial firm performance, to measure the financial firm recovery, should be analyzed. Studies like Kemper et al. (2013), Symeou (2010) and Zeitun and Tian (2007) indicate that firm characteristic size has an direct positive influence on the stability of the financial firm performance. Smaller firms (50 or less employees) are more likely to fail and have to deal with more volatile financial firm performance than medium (51-500 employees) and large (>500+ employees) sized companies.

Symeou (2010) and Zeitun and Tian (2007) also mention a positive influence of the firm age on the firms are defined as younger than seven years since the start-up phase. In general, a firm with a higher age has a lower volatility than younger aged firms. Older firms often have lower costs, because of several benefits, for example economies of scale and higher efficiency.

Financial leverage, or debt ratio, could influence the financial firm performance in a negative way according to prior studies. Despite the tax savings for firms with a higher debt ratio, the disadvantages are larger for the financial firm performance. Empirical studies find that bankruptcy-related problems are more often present when the capital structure of firms consists of a high debt ratio. According to like Kuntluru et al. (2008) this has a negative effect on the financial firm performance.

Next to the firm-specific factors, the industry market and economy of the firm also influences the financial firm performance. In this study there are two types of industry classified. The first type includes firms with high level of capital and investments. These characteristics are firm specific. According to Zeckhouser and pound (1990), shareholders have more trouble to monitor the management when high level of capital and investments are embedded as firm specific characteristics. The firms in this industry often develop new technologies. An example is the computer industry. The opposite are firms in which capital and investments are not firm specific. Example is the oil and metal industry. This is more transparent for the shareholders. Monitoring is easier for them and contain lower risk.

According to the study of Yelih and Kaya can different types of economy influence the financial firm performance. Hence, a sample of non-financial firms from Western Europe is used in this study. According to Thomsen, et al. (2006) is the regulation in terms of investor protection also influencing the financial firm performance. These two aspects are covered to the use of the following countries which belong to Western Europe. They are matched both geographically and economically according to CIA[1] (2019) and United Nations: Belgium, Germany, France, Ireland, Luxembourg, Monaco, Netherlands, Switzerland, Austria and

[1] CIA is the nation's premier agency providing global intelligence in an ever-changing political, social, economic, technological, & military landscapes.

United Kingdom. These countries have also been defined as Western European countries according to the study by Horobet et al. (2019).

2.5 Relationships

First, the relationship between ownership concentration and firm performance is described. After that, the relationship between ownership concentration and firm performance recovery is described.

2.5.1 Ownership Concentration and Financial Firm Performance

a higher total ownership concentration lead to a higher level of monitoring, which contributes to a better firm performance, mentioned Schleifer & Vishny (1997). Because of the large incentives for large shareholders, monitoring and using the voting control to make decisions which are in line to maximize the profits, can reduce the agency problem. Reducing the agency problem means that the firm has less monitoring costs, which can result in a better firm performance. However, Thomsen and Pederson (2000) mention that a concentrated ownership could counteract the diversification to increase shareholder wealth. This interest of large shareholders could mismatch with top managers, which more often prefer diversification strategies, to mitigate risk. This could occur higher agency cost, which can be at the expense of the firm performance, especially when a risky project fails due to the decisions of the large shareholders. Although, Thomson and Pedersen (2000) report a positive relationship between total ownership concentration and firm performance for the overall sample. They took a sample of 435 European firms during a stable economy and came to the conclusion that a high total ownership concentration has a positive impact on the financial firm performance. More empirical studies report the same positive relation, including Leng (2004), which found a positive significant effect between the relation between total ownership concentration and the financial firm performance. A relevant finding of several empirical studyes like Thomson and Pederson (2000), Claessens, Simeon et al. (2002) and Morck, Schleider and Vishy (1988) is that total ownership concentration has a positive relation to financial firm performance, but till a certain point of concentration. Above that certain point of concentration, those shareholders use their level of voting power, to maximize their own welfare.

The study of Liu, Uchida and Yang (2012) mention a positive significant effect of the total ownership concentration on financial firm performance during an economic turndown. Small shareholders decrease the financial firm performance, what means that an inversed U-shaped relation occur. That indicates that a higher total ownership concentration mitigates the financial constraints of firms during the economic turndown.

There is one relatively comparable study in the EU. Horobet et al. (2019) mention that larger ownership concentration has a positive significant effect on the financial firm performance indicators ROA and ROE of all the total EU and Western-based samples. The Eastern-based sample did not perform a positive significant effect. So, according to this study there is a difference between the outcomes of Western-based developed countries and Eastern-based developing countries.

2.5.2 Ownership Concentration and Firm Performance Recovery

Studies describing the relationships between ownership concentration and firm performance recovery are scarce in Europe. In fact, only one study to date has explored the relationship. The study by Horobet et al. (2019) described the relationship between ownership concentration and firm performance recovery of European countries during and after the financial crisis of 2007 till 2009. They mention that larger ownership concentration has a positive significant effect on the firm performance recovery on the indicators ROA and ROE of all the total EU and Western-based samples. The Eastern-based sample did not perform a positive significant effect.

2.6 Hypotheses developments

According to existing literature and based on the elements of the agency theory, the hypotheses for this study has been established.

2.6.1 Effect on financial firm recovery

The agency theory mention that large shareholders, because of their voting power, have more control over the expenses and decisions which the firm make. In addition, the theory mentions that shareholders with a concentrated ownership concentration, have higher incentives compared to shareholders with a dispersed ownership concentration. The control rights of large shareholders can also reduce agency cost, since they not only effectively monitor the management, but also have the ability to discipline or remove managers. In addition, the majority of the existing literature suggests that ownership concentration have a positive effect on financial firm performance. According to the existing information, the first hypothesis for this study is as follows:

Hypothesis 1*: A concentrated ownership concentration leads to a faster financial firm recovery for Western – Europe non-financials firm in financial distress than a dispersed ownership concentration.*

2.6.2 Non-linear relationship

Hypothesis 1 expects that a positive linear relationship consists between ownership concentration and financial recovery for Western-European non-financial firm in financial distress. However, some literature, like Pederson (2000), Claessens, Simeon et al. (2002), Morck, Schleider and Vishy (1988) and Liu, Uchida and Yang (2012) also suggest that ownership concentration has a positive relation with financial firm performance, but till a certain point of concentration. The reason for that certain point of concentration is because of the phenomenon that shareholders could use their level of voting power to mainly maximize their own welfare. In addition, Liu, Uchida and Yang (2012) suggested that there is a positive significant effect of the total ownership concentration on financial firm performance during an economic turndown. Since small shareholders decrease the financial firm performance during an economic turndown, an inversed U-shaped relation occur. In this study will be tested whether a certain point of ownership concentration would also provide the most effective financial firm recovery time. For that reason, the following second hypothesis has been established:

Hypothesis 2*: The relation between ownership concentration and financial firm recovery time for Western – Europe non-financials firm in financial distress will have an inverted U-shaped relation.*

In the next chapter, the variables, type of study, methodology, data and sample are described in order to test the two hypotheses and to answer the main study question.

3. Study method

In this chapter the methodology, study model, variables, data and sample for this study are described.

3.1 Variables

In this study the independent variable ownership concentration and the dependent variable financial firm recovery are explained for non-financial listed firms in Western – Europe between 2014 and 2019. Figure 4 shows the relation, with the expectation that ownership concentration has a positive effect on the financial firm recovery. An overview of all variables used in this study are described in table 4.

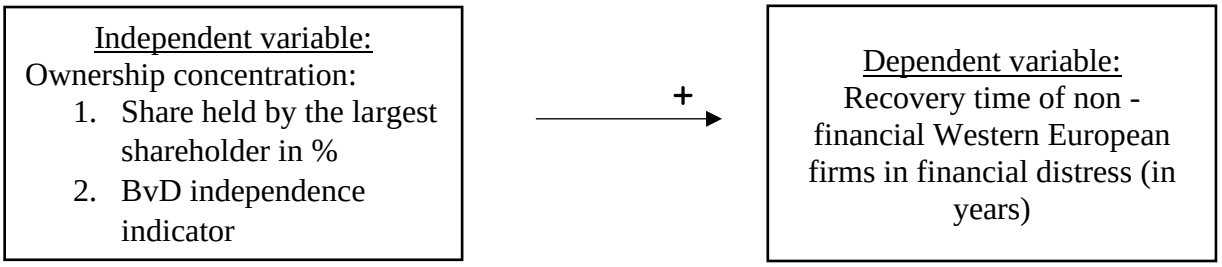

Figure 4 Independent and dependent variables

3.1.1 Dependent variable

The aim of this study is to identify the influence of ownership concentration on the recovery time of non-financial Western European financial distressed firms. The recovery time will be measured in years, since the financial statements in the Orbis database are presented once a year. In order to measure the recovery time, the formula of the Zmijewski model, explained in chapter 2.4.4, has been used. The formula of the Zmijewski model is as followed:

$X\text{-score} = -4.3 - 4.5X_1 + 5.7X_2 - 0.004X_3$

In order to calculate the recovery time, only firms which have experienced a stage in which the firm scores an X-score output of >0, followed by an X-score output of <0. The time period between the outcome of X-scores > 0 and < 0 defines the recovery time.

3.1.2 Independent variables

Ownership concentration, the independent variable in this study, are measured according to two different kind of operationalizations. The traditional measurement is often used in studies which relate to the agency theory. This way of measuring is also used during the study of Hamadi and Heinen (2015), who defines ownership concentration as the share held by the largest shareholder of a firm in percentage. The other way of measuring is the BvD independence indicator, described in chapter 2.3, which has been used in studies like Horobet (2019). BvD independence indicator states that ownership concentration is inherent to the level of the firm's independency. As table 4 explains, there are different categories, which are grouped per ownership concentration, taking into account the number of shareholders.

3.1.3 Control and dummy variables

To guarantee the reliability of this study, the firm-specific variables that have a significant impact on the financial firm performance, to measure the financial firm recovery, should be analyzed. In this study the firm-specific control variable firm age and the macroeconomic-specific control variable location and dummy variable industry market have been used. The literature described in chapter 2.4.7 has been used in order to establish the control and dummy variables for this study. The firm-specific variable firm size is mentioned in chapter 2.4.7, but has been eliminated as a dummy or control variable, since only the group 'large firm size' participated in this study. In the case that at least one of the following conditions are being met, the firm fall under the category of large firms: the firm is listed, contains more than 500 employees, or consists of more than 100 million EUR of total assets. The control and dummy variables are explained in table 4.

The firm-specific control variable firm age is the year in which the financial distress started, less the year in which the firm was established. The macroeconomic control variable location consists of firms which are located in the following countries: Austria, Belgium, France, Germany, Ireland, Luxembourg, Netherlands and United Kingdom. In comparison with the list mentioned in chapter 2.4.7, the countries Monaco, Northern Ireland and Switzerland are eliminated since there is no data available in this study. But in this study, the majority of the sample consists of firms from French and United Kingdom. For this reason, the focus was mainly on these two groups. It was also examined whether the groups produced significant deviations from the results, compared to the other groups in the sample. This will be elaborated in the next chapter.

The macroeconomic dummy variable industry development is limited to two types of industry, since the sample of this study exists of a limited amount of firms. The first type are firms which contain highly capital and investment firm specific characteristics; the high development category. As already explained in chapter 2.4.7, according to Zeckhouser and pound (1990), the development is on a high level with these types of firms, what means that shareholders have more difficulty to monitor the management. The firms in this industry often experiencing new technologies, like the computer industry. The opposite are firms where capital and investments are not firm specific; the low development category. Examples are the oil and metal industry. This is more transparent for the shareholders, what means that monitoring is easier for them.

In the next subchapter, the methodology of this research is further elaborated.

Table 4: Explanation of all variables

Variables	Type of variable	Explanation
Recovery time	Dependent variable	Year in which the firm has been recovered from the financial distress, less the year in which the financial distress started.
Ownership concentration	Independent variable	Share held by the largest shareholder of a firm in %.
	Independent variable	BvD independence indicator Mentioned by: Group A: A- / A / A+ Group B: B- / B /B+ Group C Group D Labeled as: 0 = Firms which includes six or more identified shareholders whose percentage is known, each of them having less than 25% ownership (A+). 1 = Firms with one to three identified shareholders whose percentage is known, each of them having less than 25% ownership (A). 2 = firms with one to three shareholders, each of them having less than 25% ownership (A-). 3 = firms with six or more shareholders, each of them having less than 50% ownership, but with at least one shareholder having more than 25% ownership (B+). 4 = firms with four or five shareholders, each of them having less than 50% ownership, but with at least one shareholder having more than 25% ownership (B). 5 = firms with one to three shareholders, each of them having less than 50% ownership, but with at least one shareholder having more than 25% ownership (B-). 6 = Firms with a sum of direct percentage of ownership above 50.01% or higher (C+). 7 = Firms with a recorded shareholder that has a direct ownership above 50% (D).
Firm age	Control variable	The year in which the financial distress started, less the year in which the firm was established.
Location	Control variable	Firms located in the following countries: Austria, Belgium, France, Germany, Ireland, Luxembourg, Netherlands and United Kingdom
Industry development	Dummy variable	High development: firms where capital and investments are firm specific, often related to experiencing new technologies. An example is computer industry. Low development: firms where capital and investments are not firm specific, often related to existing technologies and more transparency for the shareholders. An example is the oil industry.

3.2 Methodology

3.2.1 Setting

The relationship between ownership concentration and firm performance has been studied by many studies outside Europe. In this study, the independent variable ownership concentration and the dependent variable financial firm recovery is explained for non-financial listed firms in Western – Europe. The label for the dependent variable firm recovery in this study, is linked to the regular firm performance. The setting in terms of location and firm financial distress stages, differentiates this study compared to others. In order to conduct this study, the two hypotheses from chapter 2.6, need to be tested. Hypothesis 1 expects a linear relation between ownership concentration and financial recovery for Western - Europe non-financials firms in financial distress. In order to test this relation, prior studies have applied regression analysis to examine the relationship between ownership concentration and firm performance. The two regression models are the OLS - and the multinomial logistic regression model. Hypothesis 2 also suggests that ownership concentration has a positive relation with financial firm performance, but till a certain point of concentration expressed in an inversed U-shaped relation. Like hypothesis 1, in order to test hypothesis 2, both the OLS regression and the multinomial logistic regression with a quadratic term will be conducted. In the next session, the regression models will be elaborated.

3.2.2 Detection and recovery of financial distressed firms

Appendix I explains the way how the financial distressed firms are selected for the sample. A time frame from 2013 till 2016 has been selected in order to detect the financial distressed firms, see figure 5. The time frame from 2016 till 2019 is used in order to monitor the recovery time of the selected financial distressed firms. The conditions of the Zmijwski model and the interest coverage ratio determined whether a firm experienced a financial distress stage. Sampling data from the year 2013 has been conducted to mitigate the exogenous causes, because of the negative market sentiment caused by the European debt crisis in 2009. According to a study of Ruca (2014) who used the data from the European Commission, the market has been in recovering from of 2013. For that reason, it seems safe to start sampling from the year 2013. In addition, the condition was that the firm was not already in financial distress before 2013.

Once the financial distressed firms are detected and selected, during the second time frame, the recovery time is monitored. The years 2016 till 2019 are used as time frame, illustrated in figure 5. The time between the moment of detection and recovery of the firm, is the recovery time.

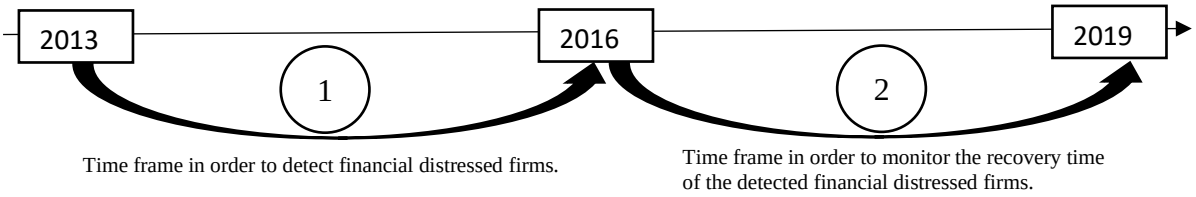

Figure 5 Independent and dependent variables

The conditions of the Zmijewsi model and the interest coverage ratio are used in order to detect financial distressed firms and its recovery. Only firms which have experienced a stage in which

the firm scores an X-score output of >0, followed by an X-score output of <0 are selected. In addition, the condition is that the X-score of the recovered firm must stay < 0 for at least one year after detection in order to eliminate temporary recoveries. In order to enlarge the chance to detect financial distressed firms in the dataset, theories behind the adopted financial ratios theories in the Zmijewski formula (X-score = $-4.3 - 4.5X_1+5.7X_2 - 0.004X_3$) are used. According to the theories written in chapter 2.4.5, financial ratios Return on Assets ($X_{1)}$, Debt to Assets ($X_{2)}$, and Current ratio ($X_{3)}$ are used to create a smaller, valuable dataset (see appendix II). For that reason the dataset consists of conditions based on the theories in order to detect more easily financial distressed firms.
During the detection phase (2013-2016 timeframe) the following information is known:

- Return on Assets (X_1): Financial distressed firms often perform below a ratio of 0.
- Debt to Assets (X_2): A ratio above 0.4 is considered as a bad debt to assets ratio. The higher the ratio, the less the firm is able to pay short -and long-term debts.
- Current ratio (X_3) between 0 and 1 seems to be a unhealthy financial ratio.

During the recovery phase (2016-2019 timeframe) the following information is known:

- Return on Assets (X_1): Healthy or recovered firms generally got a Return on Assets ratio above 5.0.
- Debt to Assets (X_2): A ratio below 0.4 is considered as a healthy debt.
- Current ratio (X_3): A ratio above 1.0 seems to be healthy

In addition to the Zmijewski model, the interest coverage ratio provides a representative view of the operating cash flows of the firm. In this study, the interest coverage ratio is used as a conditional variable in addition to the Zmijewski model. Because of this, it was possible to test the reliability of the of this contemporary used ratio, in comparison with the traditional Zmijewski model. Basically, the interest coverage ratio is used as an controlling ratio in order to select companies for the sample. According to the theory, the following information about the interest coverage ratio is known.
During the detection phase (2013-2016 timeframe):

- Interest coverage ratio: Financial distressed firms often perform below a ratio of 0.

During the recovery phase (2016-2019 timeframe):

- Interest coverage ratio: Financial distressed firms often perform above a ratio of 1.0.

The condition is that during the same period, a ratio below 0 and above 1.0 must have been experienced, next to the conditions of the Zmijewski model. However, in a later stage of this study, the relation in comparison with the Zmijewski model has been tested. There is tested whether significant difference in results occur when the interest coverage ratio dataset has been separated from the dataset of the Zmijewski model. This made it possible to create more depth in this research topic.

3.2.3 Regression analysis

This study aims to test the relationship between ownership concentration and recovery time of non-financial listed firms in Western-Europe during a financial distress stage. In order to test hypothesis 1, after reviewing prior study that has investigated the relationship between ownership concentration and firm performance, it can be concluded that most of studies have used OLS regression models. Some of them have used the multinomial logistic regression.

3.2.3.1 OLS Regression model

Regression analysis is the most frequently used data analysis method. The ordinary least squares regression (OLS), is mostly used in the case that the relationship between one or multiple independent variables and a dependent variable.

According to Goldberger (1964), the OLS regression estimates the parameters of a linear regression of a set of independent variables. There also consists a pooled OLS regression, but this method is not used, since there are no different samples for different times periods selected. One important assumption when using the OLS regression, is to test whether multicollinearity occurs between the independent variables. In the case that multicollinearity occurs, one of the independent variables has to be removed are separated from the variable overview. Multicollinearity appears according to Daoud (2017) when independent variables in a regression model are highly correlated (>.85). Since the two independent variables are also tested separately in this study, apart from the possibility that multicollinearity could occur, the regression formula is divided into two models.

$$Financial\ firm\ recovery_{,t} = \alpha + \beta_1 ownership\ concentration_{i,t-1} + \beta_2 firm\ age_{i,t} + \beta_3 Industry_{i,t} + \beta_4 Location_{i,t} + \varepsilon i,t$$

$$Financial\ firm\ recovery_{,t} = \alpha + \beta_1 BvD\ independence\ indicator_{,t-1} + \beta_2 firm\ age_{i,t} + \beta_3 Industry_{i,t} + \beta_4 Location_{i,t} + \varepsilon i,t$$

Hypothesis 2 suggests that ownership concentration has a positive relation with financial firm performance, but till a certain point of concentration expressed in an inversed U-shaped relation. To test the inversed U-shaped relation, only the independent variable ownership concentration expressed in share held by the largest shareholder in percentage will be used. According to Bates & Watts (1988), the percentage is required in order to create a quadratic term. By including this quadratic term in SPSS, a non-linear relationship can be observed. In this case, the formula is used:

$Financial\ firm\ recovery_{,t} = \alpha + \beta_1 BvD\ independence\ indicator^2 + \beta_2 firm\ age + \beta_3 Industry + \beta_4 Location$. The $b*x^2$ in the formula represents the coefficient of the quadratic term.

According to Ritz & Streibig et al. (2008), the coefficient of the quadratic term has to be negative and significant when an inversed U-shaped relation is present. The X – coefficient in the formula has to be positive and significant. In order to test this, both OLS and multinomial logistic regressions will be conducted. In the case that hypothesis 2 will be rejected, the

interpretation of Bruin (2006) will be used in order to know which non-linear relationship is present.

Since in some similar studies the multinomial logistic regression model has been applied, the multinomial logistic regression model will also be applied in this study. In the next session, there will be more described about this regression model.

3.2.3.2 Multinomial logistic regression model

According to Garson (2009), the characteristics of the dependent variable in this study fits with the application of the multinomial logistic regression model. The dependent variable recovery time of non - financial Western European firms in financial distress, is measured in years. Because years is a nominal variable with more than two levels in this case, the dependent variable fits the model. According to Schwab (2002), the independent variables can be either dichotomous or continuous, in which the latter is the case in this study. After running the multinomial logistic regression, it will be examined which independent variables are decisive for a firm to have a recovery time of one, two or three years. To test this, the reference category will be set at a one-year recovery time. Then a recovery time of two years will be compared to a one-year recovery time and a recovery time of three years will be compared to a one-year recovery time. The independent variables which are significant explain the recovery time difference. The following formula for the multinomial logistic regression model is used:

$$Financial\ firm\ recovery,\ [P(y=1] = \alpha + \beta_1 ownership\ concentration_{i,t-1} + \beta_2 firm\ age_{i,t} + \beta_3 Industry_{i,t} + \beta_4 Location_{i,t}$$

The parameter β refers to the effect of α_i on the log odds(Y=1), which controls the other α_j.

4. Data and sample

In this chapter, the data collected in this study is described, followed by the sample that is used in this study.

4.1 Data

In order to create a sample, only firms which have experienced a financial distress stage are adopted. The Orbis database is used to collect data, because of large amount of data, good accessibility and useful selections of variables. The Orbis database also consists of the BvD independence indicator, which is used as independent variable. The data which is gathered from non-financial firms located in West-European countries mentioned in appendix I, are used in order to detect potential financial distressed firms.

4.2 Sample

After applying all the criteria in the Orbis database, see appendix I, the total population has been decreased from 2,696,582 firms to 957 potential firms. From this 957 potential firms, only firms which have been experienced a financial distress stage will be used for this study. In order to generate a representative sample, according to the central limit theorem (CLT) described in the study of Hays (1994), the minimum sample size must be 30. From the 957 potential firms, the dataset of firms which have experienced a financial distress stage, has been reduced to 84 firms. 67 out of 84 firms in this dataset are useful for this study. Appendix II includes a total overview of the established dataset of 67 firms.

In the next chapter, the results based on this sample are discussed.

5. Results

This part describes the results of this study. The hypotheses from chapter 2.6 are tested in this chapter. First, the descriptive statistics will be discussed. After that, the correlations according the Pearson and Spearman's Rho are described. Then the results are described by the execution of both the OLS regressions and multinomial logistic regressions.

5.1 Descriptive statistics

Based on the analysis, a total of 84 firms have been experienced a financial distress phase. 67 of the 84 firms recovered within the time horizon. 8 of the 84 firms are still or became recently in a financial distress, so they have not recovered within the time horizon. 9 of the 84 firms have not been recovered from the financial distress and went bankrupt.

Table 5 shows the descriptive statistics and frequencies of the 67 firms. Panel A1 provides the descriptive statistics of the dependent variable recovery time and independent variable ownership concentration. The mean recovery time is 1.79 years, with a minimum of one year and a maximum of three years. The mean ownership concentration in this sample is 60.3%. The largest shareholder in this sample owns 100% of the shares. The smallest shareholders owns only 11% of the shares in a firm. According to the frequencies of the independent variable BvD independence indicator in panel A2, group D covers 53.7% of the sample, against 17.9% in group A, 23.9% in group B and only 4.5% in group C. In terms of ownership concentration, the sample is divided quite equal. About half of the sample consists of shareholders which own more than 50% of the shares (groups C and D). Just a little smaller group consists of shareholders which own less than 50% of the shares Groups (A and B). Since groups A, A-, B+ consists of a few firms, the regression analysis described in chapter 5.3, has taken into account if this would affect the results.

Panel B1 describes the descriptive statics of the control variable firm age. The average firm age is 21.21 years. The youngest firm is 2 years old and the oldest firm is 61 years old. According to the literature review in chapter 2.4.5, 'young firms' are present in the database. Referring to that chapter, the literature states that a young firm is defined by an age of seven years or younger since the start-up phase. The literature states that a firm with a higher age has a lower volatility than younger aged firms. The correlation matrix, which will be discussed in the next chapter, indicates whether the young firms would affect the sample.

Panel B2 describes the frequencies of the control variable location. According to this panel, the majority of the total sample is represented by the countries France (32.8%) and United Kingdom (35.8%) by a total of 68,6%. The correlation matrix, which will be discussed in the next chapter, indicates if the countries France and/or United Kingdom would affect the sample by a significant correlation with the (in) dependent variables.

Panel B3 describes the frequencies of the control variable industry development. 28 firms out of 67 are classified as high development firms and 39 are classified as low development firms.

5.1.1 Robustness

In this part, the descriptive statistics of the financial ratios elaborated. In addition, the remaining groups, which are excluded from the sample are being analyzed.

5.1.1.1 Financial ratios

Panel C in table 5, describes the descriptive statistics of the financial ratios ROA, debt ratio, current ratio, interest coverage ratio and the X values arrived from the formula of the Zmijewski Model. This may be interesting to analyze, in order to know the behavior of the financial ratios of firms. Two moments of the financial ratios are described: a) the moment that firms enter the financial distress stage and b) the moment that firms are recovered.

According the panel, it becomes clear that during the entry of the financial distress, the behavior of the financial ratios are different, compared to the moment of being recovered. This is in line with the literature written in chapter 2.4.5. The mean ROA differs 25%, the mean debt ratio differs 15%, the mean current ratio differs 0.36 ratio points, the mean interest coverage ratio differs 21.43 ratio points and the mean X-value differs 1.93.

The literature written in chapter 2.4.5 contributed to the detection of financial distressed companies. Although, the literature described that a healthy debt ratio would be seen as below 0.4. But, according to panel C 'debt ratio – recovered financial distress firm', the mean value is 0.54. This indicates that the mean debt ratio is above what the literature suggested.

5.1.1.2 Remaining groups

The remaining groups of firms, which are still in financial distress or went bankrupt, cannot statistically be included in the study. The sample is too small. However, the descriptive statistics of the dummy variables of these groups are described in panel D.

8 of the 84 firms that are still in financial distress are labeled as group 2. 9 of the 84 firms which went bankrupt are labeled as group 3. The descriptive statistics of the dummy variables of group 2 and group 3 can be found in table 10. In group 2, there are more firms with lower industry development. In addition, the majority of the firms are located in the UK. Group D is the largest group according to the BvD independence indicator measurements. The average firm age is 19 years with a median of 8.5 years. The youngest firm is 5 years old and the oldest firm is 57 years old. In group 3 there are also more firms with lower industry development. In addition, the majority of the firms are located in NL. Group D is the largest group according to the BvD independence indicator measurements. The average firm age is 12.44 years old, with a median of 4 years. The youngest firm is 1 year old and, the oldest firm is 51 years old. The median of 4 years is striking compared to the mean of 12.44 years. The median of 4 years suggests that more younger firms are present. According to the datasheet, 7 out of 9 firms have an age under 7 years old and only two firms are above 7 years old. Statistically, no conclusions can be drawn. However, these results seem to be in line with the theory from chapter 2.4.4, that firm age has a positive effect on financial firm performance and that the volatility will be less at maturity firms.

In the next chapter, the results of this study will be discussed. It starts with the discussion about the correlation matrix, followed by testing the hypotheses by conducting the OLS and multinomial logistic regressions.

Table 5: Descriptive statistics and frequencies

Panel A1: Descriptive statistics dependent/independent variables					
	Mean	**Median**	**SD**	**Min**	**Max**
Recovery time	1.79	2	0.708	1	3
Ownership concentration in %	0.603	0.56	0.30	0.11	1.00
Panel A2: Frequencies independent variable BvD independence indicator					
BvD independence indicator	**Frequency**		**Valid Percent in %**		
• Group A	12		17.9		
○ A	3		4.5		
○ A-	1		1.5		
○ A+	8		11.9		
• Group B	16		23.9		
○ B	6		9.0		
○ B-	7		10.4		
○ B+	3		4.5		
• Group C	3		4.5		
○ C+	3		4.5		
• Group D	36		53.7		
○ D	36		53.7		
Panel B1: Descriptive statistics control variable firm age					
	Mean	**Median**	**SD**	**Min**	**Max**
Firm age	**21.21**	**24.1**	**13.71**	**2**	**61**
Panel B2: Frequencies control variable location					
Location	**Frequency**		**Valid Percent in %**		
○ AU	2		3.0		
○ BE	6		9.0		
○ DE	7		10.4		
○ FR	22		32.8		
○ IR	2		3.0		
○ LU	2		3.0		
○ NL	2		3.0		

○ UK	24	35.8
Panel B3: Frequencies control variable industry development		
Industry development	**Frequency**	**Valid Percent in %**
High development	28	41.8
Low development	39	58.2

Panel C: Descriptive statistics financial ratios					
	Mean	**Median**	**SD**	**Min**	**Max**
ROA ratio - entry financial distressed firm	-0.20	-0.13	0.194	-0.77	0.012
ROA ratio– recovered financial distressed firm	0.05	0.03	0.125	-0.33	0.187
Debt ratio - entry financial distressed firm	0.686	0.707	0.12	0.33	0.95
Debt ratio – recovered financial distressed firm	0.54	0.56	0.153	0.112	0.817
Current ratio - entry financial distressed firm	0.719	0.76	0.223	0.18	1.37
Current ratio – recovered financial distressed firm	1.08	0.99	0.69	0.49	4.77
Interest coverage ratio - entry financial distressed firm	-14.38	-5.1	21.73	-88.81	0.89
Interest coverage ratio - recovered financial distressed firm	7.05	2.56	19.21	1.02	128
X value - entry financial distressed firm	0.51	0.264	0.687	0.010	3.72
X value - recovered financial distressed firm	-1.42	-1.225	1.086	-6.5	0.678

Panel D: Descriptive statistics excluding groups										
	Group 2					**Group 3**				
Industry development	**High**		**Low**			**High**		**Low**		
	3		5			4		5		
Location	**FR**	**UK**	**BE**			**FR**	**UK**	**LU**	**DE**	**NL**
	2	4	2			1	2	2	1	3
BvD independence indicator	**A**	**B**	**C+**	**D**		**B**	**B+**	**D**		
	1	2	2	3		2	1	6		
Firm age	**Mean**	**Median**	**SD**	**Min**	**Max**	**Mean**	**Median**	**SD**	**Min**	**Max**
	19	8.5	20.1	5	57	12.4	4	18.8	1	51

5.2 Correlation matrix

Table 6 shows the Pearson and Spearman's rho correlation matrices. Since the dependent variable is an ordinal variable, according to the publication of McKillup (2005), the correlation matrix of Spearman's rho is also used, in addition to the Pearson correlation matrix.

According to table 6 and looking at Pearson, there is a negative significant linear correlation between the independent variable ownership concentration in % and recovery time in years of -.596**. The higher the ownership concentration, the shorter the recovery time. This result corresponds to Spearman's rho. The negative significant linear correlation is slightly stronger with -.607**. In addition, both tables show a negative significant linear correlation between firms based in France and the recovery time. According to Pearson, the correlation coefficient is -.244* and according to Spearman's rho -.250*. Both show a positive correlation between recovery time and BvD independence indicator. This indicates that firms with more than six registered shareholders, in which none of them own more than 50% of the firm (A + or B + indicator), have a higher recovery time compared to firms with C + / D shareholders. A positive strong significant correlation regarding the BvD independence indicator can be found with ownership concentration. According to Pearson, the correlation coefficient is .830** and according to Spearman's rho .875**. This is in line with the information in table 5, which state that a label 3 corresponds with firms with in/direct ownership above 50% (C+ / D). Label 0 corresponds with firms with six or more shareholders (A + / B +). This high correlation between the two independent variables BvD independence indicator and ownership concentration indicates that a multicollinearity appears. Multicollinearity appears according to Daoud (2017) when independent variables in a regression model are highly correlated (>.85). Since the variables are very similar, the variables are used separately during the regression analysis, so that they cannot influence each other or that one of them overrule the other one.

Table 6 provide more significant correlations. Location France is negatively significantly correlated with firm recovery (-.244*), positively correlated with ownership concentration (.310*) and negatively correlated with location UK (-.522**). The condition from chapter 3.4 brings that the data will be also grouped during the analyzing part, in order to test whether the results hold with and without location France added to the dataset. The data will be grouped as 1) locations UK + France 2) Location UK (elimination of location France).

Firm age is negatively significantly correlated with industry = high, and Spearman's rho according to Pearson (-.242*) and Spearman's rho (-.319*). According to Spearman's rho, firm age is also negatively correlated significantly with firms in the UK. Industry = high is positively significantly correlated with firms in the UK. In both cases, a correlation coefficient of (.251*) is present. Firm age has no significant correlation with the (in)dependent variables.

5.2.1 Robustness

5.2.1.1 Financial ratios

In addition to the correlation matrix in table 6, the correlation matrix in appendix III is committed to test the descriptive statistics of the financial ratios. With this matrix, extra insight is created into the correlations between the financial ratios in relation to other financial ratios and the (in)dependent variables. According to Pearson, a positive correlation exists between Current ratio – entry financial distressed firm and ROA ratio – entry financial distressed firm

(.247*). This means that there is a fairly strong relationship between the ratios between ROA and current ratio when a firm ends up in financial distress. There is also a strong relationship between the ratios ROA and current ratio (.459**) and ROA and interest coverage ratio (.760**) when a firm recovered from a financial distress.

According to Spearman's rho, the ROA ratio at the moment that a firm enters a financial distress stage, is fairly strong related to interest coverage ratio (.400**).

The relation between ROA and interest coverage ratio is interesting, since ROA plays an important role in representing the outcome of the Zmijewski model. According to the correlation matrix, ROA and the interest coverage ratio are related to each other. This may indicate that the interest coverage ratio is an reliable alternative way to determine the liquidity of a firm. The regression analysis in the next chapter provides more insight into this.

Table 6: Pearson and Spearman's rho correlation matrix

Pearson / Spearman's rho		Recovery time		Ownership concentration		Firm age		Industry=high		Location=AU		Location=BE		Location=DE		Location=FR		Location=IR		Location=LU		Location=NL		Location=UK		BvD independence indicator	
Recovery time	**Correlation Coefficient**	1.000	1.000	-.596**	-.607**	-.025	.005	-.049	-.036	-.073	-.069	.056	-0.41	.171	.173	-.244*	-.250*	.177	.173	-.073	-.069	.177	.173	.089	.086	.662**	.643**
	Sig. (2-tailed)			.000	.000	.840	.967	.691	.774	.559	5.79	.655	.741	0.166	0.162	.046	0.041	.152	.162	.559	.579	.152	.162	.473	.490	.000	.00
Ownership concentration	**Correlation Coefficient**	-.596**	-.607**	1.000	1.000	-.116	-.101	.072	.075	.075	.084	.088	.093	-.191	-.195	.310*	.303*	-.116	-.116	-.028	-.027	-.005	-.023	-.208	-.199	.830**	.875**
	Sig. (2-tailed)	,000	.000		.	.350	.414	.561	.545	.548	.499	.477	.452	.122	.114	0.011	.013	.350	.350	.822	.827	.7971	.855	.091	.106	.000	.000
Firm age	**Correlation Coefficient**	-.025	.005	-.116	-.101	1.000	1.000	-.242*	-.319**	.120	.0159	-.070	-.054	-.038	-.010	.094	.144	.113	.182	.068	-.005	.165	.184	-.192	-.287*	.234	.209
	Sig. (2-tailed)	.840	.967	.350	.414		.	.048	.009	.334	.199	.573	.664	.763	.935	.448	.245	.361	.141	.583	.971	.182	.136	.119	.019	.057	.090
Industry=high	**Correlation Coefficient**	-.049	-.036	.072	.075	-.242*	-.319**	1.000	1.000	-.149	-.149	-.054	-.054	.007	.007	-.141	-.141	-.149	-.149	.207	.207	-.149	-.149	.251*	.251*	-.043	-.068
	Sig. (2-tailed)	.691	.774	.561	.545	0.048	.009		.	.230	.230	.666	.666	.953	.953	.254	.254	.230	.230	.093	.093	.230	.230	.041	0.041	.730	.582
Location=AU	**Correlation Coefficient**	-.073	-.069	.075	.084	.120	.159	-.149	-.149	1.000	1.000	.055	-.055	-.060	-.060	-.123	-.123	-.031	-.031	-.031	-.031	-.031	-.031	-.131	-.131	-.057	-.023
	Sig. (2-tailed)	.559	.579	.548	.499	.334	.199	.230	.230			.658	.658	.630	.630	.323	.323	.805	.805	.805	.805	.805	.805	.290	.290	.645	.854
Location=BE	**Correlation Coefficient**	-.056	-.041	.088	.093	-.070	-.054	-.054	-.054	-.055	-.055	1.000	1.000	-.107	-.107	-.219	-.219	-.055	-.055	-.055	-.055	-.055	-.055	-.234	-.234	-.192	-.183
	Sig. (2-tailed)	.655	.741	.477	.452	.573	.664	.666	.666	.658	.658			.388	.388	.075	.075	.658	.658	.658	.658	.658	.658	.056	.056	.119	.137
Location=DE	**Correlation Coefficient**	.171	.173	-.191	-.195	-.038	-.010	.007	.007	-.060	-.060	-.107	-.107	1.000	1.000	-.239	-.239	-.060	-.060	-.060	-.060	-.060	-.060	-.255*	-.255*	.119	.156
	Sig. (2-tailed)	.166	.162	.122	.114	.763	.935	.953	.953	.630	.630	.388	0.388			-.052	0.52	.630	.630	.630	.630	.630	.630	.037	.037	.339	.208
Location=FR	**Correlation Coefficient**	-.244*	-.250*	.310*	.303*	.094	.144	-.141	-.141	-.123	-.123	-.219	-.219	-.239	-.239	1.000	1.000	-.123	-.123	-.123	-.123	-.123	-.123	-.522**	-.522**	-.201	-.233
	Sig. (2-tailed)	-.046	.041	.011	.013	.448	.245	.254	.254	.323	.323	.075	0.75	.052	.052			.323	.323	.323	.323	.323	.323	.000	.000	.103	.057
Location=IR	**Correlation Coefficient**	.177	.173	-.116	-.116	.113	.182	-.149	-.139	-.031	-.031	-.055	-.055	-.060	-.060	-.123	-.123	1.000	1.000	.031	-.031	-.031	-.031	-.131	-.131	.093	.140
	Sig. (2-tailed)	.152	.162	.350	.350	.361	.141	.230	.230	.805	.805	.658	.658	0.630	.630	.323	.323			.805	.805	.805	.805	.290	.290	.453	.259
Location=LU	**Correlation Coefficient**	-.073	-.069	-.028	-.027	.068	-.005	.207	.207	-.031	-.031	-.055	-.055	-.060	-.060	-.123	-.123	-.031	-.031	1.000	1.000	-.031	-.031	-.131	-.131	.093	.071
	Sig. (2-tailed)	.559	.579	.822	.827	.583	.971	.093	.093	.805	.805	.658	.658	.630	.630	.323	.323	.805	.805			.805	.805	.290	.290	.453	.567
Location=NL	**Correlation Coefficient**	.177	.173	-.005	-.023	.165	.184	-.149	-.149	-.031	-.031	-.055	-.055	-.060	-.060	-.123	-.123	-.031	-.031	-.031	-.031	1.000	1.000	-.131	-.131	.018	.020
	Sig. (2-tailed)	.152	.162	.971	.855	.182	.136	.230	.230	.805	.805	.658	.658	.630	.630	.323	.323	.805	.805	.805	.805			.290	.290	.885	.870
Location=UK	**Correlation Coefficient**	.089	.086	-.208	-.199	-.192	-.287*	.251*	.251*	-.031	-.131	-.234	-.234	-.255*	-.255*	-.522**	-.522**	-.131	-.131	-.131	-.131	-.131	-.131	1.000	1.000	.183	.164
	Sig. (2-tailed)	.473	.490	.091	.106	.119	.019	.041	.041	.290	.290	.056	.056	.037	.037	.000	.000	.290	.290	.290	.290	.290	.290			.138	.184
BvD independence indicator	**Correlation Coefficient**	.662**	.643**	.830**	.875**	.234	.209	-.043	-.068	-.057	-.023	-.192	-.183	.119	.156	0.201	-.233	.093	.140	.093	.071	.018	0.20	.183	.164	1.000	1.000
	Sig. (2-tailed)	.000	.000 7	.000		.000	.090	.730	.582	.645	.854	.119	.137	.339	.208	.103	.057	.453	.259	.453	.567	.885	.870	.138	.184		

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

C. Listwise N= 67

5.3 Regression analyses

This part describes the results of the OLS and the multinomial logistic regressions in order to test the hypotheses.

5.3.1 OLS and multinomial logistic regression

5.3.1.1 OLS Regression

As already described in chapter 3.2.3, due to the multicollinearity between the independent variables BvD independence indicator and ownership concentration, the variables are used separately during the regression analysis. According to Kennedy (2008), it is relevant to mention the R-squared value. R-squared represents the percentage of variation for a dependent variable which is explained by an independent variable in a regression model. Appendix IV, panel A, indicates that the dependent variable recovery time has been explained by 37.6% of the selected independent variables ownership concentration, firm age, location=FR, industry=High, location=UK. Panel B indicates that the dependent variable recovery time has been explained by 50.3% of the selected independent variables BvD independence indicator, firmage, location=FR, industry=High, location=UK. The R-squared value is higher when the independent variable BvD independence indicator is present.

Table 7, Panels A1 and A2 show the results of the OLS regression. In panel A1, the independent variable ownership concentration is included and in panel A2, the independent variable BvD independence indicator is included. According to group 1, Ownership concentration is highly significant (.000) with the dependent variable recovery time. BvD independence indicator is also highly significant (.000) with the dependent variable recovery time. The independent variable firm age is also significant (.029), although not as strong as the BvD independence indicator. It indicates that firm age also has partly influence on the recovery time when the independent variable BvD independence indicator is included. When the BvD independence is excluded from the OLS regression, the variable firm age became insignificant with the dependent variable recovery time. This indicates that firm age has no significant effect on the dependent variable recovery time as an independent variable.

5.3.1.2 Multinomial Logistic Regression

In the multinomial logistic regression, the independent variables BvD independence indicator and ownership concentration are also carried out separately. Appendix V, panel A indicates that the dependent variable recovery time has been explained by 46.5% of the selected independent variables ownership concentration, firm age, location = FR, industry = High, location = UK. This percentage is higher than at the OLS regression. Appendix V, panel B, indicates that the dependent variable recovery time has been explained by 57.3% of the selected independent variables BvD independence indicator, firm age, location = FR, industry = High, location = UK. This percentage is also higher than at the OLS regression.

Table 7, Panel B shows the results of the multinomial logistic regression. It is examined which independent variables are decisive for a firm to have a recovery time of one, two or three years. In order test this, the reference is category is set at a one-year recovery time. Then a recovery time of two years will be compared to a one-year recovery time and a recovery time of three

years will be compared to a one-year recovery time. The independent variables which are significant explain the recovery time difference. According to panel B, the independent variable ownership concentration is significant in both two years (.009) and three years (.000) compared to a one year recovery time. There are no other significant independent variables. The independent variable BvD independence indicator is significant in both two years (.008) and three years (.000), with one year as reference. There are no other significant independent variables. Although the independent variable firm age is almost significant at the confidence level of 95% (0.051).

5.3.1.3 Hypothesis 1

According to both the OLS and Multinomial logistic regressions, hypothesis 1 'a concentrated ownership concentration leads to a faster financial recovery for Western – Europe non-financials firm in financial distress than a dispersed ownership concentration', is accepted. In both regressions, the ownership concentration and BvD independence indicator is highly significant with recovery time.

5.3.1.4 Robustness - The elimination of location France

According to both Pearson and Spearman's rho correlation matrices, described in chapter 5.2, location France is negatively significantly correlated with firm recovery (-.244*), positively correlated with ownership concentration (.310*) and negatively correlated with location UK (-.522**). The condition from chapter 5.1 brings that the data will be also grouped during the analyzing part, in order to test whether the results hold with and without location France added to the dataset. The outcomes of the latter are described in this part.

According to table 7, group 2 (OLS regression) and group 5 (multinomial logistic regression), no other conclusion can be made compared to the dataset including location France.
According to group 2, panel A1, ownership concentration is still highly significant (0.00) with recovery time. According to group 2, panel A2, BvD independence indicator is still highly significant (.000) with recovery time. Firm age has become slightly more significant with (0.28) instead of (0.29) with the dependent variable recovery time.

According to group 5, panel B, ownership concentration is still significant in both two years (.009) and three years recovery (.000), compared to a one year recovery time. The BvD independence indicator even became more significant in two years (0.05 instead of 0.08). Firm age was almost significant (0.051) according to group 4, but it is according to group 5 significant (0.046). The independent variable BvD independence indicator is still way more significant, compared to firm age.

5.3.2. Quadratic term

5.3.2.1 OLS Regression

Hypothesis 2 elaborates further on hypothesis 1. Hypothesis 2 suggests that ownership concentration has a positive relation with financial firm performance, but till a certain point of concentration expressed in an inversed U-shaped relation. In order to test the inversed U-shaped relation, only the independent variable ownership concentration expressed in share held by the

largest shareholder in percentage will be used. By including this quadratic term in SPSS, a non-linear relationship can be observed. A quadratic term percent_SQ has been established of the independent variable ownership concentration. In order to accept hypothesis 2, according to Ritz & Streibig et al. (2008), the coefficient of the quadratic term percent_SQ has to be negative and significant and the standard X – coefficient percent_C in the formula has to be positive and significant.

The results are shown in table 7, panel A1, group 3. The coefficient of the standard X – coefficient percent_C is negative (-.586) and significant (.000). The quadratic term percent_SQ is positive (.251) and significant (.014). This indicates that there is no inverted U-shaped relation between ownership concentration and financial firm recovery.

5.3.2.2 Multinomial Logistic Regression

The multinomial logistic regression with the quadratic term percent_SQ. The coefficient of the quadratic term percent_SQ has to be negative and significant and the standard X – coefficient percent_C in the formula has to be positive and significant. The results can be found in table X, panel B, group 6. The standard X – coefficient percent_C is negative (-.064) and significant (.017). The coefficient of the quadratic term is positive (0.002), but insignificant at the 95% confidence level (0.079). The standard X-coefficient percent_C is negative (-.122), but also significant (.009) with a three-year recovery time, compared to a one-year recovery time. The quadratic term percent_SQ is positive (.002), but also insignificant (.168) with a three-year recovery time, compared to a one-year recovery time. This indicates that by conducting a multinomial logistic regression, the results correspond with the results of the OLS regression.

5.3.2.3 Hypothesis 2

The results of both the OLS and multinomial logistic regression, reject hypothesis 2. In order to know which non-linear relationship is present, the interpretation of Bruin (2006) has been used. When looking at the results, the shape of this non-linear relationship would be considered as 'convex'. An example of a convex relation is illustrated in figure 6. This example has been established in the study of Simon (2017). The curve segment of the convex function between the two points always lies below the line. In the context of this study and according to the results, the raising curve would correspond to the higher ownership concentration or a higher BvD independence indicator, which lead to a shorter recovery time.

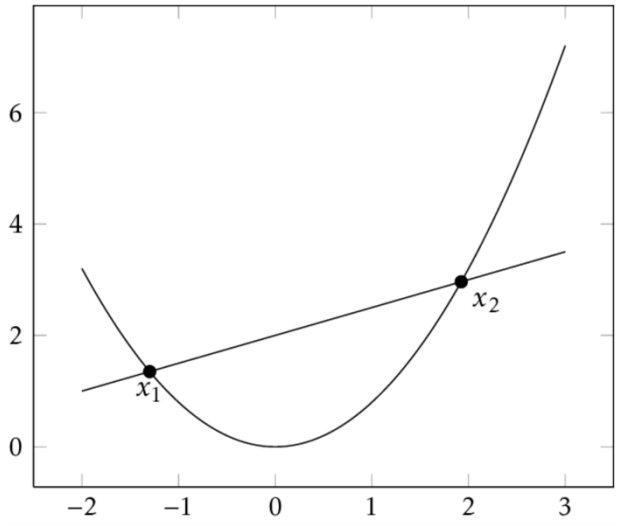

Figure 6 An example of a convex function, Simon (2017)

Table 7: Results of OLS and Multinomial Logistic Regressions

This table compares changes in recovery time between different groups. The sample consists of 67 non-financial West – European financial distressed firms. In groups 1,2 and 3 an OLS regressions have been executed. Group 1 adopts all dummy and control variables. Group 2 excludes French firms and group 3 consists of a quadratic term. In groups 4, 5 and 6 a multinomial logistic regression have been executed. Group 4 adopts all dummy and control variables. Group 5 excludes French firms and group 6 consists of a quadratic term. In groups 4, 5 and 6, a one year recovery time is the reference category. A two and three year recovery time are compared to a one year recovery time.

	Model		(1)	(2)	(3)		(4)	(5)	(6)			
	Panel A1: OLS Regression independent variable ownership concentration included											
	(Constant)		.000	.000	.000							
	Ownership concentration		.000	.000	-							
	Location = FR		.379	-	.150							
	Location = UK		.387	.603	.229							
	Industry = high		.842	.870	.855							
	Firm age		.306	.295	.372							
	percent_C coefficient	percent_C	-	-	-.586	.000						
	Percent_SQ coefficient	percent_SQ	-	-	.251	.014						
	Panel A2: OLS Regression independent variable ownership BvD independence indicator included											
	(Constant)		.000	.000								
	BvD Independence Indicator		.000	.000								
	Location = FR		.111	-								
	Location = UK		.158	.462								
	Industry = high		.554	.580								
	Firm age		.029	.028								
	Panel B: Multinomial Logistic Regression comparison between ownership concentration and BvD independence indicator											
2	(Constant)						.025	.393	.037	.892	.480	
	Ownership concentation/BvD independence indicator						.009	.008	.004	.005	-	
	Location = FR						.243	.166	-	-	.112	
	Location = UK						.293	.319	.578	.735	.167	
	Firm age						.931	.313	.961	.342	.576	
	Industry = high						.484	.878	.421	.743	.585	
	percent_C coefficient	percent_C					-	-	-	-	-.064	.017
	Percent_SQ coefficient	percent_SQ					-	-	-	-	.002	.079
3	(Constant)						.003	.762	.003	.431	.700	
	Ownership concentation/BvD independence indicator						.000	.000	.000	.000	-	
	Location = FR						.609	.482			.462	
	Location = UK						.422	.157	.003	.431	.310	
	Firm age						.389	.051	.382	.046	.305	
	Industry = high						.668	.574	.717	.657	.639	
	percent_C coefficient	percent_C					-	-	-	-	-.122	.009
	Percent_SQ coefficient	percent_SQ					-	-	-	-	.002	.168

5.4 Analyzing from different perspectives

Since the Zmijewski Model is a dominant model in this study, this study takes into account to analyze from a different perspective. A firm was added to the dataset if it met both the preconditions of the Zmijewski Model and the interest coverage ratio, according to the preconditions in this study. As already discussed in this study, the interest coverage ratio conditions are included in order to serve as a variable to check the consistency compared to the Zmijewski Model. According to recent literature, the interest coverage ratio is increasingly used to monitor the financial conditions of the firm. In the case that the conditions of the Zmijewski Model or/and the interest coverage ratio weren't met, the firm still has been saved in another dataset, in order to use these data for the analysis in this section.

In this section, the data arrived from the Zmijewski Model and the interest coverage ratio are separated from each other. The aim is to test whether the results of the separated datasets lead to similar results, as the dataset with the preconditions both the Zmijewski Model and the interest coverage ratio. It will be investigated whether the interest coverage ratio can be a reliable alternative, next to the renowned Zmijewski Model. Appendix III already indicated that 'interest coverage ratio – entry financial distressed firm' was positively significant with ROA ratio – entry financial distressed firm (.400**). In addition, 'ROA ratio – entry financial distressed firm' is negatively significantly correlated with X value - entry financial distressed firm (-.423*). The negative notation is present, because the two variables move in the opposite directions. However, this indicates that the interest coverage ratio could be an interesting variable to conduct the OLS regression and the Multinomial Logistic Regression, disregarding Zmijewski Model.

5.4.1 Comparison using OLS regression

Table 8 shows the results of the OLS regression, using separated datasets. The first database is based on the conditions of the Zmijewski Model. The second database is based on the conditions of the interest coverage ratio. Panel A1, group 1, includes the independent variable ownership concentration and panel A2, group 2, includes the independent variable BvD independence indicator. The dataset based on the conditions of the Zmijewski Model, consists of 80 firms, against 86 firms in the dataset based on the conditions of the interest coverage ratio. After comparing the datasets in panel A1, no significant differences can be observed. Both groups show that ownership concentration is significant with recovery time (.000). All other variables stay insignificant in relation with recovery time. After comparing the datasets in panel A2, also a significant relation with recovery time (.000). All other variables, except firm age, stay insignificant in relation with recovery time. Firm age shows a significance of (.022) at the database based on the Zmijewski model and (.037) at the databased based on the interest coverage ratio. Overall, these results indicate that there are no significant differences between the results of the dataset used according the conditions of the Zmijewski Model and of the interest coverage ratio.

In the next session, the results with applying the Multinomial Logistic Regression will be discussed.

5.4.2 Comparison using Multinomial Logistic Regression

Table 8, panels B1 and B2 the results of the Multinomial Logistic Regressions, using the same separated datasets as in chapter 5.4.1. Panel B1, group 3, includes the independent variable ownership concentration and panel B2, group 4, includes the independent variable BvD independence indicator. After comparing the datasets in panel B1, no significant differences can be observed. According the dataset of Zmijewski model, the independent variable ownership concentration, is significant in both two years (.001) and three years (.000) compared to a one-year recovery time. Based on the dataset of the interest coverage ratio, the independent variable ownership concentration is significant in both two years (.002) and three years (.000) compared to a one-year recovery time. All other variables have still not become significant with the dependent variable recovery time.

After comparing the datasets in panel B2, no significant differences can be observed. According the dataset of Zmijewski model, the independent BvD independence indicator is significant in both two years (.001) and three years (.000) compared to a one-year recovery time. Based on the dataset of the interest coverage ratio, the independent variable BvD independence indicator is significant in both two years (.003) and three years (.000) compared to a one-year recovery time. Variable firm age is slightly significant for both the dataset based on the Zmijewski model (0.047) and based on the dataset based on the interest coverage ratio (0.046) in three years compared to a one-year recovery time. No significant differences between these tables.

The conclusion can be made that there are no significant differences between applying the dataset of based on the conditions of the Zmijewski Model and the dataset based on the conditions of the interest coverage ratio, in both OLS regressions and Multinomial Logistic Regressions. Given the high degree of overlap in both datasets at firms, this already indicates that higher consistency could be expected. This indicates that the interest coverage ratio in this study is reliable for monitoring firms in financial distress and its recovery time, next to the Zmijewski Model.

Table 8: Comparison between the datasets of the Zmijewski Model and interest coverage ratio

This table compares changes in recovery time between two different datasets a) Zmijewski model and b) interest coverage ratio dataset. The dataset based on the conditions of the Zmijewski model consists of 80 non-financial West – European financial distressed firms. The dataset based on the conditions of the interest coverage ratio consists of 86 non-financial West – European financial distressed firms. In groups 1,2 OLS regressions have been executed. Group 1 adopts the independent variable ownership concentration in %. Group 2 adopts the independent variable BvD independence indicator. In groups 3 and 4 a multinomial logistic regression have been executed. Group 3 adopts the independent variable ownership concentration in %. Group 4 adopts the independent variable BvD independence indicator. In groups 3 and 4 a one year recovery time is the reference category. A two and three year recovery time are compared to a one year recovery time.

	Model	(1)		(2)		(3)		(4)	
	Panel A1: **Comparing the Zmijewski Model / interest coverage ratio dataset based on OLS regression (ownership concentration included)**								
	(Constant)	.000	.000						
	Ownership concentration	.000	.000						
	Location=FR	.407	.933						
	Location=UK	.554	.731						
	Industry=High	.606	.399						
	Firmage	.291	.254						
	Panel A2: **Comparing the Zmijewski Model / interest coverage ratio dataset based on OLS regression (BvD independence indicator included)**								
	(Constant)			.000	.000				
	BvD independence indicator			.000	.00				
	Location=FR			.207	.769				
	Location=UK			.255	.480				
	Industry=High			.424	.259				
	Firmage			.022	.037				
	Panel B1: **Comparing the Zmijewski Model / interest coverage ratio dataset based on multinominal logistic regression (ownership concentration included)**								
2	Intercept					.009	.009	.343	.402
	Ownership concentration					.001	.002	.001	.003
	Location=FR					.164	.328	.143	.267
	Location=UK					.408	.414	.424	.467
	Industry=High					.519	.718	1.000	.850
	Firmage					.660	.680	.149	.240
	Panel B2: **Comparing the Zmijewski Model / interest coverage ratio dataset based on multinominal logistic regression (BvD independence indicator included)**								
3	Intercept					.001	.001	.342	.401
	BvD independence indicator					.000	.000	.000	.000
	Location=FR					.709	.601	.587	.684
	Location=UK					.733	.859	.318	.592
	Industry=High					.304	.236	.335	.208
	Firmage					.493	.300	.047	.046

6. Discussion & Conclusion

The aim of this study was to examine how the ownership concentration level can affect the firm performance in order to enhance the recovery time during a financial distress for non-financial stock listed firms in Western-European countries. This study answers the main study question: "How does the ownership concentration level affect the financial recovery time of non-financial listed firms in Western-Europe during a financial distress stage?" To answer this study question, hypothesis 1 '*A concentrated ownership concentration leads to a faster financial recovery for Western – Europe non-financials firm in financial distress than a dispersed ownership concentration'* and hypothesis 2 '*The relation between ownership concentration and financial firm recovery time for Western – Europe non-financials firm in financial distress will have an inverted U-shaped relation'* were tested. The following section discusses possible explanations for the presented results and answers the above study question.

6.1 Discussion of the results

In comparable studies, the ownership concentration was mainly tested in relation to firm performance. Ownership concentration was defined in comparable studies as the share held by the largest shareholder of a firm in %. This independent variable was also used in this study. However, through the BvD independence indicator it became clear that the ownership structure is also a relevant part of the ownership concentration. In addition to the percentage, various indicators also show the composition of the total ownership concentration. The use of these two independence indicators has led to solid results in relation to the dependent variable recovery time, but also the relationship between the two independence indicators. The correlation matrix showed that the independence variables formed a multicollinearity. The BvD independence indicator besides taking into account the share held by the largest shareholder of a firm in %, the composition of ownership of all other shares is also considered. Presumably the latter had little influence, which caused a multicollinearity. With the consequence that the two independent variables were separated from the OLS and the Multinomial Logistic Regression. At both the OLS and the Multinomial Logistic Regressions, the independent variables were significant with recovery time. This resulted in hypothesis 1 being accepted. The results were also similar after eliminating location France, which showed a negatively significantly correlation with firm recovery. In this study it is also shown by means of the Multinomial Logistic Regression that firm age has a significant effect on recovery time, when the independent variable BvD independence indicator are added. Presumably the ownership structure suppresses the concentration, with the result that firm age has become significant. However, this result confirms the literature in which Symeou (2010) and Zeitun and Tian (2007) mention that a firm with a higher age has a lower volatility than younger aged firms. Mature firms often have lower costs, because for example the benefits of economies of scale and higher efficiency.

However, hypothesis 1 is mainly based on agency theory and similar studies on the relationship between ownership concentration and financial firm performance. From the perspective of agency theory, the explanation of the results of this study is that large shareholders, because of their larger ownership, have a higher incentive than small shareholders. This results in actively

monitoring the management of the firm. Monitoring will reduce the gap between the interest of the shareholders and of the management Patrick (2002). Shleifer and Vishny (1986) add that large shareholders, because of their voting power, have more control over the expenses and decisions which the firm make. However, the results contain valuable information for the literature, as the setting in this study differs from the literature study used. Although this study focused on firm performance, it had the dependent variable recovery time of firms from financial distress. The setting of this study has for this reason resulted in a differentiation, by not only looking at firm performance over a specific period, but also at distressed firms and their recovery. These results potentially reinforce the agency theory.

The establishment of hypothesis 2 was mainly based on the suggestion of Pederson (2000), Claessens, Simeon et al. (2002), Morck, Schleider and Vishy (1988) that ownership concentration has a positive relation with financial firm performance, but till a certain point of concentration. In addition, Liu, Uchida and Yang (2012) suggested that there is a positive significant effect of the total ownership concentration on financial firm performance during an economic turndown. Since small shareholders decrease the financial firm performance during an economic turndown, an inversed U-shaped relation occur. However, according to this study, an inversed U-shaped relation has not been occurred. According to the interpretation of Bruin (2006), the shape of this non-linear relationship would be considered as 'convex', which suggests that large shareholders have a large influence on the recovery time, and thus the firm performance. This finding refers to the agency theory, which states that the control rights of large shareholders can reduce agency cost, since they not only effectively monitor the management, but also have the ability to discipline or remove managers. Because of the power of large shareholders, the decision-making cause, leads to the fact that small shareholders have too less power to only follow the decisions made by the large shareholders. Small shareholders lose their earnings in this case. Large shareholders also prefer the retention of earnings cause means that large shareholders often choose to retain earnings in the firm for future projects, instead of a pay-out to all shareholders. The findings from agency theory are probably an explanation of the findings regarding hypothesis 2 of this study.

An interesting additional finding is the consistency of the interest coverage ratio to determine whether a firm is in financial distress and has recovered, with respect to the renowned Zmijewski model. Looking back at the results, it became clear that there is a correlation between ROA and the interest coverage ratio. ROA is also an important factor for the Zmijewski model. The datasets of the Zmijewski model and of the interest coverage ratio model also correspond for 93%. For this reason, there are also no significant deviations between the use of the datasets. Based on this study, the interest coverage ratio, in addition to the Zmijewski model, is a reliable ratio for recognizing firms in financial distress and recovering.

Some other findings have also been discovered in this study. It has been found that no signification correlation consists among the conditions in which firms enter and exit the financial distress, both with the Zmijewski model and with the interest coverage ratio. This

study has therefore shown that the degree of the firm's financial condition at the time of entering the financial distress says insignificantly about how a firm will eventually recover.

6.2 Limitations and recommendations

This study has some limitations. The study only focused on non-financial firms, located in Western European countries Belgium, Luxembourg, Germany, France, Ireland, Luxembourg, Monaco, Netherlands, Switzerland, Austria, United Kingdom. The other Western European countries Monaco, Switzerland and Nortern Ireland were selected in the Orbis databank, but no firms in financial distress were detected. As a result, not all firms from Western European countries could be used in the dataset. Another limitation is that Orbis databank only showed the financial results of firms per year. With the result, the dependent variable is only divided into years and not an accurate measurement. In addition, a subdivision in the influencing variable firm size disappeared, as only very large firms were detected in Orbis databank. Finally, to avoid the exogenous causes due to the financial crisis, only firms from 2013 till 2019 have been used in the dataset. It may be interesting for further study to assess whether a higher ownership concentration has sustained a more sustainable recovery, over several years after recovery. In addition, whether a financial crisis has an effect on the relationship between ownership concentration and firm recovery time. The study could also take place in Eastern European countries, with a comparison between Western European and Eastern European countries. Since this study only focused on non-financial firms, the setting of the study could also be tested with financial firms.

6.3 Conclusion

This study answers the main study question: "How does the ownership concentration level affect the financial firm recovery time of non-financial listed firms in Western-Europe during a financial distress stage?"

This study contributed to the literature on the effect of ownership concentration on recovery time at non-financial firms in financial distress in Western Europe. In practice, the results of this study contribute to the anticipation of top managers and shareholders of Western European firms regarding the effect of ownership concentration on firm performance recovery, if the non-financial firm ends up in a financial distress.

By accepting hypothesis 1 there can be concluded that both a higher BvD independence indicator and a higher ownership concentration lead to a shorter recovery time. By rejecting hypothesis 2, there can be concluded that there is no inverted U-shaped relationship between, but there is a convex relationship, which suggests that large shareholders have a large influence on the recovery time, and thus the firm performance. In addition, from this study there can be concluded that the interest coverage ratio is a reliable ratio to determine whether a firm experiences financial distress and when it has been recovered, next to the renowned Zmijewski model.

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Appendix

Appendix I

Criteria		Step result	Search result
Status	Active firms, Inactive firms	2,696,582	2,696,582
BvD Independence Indicator	A+, A, A-, B+, B, B-, C+, C, D, Add all publicly listed firms, Add firms for which all shareholders or all shareholders with a stake greater than 25% are individuals or employees, Add branches.	1,696,275	1,689,323
Entity Type	Corporate.	2,471,021	1,531,525
Current Ratio (1)	max=1, 2016, 2015, 2014, 2013, for at least one of the selected periods, exclusion of firms with no recent financial data and Public authorities/States/Governments.	311,452	241,178
Current Ratio (2)	All companies with a known value 2012, for all selected periods, exclusion of firms with no recent financial data and Public authorities/States/Governments.	522,578	152,230
Current Ratio (3)	All companies with a known value, 2019, 2018, 2017, for all the selected periods, exclusion of firms with no recent financial data and Public authorities/States/Governments.	115,571	22,035
ROA using Net income (%) (1)	max=5, 2016, 2015, 2014, 2013, for at least one of the selected periods, exclusion of firms with no recent financial data and Public authorities/States/Governments.	677,507	19,071
ROA using Net income (%) (2)	All companies with a known value 2012, for all selected periods, exclusion of firms with no recent financial data and Public authorities/States/Governments.	530,432	18,392
ROA using Net income (%) (3)	All companies with a known value, 2019, 2018, 2017, for all the selected periods, exclusion of firms with no recent financial data and Public authorities/States/Governments.	134,298	17,594
World region	Austria, Belgium, France, Germany, Ireland, Luxembourg, Monaco, Northern Ireland, Netherlands, Switzerland, United Kingdom	440,701	2,784
Size classification	Large, Medium, Small, Very large.	2,741,156	2,784
Debtors (m €)	All companies with a known value, 2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012 for all the selected periods, exclusion of firms with no recent financial data and Public authorities/States/Governments.	84,751	2,582
Interest cover (x) (1)	max=0, 2016, 2015, 2014, 2013 for at least one of the selected periods, exclusion of firms with no recent financial data and Public authorities/States/Governments.	220,526	1,270
Interest cover (x) (2)	All companies with a known value 2012, for all selected periods, exclusion of firms with no recent financial data and Public authorities/States/Governments.	342,686	1,144
Interest cover (x) (3)	All companies with a known value, 2019, 2018, 2017, for all the selected periods, exclusion of firms with no recent financial data and Public authorities/States/Governments	78,298	957
Total firms		**957**	

Appendix II

Firm	Firmage	Industry	Location	ROA-entry	ROA-end	Debt-entry	Debt-end	Current-entry	Current-end	Interestcov-entry	Interestcov-end	Startyear	Xvalue-entry	Endyear	X-value-end	Recovery time	BvD independence indicator	Ownership concentration
1	23	Low	NL	-0,773	-0,332	0,661849711	0,396761134	0,19	0,22	-4,44	1,05	2016	2,95	2019	-0,55	3	A	22%
2	10	High	UK	-0,661	-0,032	0,555	0,4925	0,65	1,75	-5,1	1,24	2014	1,84	2016	-1,36	2	A+	15%
3	12	Low	UK	-0,1832	0,0139	0,643	0,539	0,68	0,88	-5,4	5,01	2016	0,19	2019	-1,29	3	A+	13%
4	17	Low	UK	-0,0529	-0,0242	0,821	0,552	0,53	0,61	-1,78	1,26	2014	0,62	2017	-1,05	3	B+	30%
5	17	Low	BE	-0,0632	0,0213	0,72	0,51	0,35	0,51	0,46	3,88	2014	0,09	2015	-1,49	1	D	79%
6	21	High	FR	-0,6105	0,02	0,33	0,24	0,46	1,18	-0,12	1,24	2015	0,33	2016	-3,03	1	D	99%
7	5	Low	FR	-0,2832	-0,0121	0,56	0,34	0,33	0,72	-3,63	1,91	2013	0,17	2015	-2,31	2	D	86%
8	17	Low	BE	-0,1969	-0,0182	0,70745	0,639	0,86	0,89	-3,31	9,27	2014	0,62	2016	-0,58	2	D	97%
9	10	High	UK	-0,098	0,1011	0,71	0,62	0,68	0,94	-8,11	11,94	2013	0,19	2015	-1,22	2	D	60%
10	12	High	UK	-0,0778	0,1211	0,81	0,64	0,66	0,9	-10,11	14,94	2013	0,66	2015	-1,20	2	B-	40%
11	17	High	UK	-0,0187	0,0198	0,76	0,64	0,76	0,82	-0,08	1,62	2014	0,11	2015	-0,74	1	D	60%
12	25	Low	FR	-0,0331	0,038	0,86	0,63	0,56	0,59	-15,69	1,69	2015	0,75	2017	-0,88	2	D	95%
13	13	Low	FR	0,0071	0,0729	0,7822	0,19	0,83	4,77	0,89	2	2015	0,12	2016	-3,56	1	D	100%
14	19	Low	UK	-0,2134	-0,0242	0,723	0,723	0,6	0,53	-9,6	1,44	2016	0,78	2017	-0,07	1	C+	53%
15	21	Low	FR	-0,3816	0,0274	0,7	0,72	0,35	0,37	-11,12	5,66	2014	1,41	2015	-0,32	1	D	100%
16	21	High	FR	-0,4865	-0,0796	0,384	0,112	0,93	3,13	-14,91	1,7	2016	0,07	2017	-3,32	1	D	93%
17	14	High	FR	-0,0705	0,1869	0,7062	0,706	1,06	1,25	-31,1	24,39	2015	0,04	2016	-1,12	1	D	82%
18	29	High	UK	-0,3535	0,0785	0,7716	0,817	0,87	1,03	-88,81	3,09	2015	1,69	2017	0,00	2	D	100%
19	45	Low	NL	-0,0894	0,0236	0,785	0,429	0,44	0,49	-2,1	3,2	2014	0,58	2016	-1,96	2	D	97%
20	19	Low	BE	0,0079	0,1079	0,779	0,426	0,7	1,45	0,11	1,79	2015	0,10	2016	-2,36	1	B-	46%
21	6	High	UK	-0,036	0,0139	0,7667	0,65	0,44	0,49	-5,45	2,86	2016	0,23	2017	-0,66	1	D	51%
22	25	Low	FR	-0,0447	0,0194	0,7434	0,663	0,85	0,99	-1,17	7,22	2015	0,14	2017	-0,61	2	B-	47%
23	4	High	BE	-0,113	0,1246	0,946	0,506	0,9	1,03	0,41	1,09	2014	1,60	2016	-1,98	2	C+	59%
24	43	Low	FR	-0,6841	0,0456	0,522	0,3376	0,48	1,13	-1,05	3,89	2014	1,75	2015	-2,59	1	D	100%
25	48	High	LU	-0,331	0,0765	0,54	0,21	0,72	1,26	0,89	2,08	2015	0,26	2017	-3,45	2	B+	41%
26	21	High	FR	-0,512	0,859	0,6727	0,2937	1,37	3,87	-11,73	128,03	2016	1,83	2017	-6,51	1	D	100%
27	59	Low	UK	-0,0196	0,0106	0,75	0,68	0,81	0,87	0,08	1,62	2014	0,06	2015	-0,48	1	D	61%
28	25	Low	UK	0,012	0,0318	0,81	0,69	0,75	0,83	0,87	1,35	2013	0,26	2014	-0,51	1	D	95%
29	49	Low	FR	0,004	0,0105	0,89	0,74	0,91	1,01	-1,26	1,38	2013	0,75	2016	-0,13	3	B+	31%
30	26	Low	IR	-0,0328	0,0539	0,95	0,69	0,49	0,65	0,84	2,04	2013	1,26	2015	-0,61	2	B-	48%
31	12	Low	UK	-0,0969	0,0247	0,69	0,56	0,9	1,02	-0,29	1,08	2013	0,07	2016	-1,22	3	B	35%
33	18	Low	FR	-0,1367	0,1238	0,73	0,37	0,46	0,71	-69,53	82,94	2014	0,47	2015	-2,75	1	D	55%
34	35	Low	BE	-0,043	0,0104	0,765	0,699	0,18	1,56	0,21	2,98	2013	0,25	2015	-0,37	2	D	70%
35	5	High	LU	-0,48	-0,0787	0,48	0,39	0,43	0,46	-0,84	2,1	2015	0,59	2016	-1,72	1	D	70%
36	14	Low	FR	-0,109	0,009	0,72	0,68	0,98	1,09	-6,38	2,54	2013	0,29	2014	-0,47	1	D	100%
37	15	Low	FR	-0,3642	0,1694	0,49	0,33	0,56	0,87	-62,45	33,4	2013	0,13	2016	-3,18	3	A+	11%
38	61	Low	UK	-0,0442	0,0175	0,73	0,64	0,72	0,77	-0,2	4,43	2014	0,06	2015	-0,73	1	B	44%
39	19	High	UK	-0,0768	0,076	0,74	0,65	0,77	0,96	-22,83	7,66	2014	0,26	2016	-0,94	2	A	18%
40	5	High	UK	-0,1349	0,0124	0,66	0,47	0,94	0,98	-6,57	5,68	2016	0,07	2017	-1,68	1	D	100%
42	19	Low	FR	-0,2112	0,0284	0,61	0,51	0,93	0,97	-84,8	-31,4	2016	0,12	2018	-1,52	2	D	100%
44	23	Low	FR	-0,062	0,0615	0,72	0,56	0,89	1,01	-18,62	12,14	2013	0,08	2014	-1,39	1	D	51%
45	9	High	FR	-0,3303	-0,0155	0,53	0,39	0,89	1,1	-42,57	1,63	2013	0,20	2014	-2,01	1	D	100%
46	19	Low	FR	-0,3204	0,1821	0,56	0,47	0,85	1,1	-29,34	8,93	2014	0,33	2016	-2,44	2	D	65%
47	11	High	UK	-0,2425	-0,0772	0,59	0,35	0,46	0,87	-29,44	1,9	2015	0,15	2018	-1,96	3	A+	15%
48	10	High	UK	-0,1309	0,0564	0,71	0,61	0,85	1,06	-12,62	2,85	2015	0,33	2017	-1,08	2	D	99%
49	29	High	UK	-0,1213	0,0869	0,68	0,54	0,96	1,15	-1,82	12,05	2014	0,12	2016	-1,62	2	B	41%
51	58	High	FR	-0,1625	0,0316	0,65	0,41	0,9	1,08	-5,65	12,73	2013	0,13	2015	-2,11	2	A+	16%
52	17	High	BE	-0,1907	0,0028	0,61	0,49	0,76	0,88	-26,1	3,17	2015	0,03	2017	-1,52	2	C+	61%
54	10	Low	UK	-0,1112	0,2249	0,69	0,63	0,62	0,72	-1,55	3,78	2013	0,13	2014	-1,72	1	D	56%
55	19	Low	UK	-0,198	0,0531	0,64	0,41	0,9	0,98	-14,66	11,37	2015	0,24	2017	-2,21	2	B-	42%
56	2	High	UK	-0,24	0,0466	0,63	0,51	0,61	0,87	-15,85	2,99	2014	0,37	2016	-1,61	2	D	78%
60	9	Low	UK	-0,0938	0,048	0,69	0,59	0,89	1,12	0,47	1,89	2014	0,05	2016	-1,16	2	A+	22%
61	8	High	UK	-0,0241	0,0423	0,748	0,54	0,72	1,17	-2,58	5,36	2017	0,07	2019	-1,42	2	D	100%
62	10	Low	FR	-0,1254	0,051	0,74	0,69	0,96	1,19	-15,75	7,18	2014	0,48	2015	-0,60	1	D	98%
63	24	Low	FR	-0,034	0,0169	0,73	0,59	0,96	1,13	-88,43	1,44	2015	0,01	2017	-1,02	2	D	51%
64	34	Low	IR	-0,079	0,0739	0,74	0,68	0,77	0,95	-3,71	7,69	2013	0,27	2016	-0,76	3	B	33%
65	14	High	UK	-0,1662	0,039	0,69	0,61	0,59	1,12	-4,23	1,58	2014	0,38	2017	-1,00	3	A+	19%
66	40	High	FR	-0,121	0,023	0,71	0,55	0,8	1,07	-2,88	1,42	2015	0,29	2017	-1,27	2	B	37%
67	15	Low	DE	-0,3914	-0,024	0,61	0,7	0,55	0,7	-71,71	1,21	2015	0,94	2018	-0,20	3	A+	18%

Appendix III: Pearson and Spearman's rho correlation matrix – financial ratio's

Pearson / Spearman's rho			StartXvalue		EndXvalue		ROAStart		ROAEnd		CurrentrStart		CurrentREnd		Interestcovratiostart		InterestcovratEnd		Recovery time		Ownership concentration		BvDindependenceindicator	
X value – entry financial distressed firm	**Pearson Correlation**	**Correlation Coefficient**	1	1	.063	.0221	-.423**	-.423**	.011	-.059	-.178	-.320**	-.011	-.183	.013	-.078	.145	-.179	.015	.153	.106	.030	-.018	-.049
	Sig. (2-tailed)	**Sig. (2-tailed)**			.615	.072	.000	.000**	.932	.634	.150	.008	.927	.137	.919	.528	.242	.147	.906	.215	.391	.807	.885	.696
X value – recovered financial distressed firm	**Pearson Correlation**	**Correlation Coefficient**	.063	.221	1	1	.314**	.314**	-.587**	-.284**	-.173	-.010	-.605**	-.282*	.001	.027	-.583**	-.232	.181	.122	-.120	-.022	.031	.012
	Sig. (2-tailed)	**Sig. (2-tailed)**	.615	.072			.010	.010	.000	.020	.162	.934	.000	.021	.991	.829	.000	.059	.143	.327	.335	.863	.806	.926
ROA ratio – entry financial distressed firm	**Pearson Correlation**	**Correlation Coefficient**	-.638**	-.423**	.310*	.314**	1	1	.073	.0201	.247*	.183	-.091	-.076	.112	.400**	-.113	.064	.009	-.078	-.050	-.019	-.079	-.063
	Sig. (2-tailed)	**Sig. (2-tailed)**	.000	.000	.011	.010			.556	.103	.044	.137	.463	.541	.369	.001	.363	.607	.944	.528	.687	.879	.523	.611
ROA ratio – recovered financial distressed firm	**Pearson Correlation**	**Correlation Coefficient**	.011	.059	-.587**	-.284*	.201	.201	1	1	.465**	.247*	.459**	.236	-.052	-.006	.760**	.508**	-.221	-.105	.169	.070	-.159	-.068
	Sig. (2-tailed)	**Sig. (2-tailed)**	.932	.634	.000	.020	.103	.103			.000	.044	.000	.054	.674	.959	.000	.000	.072	.400	.173	.576	.200	.586
Current ratio– entry financial distressed firm	**Pearson Correlation**	**Correlation Coefficient**	-.178	-.320**	-.173	.10	.183	.183	.465**	.247*	1	1	.425**	.517**	-.117	-.114	.225	.128	-.113	-.073	.134	.137	-.075	-.055
	Sig. (2-tailed)	**Sig. (2-tailed)**	.150	.008	.162	.934	.137	.137	.000	.044			.000	.000	.347	.360	.067	.302	.363	.560	.280	.267	.547	.661
Current ratio– recovered financial distressed firm	**Pearson Correlation**	**Correlation Coefficient**	-.011	-.183	-.605**	-.282*	-.091	-.076	.459**	.236	.425**	.517**	1	1	.074	.091	.353**	.061	-.217	-.095	.228	.116	-.085	-.061
	Sig. (2-tailed)	**Sig. (2-tailed)**	.927	.137	.000	.021	.463	.541	.000	.054	.000	.000			.550	.465	.003	.626	.078	.442	.064	.349	.492	.621
Interest coverage ratio– entry financial distressed firm	**Pearson Correlation**	**Correlation Coefficient**	.013	.078	.001	.027	.112	.400**	-.052	-.006	-.117	-.114	.074	.091	1	1	-.100	-.166	-.169	-.158	-.024	-.037	.081	.126
	Sig. (2-tailed)	**Sig. (2-tailed)**	.919	.528	.991	.829	.369	.001	.674	.959	.347	.360	.550	.465			.420	.181	.172	.201	.850	.768	.514	.309
Interest coverage ratio– recovered financial distressed firm	**Pearson Correlation**	**Correlation Coefficient**	.145	.179	-.583**	-.232	-.113	-.064	.760**	.508**	.225	.128	.353**	.061	-.100	-.166	1	1	-.177	-.173	.041	.071	-.067	-.088
	Sig. (2-tailed)	**Sig. (2-tailed)**	.242	.147	.000	.059	.363	.607	.000	.000	.067	.302	.003	.626	.420	.181			.151	.161	.740	.568	.589	.478
Recovery time	**Pearson Correlation**	**Correlation Coefficient**	.015	.0153	.181	.122	.009	-0.078	-.221	-.105	-.113	-.073	-.217	-.095	-.169	-.158	-.177	-.173	1	1	-.596**	-.607**	.662**	.643**
	Sig. (2-tailed)	**Sig. (2-tailed)**	.906	.215	.143	.327	.944	.528	.072	.400	.363	.560	.078	.442	.172	.201	.151	.161			.000	.000	.000	.000
Ownership concentration	**Pearson Correlation**	**Correlation Coefficient**	.106	.030	-.120	-.022	-.050	-.019	.169	.070	.134	.137	.228	.116	-.024	-.037	.041	.071	-.596**	-.607**	1	1	-.830**	-.875**
	Sig. (2-tailed)	**Sig. (2-tailed)**	.391	.807	.335	.863	.687	.879	.173	.576	.280	.267	.064	.349	.850	.768	.740	.568	.000	.000			.000	.000
BvD independence indicator	**Pearson Correlation**	**Correlation Coefficient**	-.018	-.049	.031	.012	-.079	-.063	-.159	-.068	-.075	-.055	-.085	.061	.081	.126	-.067	-.088	.662**	.643**	-.830**	-.875**	1	1
	Sig. (2-tailed)		.885	.696	.806	.926	.523	.611	.200	.586	.547	.661	.492	.621	.514	.309	.589	.478	.000	.000	.000	.000		

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

C. Listwise N= 67

Appendix IV

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Panel A: independent variable ownership concentration included				
1	.613[a]	.376	.325	.582
Panel B: independent variable BvD independence indicator included				
1	.709[a]	.503	.462	.519

Panel A

a. Predictors: (Constant), Ownership concentration, firmage, Location=FR, Industry=High, Location=UK

b. Dependent Variable: Recovery time

Panel B

a. Predictors: (Constant), BvD independence indicator, firmage, Location=FR, Industry=High, Location=UK

b. Dependent Variable: Recovery time

Appendix V

Model Summary[b]

Panel A: with independent variable ownership concentration included	
Cox and Snell	.405
Nagelkerke	.465
McFadden	.254
Panel B: with independent variable BvD independence indicator included	
Cox and Snell	.499
Nagelkerke	.573
McFadden	.338

Panel A

a. Predictors: (Constant), Ownership concentration, firmage, Location=FR, Industry=High, Location=UK

b. Dependent Variable: Recovery time

Panel B

a. Predictors: (Constant), BvD independence indicator, firmage, Location=FR, Industry=High, Location=UK

b. Dependent Variable: Recovery time