The firm specific determinants of capital structure and the influence of the financial crisis: Evidence from Dutch firms.

Author: Mats Wagenvoort
University of Twente
P.O. Box 217, 7500AE Enschede
The Netherlands

This paper aims to identify whether the financial crisis had an influence on the determinants of capital structure for Dutch firms. It does so by comparing data of two timeframes namely the pre-crisis period (2006-2007) and crisis period (2008-2009). The determinants that are of interest for the study include; profitability, tangibility, size, growth opportunities and liquidity. The variables are regressed against the dependent variable leverage. The results hold that the mean value of leverage increased during the financial crisis. This indicates that companies searched for external financing when profitability and liquidity levels were diminishing. Furthermore the determinants profitability, tangibility, size and liquidity all seem to be positively related to leverage before the crisis. Whilst the variable growth opportunities appears to be negatively related to leverage. During the crisis the value of the coefficients changed although the direction of the relationship stays the same for all variables except profitability.

Supervisors: Dr. Xiaohong Huang
Dr. Samy Essa.

Keywords
Capital structure, Trade-off theory, Pecking order theory, Market-timing theory, Global Financial Crisis.

8th IBA Bachelor Thesis Conference, November 10th, 2016, Enschede, The Netherlands.

1. INTRODUCTION

"The business of business is business." This famous quote from Nobel prize winner Milton Friedman (1970) states how corporations' only purpose is to make profit. Corporate executives are just employees of the owners of the business and are tasked to make as much money as possible while conforming to the basic rules of society. In this sense it can be concluded that firms strive towards maximization of individual shareholders value which collectively leads to the optimal value of the firm. In their paper Modigliani and Miller (1958) state their independence thesis through which they argue that the value of a firm is a constant that is not subject to change in the debt equity ratio making capital structure irrelevant. This proposition only holds when assuming a perfect capital market that is not subject to taxes or transactional and bankruptcy costs (Fama, 1978). However capital markets are far from perfect stressing the importance of capital structure.

After Modigliani and Miller's work a lot of scholars have studied the subject of capital structure. Researchers have tried to understand and explain the reasoning behind the decisions that managers make in regard of capital structures. The large amount of literature that is present as on this day comprises of a range of theories that try to explain the debt equity choice made by firms. The most debated theories include the Trade-off Theory (TOT) which emerged from the work of Modigliani and Miller by adding the costs of bankruptcy (Robichek and Myers, 1965) and effect of tax minimizing procedures on firm value (Hirshleifer, 1966). These features lead to an optimal capital structure and corresponding target leverage ratio. Another thoroughly tested theory is The Pecking Order Theory (POT). Named by Myers (1984) but already proclaimed earlier by Donaldson (1961). This theory distinguishes between internal and external sources of finance and states that due to information asymmetries firms prefer internally generated finances followed by external ones being debt and equity in that particular order(Myers, 1984). A more recent theory and as a consequence les of a subject to testing is the Market-Timing Theory (MTT). Baker and Wurgler (2002) argue that firms issue shares at high prices and repurchase them when prices are low. This is done to exploit the fluctuations in the cost of equity relative to the costs of other forms of capital.

The three previously mentioned theories are among the most tested in the current literature. Although it should be noted that these are not the only three theories in existence. The theories have their limitations as they are subject to certain conditions and assumptions. Subsequently Myers (2001) argues that there is no universal theory of the debt-equity choice, and no reason to expect one.

The theories of capital structure are often linked with specified determinants correlating with leverage. These determinants exist on the firm (Harris and Raviv, 1991; Rajan and Zingales, 1995) and country level (Lane and Milesi, 2000; Cook and Tang, 2010). Although in this research only firm specific determinants will be studied. Furthermore the firm specific determinants of capital structure are argued to be varying across countries (de Jong, Kabir, and Nguyen, 2008). Within the Netherlands capital structure has been studied by various scholars including de Jong and Veld (2001), de Jong (2002), de Haan and Hinloopen (2003) de Bie and de Haan (2007) and Degryse et al. (2012).

Next to country specific research capital structure has also been studied in the context of the financial crisis. The reasoning behind doing research during this event comes from the direct influence that the financial crisis had on the supply and demand of debt financing. Zhang and Mirza (2015) studied the effect of the global financial crisis on the capital structure determinants within China. Iqbal and Kume (2014) studied the impact of the financial crisis on the capital structures of UK, French and German firms. However there exists a gap in the current literature as no research has yet been done on the Influence of the global financial crisis on the capital structure of Dutch firms. This leads to the following research question:

"How does the global financial crisis influence the capital structure determinants in the Netherlands?"

The remainder of this paper consists out of a literature review, hypothesis section, methodology, results, discussion and conclusion.

2. LITERATURE REVIEW

Pioneering work on the subject of capital structure has been provided my Modigliani and Miller (1958). In their paper they state that managers make decisions based on a rational that leads to the maximization of profits and the optimal firm value. According to their theory of irrelevance this optimal firm value is not dependent on the mix between debt and equity. The theory's drawback is its hypothesized perfect world as it assumes the absence of taxes, bankruptcy costs and inefficiency's in markets (Bradley et al., 1984). Meaning that the optimal firm value that managers strive towards can be accomplished by taking on as much debt as possible. The irrelevance theory functioned as a starting point for the study on capital structure (Dierkes and Schäfer, 2016). As a result multiple theories have been developed that state the relevance of capital structure towards the value of the firm. The main three theories will be elaborated in the remainder of this part of the paper.

2.1 Trade-off theory

One of the theories that has been developed as a response to Modigliani and Miller's irrelevance theory is the Trade-off theory of capital structure. As the name already suggests the theory assumes that there is a trade-off to be made in the decision that leads towards the chosen capital structure. The reason for this is that the assumptions and conditions of the irrelevance theory do not hold in the real world. The Trade-off theory was first introduced by Kraus and Litzenberger (1973). However in their paper they speak about a "State-preference model of optimal financial leverage" which indicates that the trade-off leads towards an optimal capital structure that maximizes the value of the firm.

One of the factors of influence on the optimal capital structure is the existence of taxes. In their paper on corporate income taxes and the cost of capital Modigliani and Miller (1963) correct for the absence of taxes in their previous paper. It is stated that a firm's market value is a linear function of the amount of debt used in its capital structure. In accordance Fama and French (2002) argue that deductibility of corporate interest payments pushes firms toward more target leverage. However they also state that a higher personal tax rate on the company's debt compared to equity pushes them toward less leverage.

With only the advantage that is generated by non-debt tax shields a trade-off is not in order. However endlessly taking on debt will cause the appearance of so called costs of bankruptcy (Robichek and Myers, 1965). These costs will increase with debt and thus cause for an optimal capital structure. Instead of bankruptcy costs, Myers (1984) refers to these costs as costs of financial distress which include the legal and administrative costs of bankruptcy, as well as the subtler agency, moral hazard, monitoring and contracting costs.

Myers (1984) also criticizes the trade-off theory as not every company's observed leverage ratio matches its optimal ratio.

This due to the cost of adjustment that causes companies to experience lag in the process of adjusting to their optimal capital structure. These adjustment costs include the costs of for example security issuance and are expected to be higher in times of the financial crisis according to a study by Lambrinoudakis (2014). He argues that firm risk as measured by volatility of stock returns is positively related to adjustment costs.

To finalize, according to the Trade-off theory the market value of a firm financed with debt is equal to the market value of an "unlevered" firm, plus the corporate tax rate times the market value of the firms' debt, subtracting the complement of the corporate tax rate times the present value of bankruptcy costs (Kraus and Litzenberger, 1973).

2.2 Pecking order theory

The Pecking order theory of capital structure is often referred to as the pioneering work of Myers (1984) and Myers and Majluf (1984). This might be due to the fact that it was Myers (1984) who first coined the term "Pecking order" However the Pecking order hypothesis can already be found in a study performed by Donaldson (1961). Donaldson argues that "Management strongly favoured internal generation as a source of new funds even to the exclusion of external funds except for occasional unavoidable 'bulges' in the need for funds."

This gives a clear explanation on the preferred order of finance. In the financing hierarchy management prefers internal over external financing. This due to asymmetric information that arises between insiders and outsiders of the firm. When internal funds are not able to cover all of the costs that the firm has external finance needs to be obtained. According to Myers (1984) firms issue the safest security first. Which means that debt is issued before equity. It should be noted that in contrast with the Trade-off theory of capital structure the Pecking order theory does not lead towards an optimal leverage ratio. This is due to the presence of internal and external equity.

Research agreeing with the Pecking order hypothesis was done by Shyam-Sunder and Myers (1999) who find that the Pecking order theory has much more time-series explanatory power compared to the Trade-off theory. However the theory has also been subject to criticism. The theory should only hold for large firms as smaller firms tend to not prefer internal but external financing (Shyam-Sunder and Myers, 1999; Frank and Goyal, 2002). Research by Chen (2004) also suggests that the Pecking order might vary across countries. He finds that within China firms prefer equity financing over debt financing.

2.3 Market-timing theory

The Market-timing theory of capital structure also known as the "Window of opportunity" hypothesis was first developed and tested by Rajan and Servaes (1995). The idea behind the theory is relatively old (Myers, 1984). It refers to the practice of issuing shares at high prices and repurchasing outstanding shares when prices are low(Baker and Wurgler, 2002). The incentive for managers to time the market is the exploitation of temporary fluctuations in the cost of equity capital relative to other forms of capital available. Baker and Wurgler (2002) argue the effectiveness and applicability of the market-timing theory as markets tend to be inefficient and segmented. This in contrast with Modigliani and Miller (1958) who's irrelevance theory assumes a fully efficient and integrated capital markets. Furthermore the Pecking order theory is restricted to the assumption of a semi-strong form of market efficiency (Huang and Ritter, 2005).

Evidence on market-timing can be found as firms tend to issue seasoned equity offerings instead of debt when their market values are high (Taggart, 1977; Jung et al., 1996). Also in the case of an initial public offering (IPO) market-timing can be observed (Loughran et al., 1994; Pagano et al., 1998). Evidence also emits from a survey conducted by Graham and Harvey (2001) in which two-thirds of interviewed Chief Financial Officers(CFO) admit to timing the equity market. Within the Netherlands the Market-timing hypothesis has been tested by De Bie and De Haan (2007) who find that there is evidence on Dutch firms intentions to time the equity market.

2.4 The financial crisis and capital structure

The current body of literature on capital structure is dominated by research that investigates the applicability of the three previously mentioned theories. To further develop understand of company's capital structure decisions researchers have studied the influence of financial crisis on a company's capital structure. According to Fosberg (2012) a consequence of the 2008 financial crisis was the reduction in the supply of bank loans towards non-financial companies. This was caused by the lack of confidence that emitted between banks which led to lending among banks at highly unfavorable rates and eventually led to a supply shortage in the debt market (Fosberg, 2012). New loans for large borrowers of capital fell by 37% during September 2008 when the financial crisis peaked. Also loans for restructuring purposes such as share buybacks dropped. Companies suffered from increasing difficulty in the process of getting a loan to finance their projects (Ivashina and Scharfstein, 2008). However in times of the financial crisis the need for finances in order to fund projects also goes down as investment opportunities are rare and as a consequence the demand for external financing is also low. As a result leverage ratios are expected to be low in times of economic downturn (Mokhova & Zinecker, 2014).

The supply of equity financing also suffers from consequences caused by the financial crisis. According to research by Kahle and Stulz (2013) equity markets suffered from a supply shock because of equity buyers fleeing towards quality bond markets. Raising equity capital was thus particularly costly to shareholders during the crisis because it led to a significant wealth transfer from shareholders to debtholders (Kashyap et al., 2008; Myers, 1977).

Scholars have also studied how the firm specific determinants of capital structure are influenced by the financial crisis. Zhang and Mirza (2015) studied the influence of the 2008 financial crisis on capital structure determinants within China. They segregated between a pre and post crisis periods and found that liquidity showed no change during both periods. In contrast tax, non-debt tax shields, tangibility, economic development and inflation showed a significant change in post crisis period. Their findings approve of the Pecking order theory as the most suited to explain capital structure of Chinese firms after the financial crisis because most of the assumptions regarding this theory are satisfied. This at the cost of both the Market-timing and Trade-off hypothesis. The findings of Zhang and Mirza (2015) agree with those of Harrison and Widjaja (2013) who also find that the Pecking order theory has the most explanatory power during and after a crisis

Iqbal and Kume (2014) also studied the effects of the 2008 financial crisis on firms capital structure. They specifically studied firms located in the UK, France and Germany. However the approach towards the financial crisis differs from the two former mentioned articles as not two but three time frames are distinguished. Iqbal and Kume (2014) mention the 2006-2007, 2008-2009 and 2010-2011 periods as the pre, during and post-crisis periods respectively.

A disadvantage to this approach is that the post-crisis period will be effected by the European sovereign debt crisis which started in Greece and had its climax in May 2010 (Young and Semmler, 2011). The European sovereign debt crisis is beyond the scope of this research and therefore the post-crisis will not be part of the analysis.

The literature review has provided a theoretical framework that handled the three main theories of capital structure since the irrelevance hypothesis by Modigliani and Miller (1958). The latter part of this paper is limited to only the Trade-off and Pecking order theories of capital structure. This due to the limited explanatory power of the Market timing theory caused by the lacking of available explanatory variables (Harrison and Widjaja, 2013).

3. HYPOTHESIS SECTION

To be able to test the effect of the financial crisis on the determinants of capital structure in the Netherlands a set of hypothesis needs to be formulated. These hypothesis are often based on theories that predict a certain direction of the correlation between capital structure determinants and leverage. However the theories of capital structure tend to contradict each other's prediction on the direction of the correlation. This would lead to the undesirable case of two hypothesis for only one variable. In addition the financial crisis must also be represented in the hypothesis which will be difficult when the construction of the hypothesis is based on theory prediction.

Therefore the hypothesis will be formulated based on the majority of findings for the particular variable. The variables used in this study include; profitability, tangibility, size, growth opportunities and liquidity.

It should be noted that the previously mentioned variables are not the only ones that correlate with leverage. The reason to choose for these variables specifically has to do with the geographical scope of this research and the findings by De Jong et al. (2008). In their research they state how capital structure determinants differ for each country and are deemed to be country specific. That is some variables don't offer a significant influence on the dependent variable leverage for each country. Next to that profitability, tangibility and size are also reckoned as the most consistent variables that correlate with leverage (Bradley et al., 1984; Long and Malitz, 1985; Harris and Raviv, 1991).

3.1 Profitability

Profitability is a determinant of leverage that is subject to contradicting predictions from a theory viewpoint. The Trade-off theory of capital structure states that companies will take on as much debt as possible till a point that the costs of bankruptcy become too severe. Also the tax advantage that debt brings in form of a tax-shield causes companies to seek for more debt financing (Frank and Goyal, 2005). This holds that from a Trade-off perspective profitability is positively related to leverage. The Pecking order theory disagrees with this statement. Companies are assumed to only take on external financing when their internal generated funds are inadequate (Myers & Majluf, 1984). This results in an expected negative correlation between profitability and leverage.

The effect that profitability has on leverage has been tested by an extensive amount of scholars. Negative relationships have been documented by Bauer (2004), Bokpin (2009), Rajan and Zingales (1995) and Titman and Wessels (1988). In addition Akinlo and Asaolu (2012) find that Leverage is negatively related to Profitability for Nigerian firms. Also within the Netherlands a negative correlation was found by Degryse et al. (2012) De Jong et al. (2008) and De Bie and De Haan (2007).

Within the context of the financial crisis Zhang and Mirza (2015) find that profitability is negatively related to leverage in both pre-crisis and crisis periods. However it becomes less negative during the crisis. Deesomsak et al. (2004) agrees on the negative correlation but finds that the correlation becomes more negative during and after the 1997 Asian financial crisis. In addition Harrison and Widjaja (2013) document a negative correlation that becomes less negative during the crisis. They argue that the financial crisis weakened the internal financing capacity causing profitability to become less influential. Following the majority of the findings the hypothesis regarding profitability will be formulated as:

H1: Profitability has a negative impact on leverage and this impact becomes less negative during the financial crisis.

3.2 Tangibility

The assets that a company owns which can serve as collateral in the case of for example a bankruptcy are defined as tangible assets. Tangible assets on a balance sheet are physical assets as plants, properties and equipment. Both the Trade-off theory and Pecking order theory agree on a positive correlation between a company's tangibility and its leverage. Following the Trade-off theory Frank and Goyal (2005) argue that high amounts of tangible assets account for lower costs of financial distress. This would allow for increased lending that as a consequence increases firm value. The reasoning behind the positive correlation expected according to the Pecking order theory also comes from the idea that collateral supports debt. Hence, collateral is associated with increased leverage (Frank and Goyal, 2003).

According to most scholars tangibility is positively correlated with Leverage. Korajczyk and Levy (2003), Frank and Goyal (2009) Nguyen and Wu (2011) and Akdal (2011) all find a positive relation. However De Bie and De Haan (2007) find that for Dutch firms tangibility has a negative relation with leverage. Although not always significant. Other research within the Netherlands on the correlation of tangibility on leverage finds positive outcomes (Degryse et al., 2012; De Jong et al., 2008).

In times of a financial crisis the effect that tangible assets have on the leverage of a company stays positive but to a lesser extent according to findings by Zhang and Mirza (2015). Their findings are not supported by Harrison and Widjaja (2013) and Deesomsak et al. (2004). Both find that tangibility is positively related to leverage before the crisis and even increases further during and after the crisis. The reasoning behind the increasing influence of tangibility on leverage during the crisis is that tangible assets mitigate adverse selection faced by lenders (Jimenez and Saurita, 2004). The problem of adverse selection peeked during the financial crisis causing lenders to seek for highly levered firms to compensate (Barell and Davis, 2008). Therefore the hypothesis regarding tangibility will be formulated as:

H2: Tangibility has a positive impact on leverage and this impact becomes more positive during the financial crisis.

3.3 Size

Both the Trade-off and Pecking order theories of capital structure agree on the prediction that size is positively related to leverage. Following the principles of the Trade-off theory large companies are said to be more diversified and thus face a decreasing chance of bankruptcy (Chen et al., 1999). This allows them to take on more debt in their capital structures. Larger companies also enjoy the benefit of lower costs associated with acquiring debt financing (Titman and Wessels, 1988). From a Pecking order perspective the most important

argument is that information asymmetries are less severe for larger firms. Making it easier to raise debt (Chen et al., 1999).

Research by scholars in generally agrees on the proposed positive correlation of both the Trade-off and Pecking order theory. Michaelas et al. (1999), Bauer (2004), Hanousek and Shamshur (2011) and Chen et al. (1999) all find a positive correlation between size and leverage. Notably Chen et al. (1999) finds a negative correlation when substituting book leverage for market leverage. However in this paper book leverage is referred to as the dependent variable. For Dutch firms Degryse et al. (2012), De Jong et al. (2008) and De Bie and De Haan (2007) also find a positive correlation.

During the financial crisis Zhang and Mirza (2015) find a positive correlation between size and leverage. Also in the pre-crisis period a positive correlation is found. However the degree of positivity has become less during the financial crisis. Harrison and Widjaja (2013) agree with the previous findings and document a negative change in the coefficient of size as it goes from positive to negative between the pre-crisis and crisis period. The shifting from a positive to a negative effect can be attributed to the unfavorable equity market during the financial crisis. This causes smaller firms that are more often subject to internal financial constraints to reach for debt financing which increases their leverage (Harrison and Widjaja, 2013). In contradiction Deesomsak et al. (2004) finds that the positive relation between size and leverage strengthens because of the crisis. Ultimately the hypothesis regarding size will be formulated as:

H3: Size has a positive impact on leverage and this impact becomes less positive during the financial crisis.

3.4 Growth opportunities

The growth opportunities that a company has can determine how capital is structured. Both the Trade-off theory and Pecking order theory have a view on how the correlation between growth opportunities and leverage takes shape. The Trade-off theory argues that high growth firms are subject to increasing bankruptcy costs implying a negative correlation (Baskin, 1989). On the other hand the Pecking order theory states a positive correlation as companies with abundant growth opportunities often find that internal finance is insufficient and thus external financing is needed (De Jong, 1999). Preferring debt over equity in the Pecking order hierarchy leverage will increase with growth opportunities implying a positive correlation.

Most findings by scholars outside of the Netherlands agree with the Trade-off theory. Titman and Wessels (1988), Barclay et al. (1995), Rajan and Zingales (1995), Barclay and Smith (1999) and Graham (2000) all find a negative correlation. However within the Netherlands the variable growth opportunities is found to be positively correlated with leverage (Degryse et al., 2012; De Jong et al., 2008; De Bie and De Haan, 2007; Chen et al., 1999).

At the time of a financial crisis Zhang and Mirza (2015) find that there is a negative correlation between growth opportunities and leverage. This correlation becomes less negative during and after the crisis. Harrison and Widjaja (2013) disagree as they find a negative correlation coefficients during the pre-crisis period. This negative correlation becomes severely more negative in times of the crisis. This finding is in line with Deesomsak et al. (2004) and could be attributed to the preference of firms towards debt financing during this financial crisis (Harrison and Widjaja, 2013).

Because the research in this paper is based on Dutch companies a positive correlation between growth opportunities will be expected. Adding the findings in the context of a financial crisis the hypothesis regarding growth opportunities will be formulated as:

H4: Growth opportunities has a positive impact on leverage and this impact becomes less positive during the financial crisis.

3.5 Liquidity

Majumdar and Chhibber, (1999) argue that liquidity is one of the most influential factors in determining a company's capital structure. The Trade-off theory and Pecking order theory don't agree on the correlation between liquidity and leverage. The Trade-off theory argues that the association is positive. Firms that are highly liquid can satisfy their liabilities with ease and take on more debt. The Pecking order theory's negative prediction is rationalized by the fact that firms prefer internal over external financing. Firms that have a high liquidity ratio can use these internal assets first to finance their projects and will only reach for debt when these internal finances are insufficient(Butt et al., 2013).

Scholar's findings don't seem to agree on a positive or negative correlation. Lipson and Mortal, (2009) Ahmad et al. (2010) and Akdal, (2011) all agree on a negative correlation while Morellec (2001) and Mazur (2007) find a positive correlation. Findings on Dutch firms also don't fully agree Degryse et al. (2012) finds a positive correlation and de Haan and Hinloopen (2003) and De Jong et al. (2008) find a negative correlation.

Within the context of the financial crisis Zhang and Mirza (2015) document a positive correlation between liquidity and leverage before and during the crisis. The positive correlation becomes even more positive during the crisis. In contradiction Harrison and Widjaja (2013) find a negative correlation before and during the crisis. This correlation stays exactly the same in both timeframes. Finally Deesomsak et al. (2004) argues that there is a negative correlation between liquidity and leverage before and after the financial crisis. According to them this negative correlation becomes even more negative during and after the crisis. Indicating that leverage had a greater influence on a companies' capital structure during the crisis.

The majority of research within the Netherlands agrees on a negative correlation. Although within the context of a financial crisis there is no majority agreeing on a certain effect as Zhang and Mirza (2015), Harrison and Widjaja (2013) and Deesomsak et al. (2004)'s findings are; more positive, no difference and more negative respectively. However the research by Deesomsak et al. (2004) was performed on the 1997 Asian financial crisis. Therefore the hypothesis regarding liquidity will be formulated as:

H5: Liquidity has a negative impact on leverage and this impact becomes less negative during the financial crisis.

4. METHODOLOGY

The next part of the paper will concern the method of analysis that is used to answer the research question. Also the dataset and the measurement of the variables will be elaborated.

4.1 Method of analysis

Current literature on the determinants of capital structure uses regression to determine how the independent variables influence the dependent variables. As mentioned before specifically the coefficients of the independent variables are of interest for this study as they give information on the direction of the correlation between the variables. Furthermore the difference in the coefficients that is observed after comparing the regression of the pre-crisis and crisis period will state the influence that the financial crisis had on the determinants of

capital structure. Both pre-crisis and crisis periods in this study are based on former work by Iqbal and Kume (2014). The regression model for this research will be:

$LEV_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 TANG_{it} + \beta_3 SIZE_{it} + \beta_4 GROWTH_{it} + \beta_5 LIQ_{it} + \varepsilon_{it}$

4.2 Dataset

The data that is used to conduct the research consists out of company's financial information. This information has been retrieved from Orbis. Orbis is a database that hives information originating out of annual reports from over 1.7 million different companies. As these companies are spread around the world and thus beyond the scope of our interest it is necessary to apply search criteria that are in line with our research question. First of all the companies must be listed on the Euronext Amsterdam. Secondly companies operating in the financial or governmental sectors must be emitted from the list. This due to the fact that these sectors have capital structures that are subject to regulation. Lastly relevant data must be available in the years 2006-2007 (pre-crisis) and 2008-2009 (crisis). The former mentioned search criteria lead to a sample size of 28 firms.

4.3 Measurement of the variables

4.3.1 Dependent variable

Mentioned before but not yet specified the dependent variable in this research will be leverage. The leverage ratio has been the dependent variable in all research on capital structure determinants. However it can take on different shapes. Titman and Wessels (1988) use six different measures of leverage in their study. Demirguc-Kunt and Maksimovic (1999) use two being long term and short term debt. Using short term debt is criticized by De Jong et al. (2008). They argue that trade credit influences short term debt and is not influenced by the same determinants as leverage. Research by Zhang and Mirza (2015) uses three different measures of leverage. Short term debt, long term debt and total debt all have their own leverage ratio. The rationale behind three different measures of leverage comes from the crisis context in which the study is performed. The financial crisis has influenced short term debt, long term debt and collectively the total debt differently (Ivashina and Scharfstein, 2010). Taking into account the criticism by De Jong et al. (2008) and the proxy for leverage by Zhang and Mirza (2015) leverage will be measured as long term debt divided by total book value of assets.

4.3.2 Independent variables

The measurement of the independent variables that are said to influence leverage may differ in their measures. Scholars seem to find different proxies better suited to measure the independent variables. This has an effect on the outcomes of the research.

Profitability will be measured as operating income divided by total book value of assets (Titman and Wessels, 1988; Akdal, 2011; Lemmon and Zender, 2010).

Tangibility will be measured as fixed assets divided by total book value of assets (de Bie and de Haan, 2007; Rajan and Zingales, 1995; De Jong et al., 2008).

Size will be measured as a logarithm of total book value of assets (Zhang and Mirza, 2015; De Haan and Hinloopen, 2003; Degryse et al., 2012).

Growth opportunities will be measured as market value of total assets divided by book value of total assets (Rajan and Zingales, 1995; De Jong et al., 2008; Zhang and Mirza, 2015).

Liquidity will be measured as total current assets divided by total current liabilities (De Jong et al., 2008; Graham, 2000; Proença, 2014).

5. RESULTS

This section of the paper provides the results of the analysis. It consists out of descriptive statistics, bivariate analysis and ultimately the regression models for both the pre-crisis and crisis period based on the ordinary least squares(OLS) method.

5.1 Descriptive statistics

The descriptive statistics for both the pre-crisis and crisis period can be found in table 1 and table 2 respectively. The differences of the amount of observations is what comes to direct attention when observing both tables. As mentioned previously the sample size totaled 28 companies. Multiplying by two would lead to the total amount of observations per variable for each table. However none of the values in the observations column matches the number of 56. This can be explained by the missing values in the data set as some companies missed data were others had it available. In the case of bivariate and OLS analysis this would cause a problem as data is analyzed pairwise. When computing descriptive statistics this problem will not arise. Furthermore the higher number of observations will improve the representativeness of the sample.

When comparing both the pre-crisis and the crisis tables it can be concluded that on average companies became more levered during the financial crisis as the leverage ratio increased from 0.167 to 0.183. This finding disagrees with a study by Fosberg

Table 1: Descriptive statistics Pre-crisis (2006-2007)

Variable	Observations	Mean	St. Dev.	Min.	Max.
Leverage	82	0.167	0.101	0.0002	0.4686
Profitability	94	1.330	0.744	0.0019	3.8576
Tangibility	94	0.472	0.193	0.6553	0.8547
Size	94	5.811	0.909	3.8174	7.5650
Growth	81	1.260	0.840	0.2798	5.0388
Liquidity	94	1.586	0.809	0.4464	4.6128

Table 2: Descriptive statistics Crisis (2008-2009)

Variable	Observations	Mean	St. Dev.	Min.	Max.
Leverage	83	0.183	0.119	0.0060	0.5031
Profitability	94	1.248	0.709	0.0082	3.6974
Tangibility	94	0.524	0.184	0.0834	0.8705
Size	94	5.847	0.935	3.8711	7.5039
Growth	92	0.694	0.497	0.0369	3.1629
Liquidity	94	1.475	0.957	0.4880	7.3354

(2012) on capital structure and the financial crisis in which he finds that on average new loans for large borrowers of capital fell by 37% during September 2008 when the financial crisis peaked. The increase in leverage ratio found in this study also contradicts Mokhova and Zinecker (2014) as they argued that leverage ratios will be lower in times of economic downturn because investment opportunities are rare and thus the demand for external financing will go down. In contrast a study by Deesomsak et al. (2004) on the effect of the Asian 1997 financial crisis on capital structure shows that Malaysian and Thai firms had substantially more debt in their capital structures during the crisis. However the leverage ratio of Australian firms stayed constant. This can be attributed to the highest legal protection of shareholders in Australia and the highest creditor's protection in Malaysia and Thailand. Within the Netherlands the leverage ratio also increased. The explanation behind the increase is that the financial system within the Netherlands is bank-based and in according to research by La Porta et al. (2000) bank-based systems exist where creditor protection is high. Iqbal and Kume (2014) find comparable results in their sample of UK, French and German firms. In addition to the change in leverage ratio between both periods the ratios also differ substantially per country within the same timeframe. Iqbal and Kume (2014) attribute this to the financial system within the country. UK firms which operate in a market-based system have lower leverage ratios compared to German and French firms who operate in bank-based systems. However both ratio's found in our sample are lower than that of firms operating in the UK's market-based system. Whilst the Netherlands can be defined as having a bank-based financial system (Levine, 1999). This misplacement can be attributed to the calculation of leverage as Iqbal and Kume (2014) also take into account short term debt while our proxy for leverage is solely based on long term debt.

For the variable profitability the mean value went down in times of the financial crisis just as in a similar study by Balios et al. (2016). This finding only corresponds partially with findings by Harrison and Widjaja (2013). In their study on the financial crisis and the determinants of capital structure they observed that companies' earnings before interest and taxes (EBIT) grew in the 2006-2008 period and only fell in the year 2009. Furthermore on average they observed a growth when grouping their yearly observations in 2006-2007 and 2008-2009 timeframes as is done in this study. Another notable finding by Harrison and Widjaja (2013) is that the average standard deviation also increased with the mean value of EBIT. This holds that the spread around the average increased in times of the crisis. Indicating that companies were effected in different ways by the financial crisis. This higher standard deviation is however not found in our sample of Dutch firms as the standard deviation for profitability decreases from 0.744 to 0.709.

Regarding the ratio for tangibility an increase can be seen as the mean value goes from 0.472 in the pre-crisis period to 0.524 in times of the financial crisis. It thus seems that companies' total assets consisted out of more tangible assets as for example plants properties and equipment. Within our sample the average value of tangible assets totaled slightly less than €2 million in the pre-crisis period. Where it rose to more than €2.4 million in times of the financial crisis. The rationale behind this increase in fixed assets is explained by Campello et al. (2011). They studied firms' liquidity management and investments in times of the financial crisis. In their study they describe how firms substitute cash savings for investments when they are unable to access credit lines. In times of a financial crisis these credit lines are restricted as Fosberg (2012) already described. Also within our research it can be seen that both profitability and liquidity went down in times of the crisis. Indicating restricted access to credit. The choice to invest in fixed assets seems to be a good decision according to research on the effect of the financial crisis on tangible assets by Diana and Gestiunea (2013). They found that most of the fixed assets in their study were valued lower in times of the financial crisis resulting in bargaining prices. After the crisis these assets were often revalued at 25% higher rates. In addition the investments in fixed assets would lead to greater ease in obtaining loans from banks during the financial crisis as fixed assets would serve as highly demanded collateral.

Company size seems to have risen in times of the financial crisis. Weather this hold for other studies as well depends on the different proxies that exist for measuring this variable. In this study size is measured as the logarithm of total assets. Thus it is influenced by the former mentioned increase in fixed assets due to investments opportunities. Harrison and Widjaja (2013) chose to measure size as the logarithm of total sales. Unfortunately their study is silent on the mean values of this variable before and during the crisis. However they do provide values for total assets. When grouped according to the timeframes of this study their findings agree with an increase of value in times of the financial crisis. In contrast Balios et al. (2016) finds that size decreases as a result of the financial crisis. However their proxy for size is based on the proxy for profitability within this study.

For the variable growth opportunities an interesting difference can be observed when comparing the values for the 2006-2007 period with those of the 2008-2009 period. The mean value went down from 1.260 to only 0.694. Also the minimal and maximal observed values decreased. In addition the standard deviation decreased with more than 40% indicating that most observed values came closer to the mean in time of the financial crisis. The reasoning behind the substantial fall can be attributed to the decreased trust of investors as they fled to quality bond markets Kahle and Stulz (2013). Research by Harrison and Widjaja (2013) agrees with the observed decrease of mean market value in this study.

Lastly the variable liquidity encountered a decrease in mean value in accordance with the majority of the variables from pre-crisis towards the crisis period. This decrease can be explained by the fact that companies saw their profits shrink and their possibilities for loans limited and as a result liquid assets as cash and cash equivalents were appealed upon. This lead to a decrease in the current assets of firms whereas in contradiction the current liabilities experienced a growth between the two timeframes. A study by Garcia-Appendini and Montoriol-Garriga (2013) that examined firms as liquidity providers during the financial crisis found that firms that are highly liquid before the crisis served as provider of liquidity for firms which were lacking liquidity. The rationale behind this act of kindness can be attributed to inter-firm dependence as it exists among suppliers and their clients. Suppliers function as last resort liquidity providers (Wilner, 2000; Cuñat, 2007). Which is consistent with the redistribution view of trade credit provision by Meltzer (1960) as approved by Jaffee (1971) and Duca (1986).

5.2 Bivariate analysis

In order to test whether the variables in this research are subject to correlation a bivariate analysis is carried out. This analysis involves pairwise correlation between the variables using a Pearson correlation coefficient. This coefficient will state the direction and the strength of the correlation as it will take on a value between -1 and +1. In addition the bivariate analysis will also explain if there are signs of multicollinearity among the

variables. The maximum correlation coefficient that is tolerated in this research is 0.8 following former research on capital structure by Harrison and Widjaja (2013). Observing both table 3 and 4 it can be concluded that there are no signs of multicollinearity among the variables.

The variable profitability seems to be negatively correlated with leverage in both time frames. Although it becomes stronger and significant in times of the financial crisis. This indicates that more profitable firms take on less debt to finance their activities. This finding disagrees with the prediction of the Trade-off theory and as a result agrees with the contradicting negative prediction made by the Pecking order theory.

Unlike profitability the determinant tangibility is positively correlated with leverage in both the timeframes. It is also one of the variables within this research that has the strongest and most significant correlations before and after the financial crisis while it stays within the limit set for multicollinearity. The observed positive correlation is predicted by both the Trade-off and Pecking order theories of capital structure. The rationale behind the positive expectation is that more tangible assets lead to more favorable loans and thus increases companies willingness to fund projects through external financing.

The variable size has a not to strong and insignificant correlation with leverage before the crisis. However this changes in times of the financial crisis as the correlation coefficient more than doubles in size and becomes significant at the 1 percent level. This indicates that size is a way stronger predictor of a firms' capital structure in times of financial turbulence.

Also the variable growth opportunities has been subject to a big change in value between both periods. However in none of the periods the positive correlation in accordance with the pecking order theory seems significant. The value of the correlation coefficient in the pre-crisis is even the smallest one found in this research. Indicating that there is close to zero relation before the crisis between growth opportunities and the dependent variable of the research. These findings disagree on all fronts with research by Harrison and Widjaja (2013) who's findings support the Trade-off theory as they find a negative relation of moderate strength between the market to book ratio and leverage. A reason for the different values observed could be that in their study Harrison and Widjaja (2013) used a different proxy to measure leverage.

The last variable correlating with leverage is liquidity. It shares the insignificance observed in both periods with that of the variable growth opportunities. The negative relation is weak before the crisis and becomes even weaker in times of the financial crisis as it holds a value of -0.127. The negative correlation among liquidity and leverage follows the views of the Pecking order theory as more liquid firms have less need to obtain external financing.

5.3 Regression analysis

The last method of analysis applied to this research is regression analysis. It will be based on the ordinary least squares method which finds a linear line that minimizes the sum of the squares of the differences between the data observed and that of the line itself. The results can be found in table 5 and 6. Just as with the descriptive and correlation statistics both pre-crisis and crisis periods are segregated in order to analyze the impact of the financial crisis.

For the variable profitability it was hypothesized that in general the influence on leverage was negative as most researchers had found a negative coefficient. In addition research on the impact of the financial crisis on the determinants of capital structure found that this negative influence becomes less negative during a financial crisis. In the pre-crisis model an insignificant positive coefficient for profitability can be observed. This finding is in accordance with the Trade-off theory and disagrees with the majority of findings by researchers who find that profitability is negatively related to leverage. However in times of the financial crisis the coefficient takes on an insignificant negative value that supports the Pecking order theory of capital structure. The hypothesis regarding profitability will be rejected as a whole as no negative influence was found that becomes less negative during the financial crisis.

Table 3: Correlations Pre-crisis (2006-2007)

Variable	Leverage	Profitability	Tangibility	Size	Growth	Liquidity
Leverage	1.000					
Profitability	-0.141	1.000				
Tangibility	0.407**	-0.461**	1.000			
Size	0.213	-0.276*	0.173	1.000		
Growth	0.026	-0.099	0.360**	-0.083	1.000	
Liquidity	-0.217	0,031	-0.595**	-0.029	-0.238	1.000

**. Significant at 1% *. Significant at 5%

Table 4: Correlations Crisis (2008-2009)

Variable	Leverage	Profitability	Tangibility	Size	Growth	Liquidity
Leverage	1.000					
Profitability	-0.396**	1.000				
Tangibility	0.432**	-0.507**	1.000			
Size	0.560**	-0.326*	0.285*	1.000		
Growth	0.143	-0.159	0.322*	0.090	1.000	
Liquidity	-0.127	0.096	-0.601**	-0.134	0.043	1.000

**. Significant at 1% *. Significant at 5%

The variable tangibility was the most significant determinant in the bivariate analysis. Also within the regression analysis significant results can be found at the 1% level during the crisis and 5% level after the financial crisis. The hypothesis that was formulated in advance of this research implied that tangibility has a positive impact on the leverage of a company. This positive effect becomes even more positive as a results of the financial crisis. The pre-crisis period of this study holds a positive coefficient for tangibility. This finding supports both the predictions of the Trade-off theory and Pecking order theory. In addition it also agrees with the majority of findings by researchers. The positive influence decreases slightly because of the financial crisis as the value goes from 0.249 to 0.248. This decrease disapproves the expected effect that was hypothesized. As a consequence the hypothesis regarding tangibility will be partially rejected.

The variable size does not represent a statistical significant finding in the pre-crisis period. However the determinant becomes highly significant during the financial crisis. Based on the majority of findings by researchers size is expected to have a positive effect on a company's leverage. This positive effect declines in times of the financial crisis. Research by Harrison and Widjaja (2013) even finds that the decline causes the positive effect to disappear and turn into a negative effect. In the pre-crisis regression model a small positive coefficient can be seen. When comparing the coefficient of the crisis model it can be seen that the crisis causes the coefficient to become even more positive. Both the findings in the pre-crisis and crisis period follow the views of the Trade-off theory as well as the Pecking order theory. As a consequence of the findings the hypothesis regarding size will be partially rejected.

Regarding the variable growth opportunities there is no statistical significant finding observed in the models. This in contrast with former work by Harrison and Widjaja (2013) who find that the market to book ratio holds significant negative coefficients in both the pre-crisis and crisis period. The hypothesis for growth opportunities states that a positive coefficient is expected based on the findings by research executed on firms in the Netherlands. In addition as a consequence of the financial crisis this positive effect is expected to lose strength and weaken. However the results for growth opportunities hold a negative coefficient in both the pre-crisis and crisis period which is in accordance with the Trade-off theory of capital structure. Disapproving with the findings on Dutch firms and consequently agreeing with the results of research by Rajan and Zingales (1995) and Barclay and Smith (1999) on non-Dutch firms. Furthermore the hypothesized expected effect that the crisis would have also does not hold as the negative coefficient of the pre-crisis model becomes less negative in times of the financial crisis. Based on the results of this study the hypothesis regarding growth opportunities will be rejected as a whole.

Liquidity was the last variable analyzed in this study and the findings in both models appear to be insignificant. An insignificant result was also observed by Harrison and Widjaja (2013) in both pre-crisis and crisis period and by Deesomsak et al. (2004) in the pre-crisis period. The most observed finding on which the hypothesis is based predicts that liquidity has a negative impact on leverage. This negative impact is assumed to become more positive during the financial crisis. The results of the research state a positive coefficient of 0.009 in the pre-crisis model. During the financial crisis the coefficient becomes even more positive as it increase in value to 0.038. These results are in line with predictions by the Trade-off theory and findings by Zhang and Mirza (2015). As a result the hypothesis on liquidity will be partially rejected.

In addition to analyzing the coefficients of the capital structure determinants and their observed changes between both models also the interpretation of the model fit is of importance. The model fit is measured by the coefficient of determination which is denoted as R^2. The R^2 value for the pre-crisis model is 0.209 which indicates that 20.9% of the variance of the dependent variable leverage is predicted by the independent variables profitability, tangibility, size, growth opportunities and liquidity. The value becomes higher in the crisis model as it states that 42% of the variance in leverage is explained. Values for R^2 can range between 0% and 100% with a higher percentage indicating a better model. Both 20.9% and 42% seem like low values. However both values are higher than those of 12.35% and 20.86% found by Zhang and Mirza (2015) in the pre-crisis and crisis period respectively.

6. DISCUSSION

The results of the regression analysis harbor some interesting findings that were not expected. Within this part of the paper

Table 5: Regression model Pre-crisis (2006-2007)

Variable	Coefficient	t-statistic	Significance
(constant)	-0.061	-0.480	0.633
Profitability	0.022	0.823	0.415
Tangibility	0.249	2.670	0.010
Size	0.015	1.127	0.265
Growth	-0.024	-0.888	0.379
Liquidity	0.009	0.399	0.692

Dependent variable: Leverage. R^2 0.209

Table 6: Regression model Crisis (2008-2009)

Variable	Coefficient	t-statistic	Significance
(constant)	-0.356	-2.370	0.022
Profitability	-0.018	-0.588	0.559
Tangibility	0.248	2.084	0.042
Size	0.062	3.928	0.000
Growth	-0.015	-0.320	0.751
Liquidity	0.038	1.133	0.262

Dependent variable: Leverage. R^2 0.420

the findings are compared to the current body of literature.

Based on the first hypothesis the variable profitability should be negatively related to leverage. This according to the views of the Pecking order theory which states that companies will only take on external financing when their internal funds are inadequate. Studies by Rajan and Zingales (1995) and Titman and Wessels (1988) find negative relations in their samples of none-Dutch firms and also within the Netherlands a negative relation is documented by De Jong et al. (2008) and De Bie and De Haan (2007). Within this research the negative relation only holds in times of the financial crisis. Before the period the coefficient is positively related to leverage. This positive relationship follows the predictions of the Trade-off theory which states that companies take on as much debt as they can afford in order to maximize the value of the firm. It seems that the maximization of firm value became of decreasing importance as during the crisis the more profitable firms did not take on as much debt as they did before the crisis. The higher standards set by banks to debtors could be the cause of this. Findings by Deesomsak et al. (2004) also state that the relation becomes more negative during the financial crisis. However Harrison and Widjaja (2013) and Zhang and Mirza (2015) document that the relation between leverage and profitability becomes less negative. This indicates that companies took on more debt during the crisis despite the higher demands made by creditors.

The second hypothesis states that tangibility will have a positive impact on the leverage ratio of a company. This relation is expected by both the Trade-off and Pecking order theory as they argue the importance of collateral that tangible assets provides when taking on a loan. Studies mostly agree on this positive relationship as Korajczyk and Levy (2003), Frank and Goyal (2009), Degryse et al. (2012) and De Jong et al. (2008) all find positive coefficients. However research by De Bie and De Haan (2007) results in a negative correlation between leverage and tangibility. They argue that a possible reason for a negative relation can emerge from the bonding role of debt becoming more important when the firms' capital outlays are less tangible and thus more difficult to monitor by lenders, in particular banks. In this study a positive relation is found between tangibility and leverage. As already mentioned this finding follows the views of both the Trade-off and Pecking order theory. The relation becomes less positive during the financial crisis although only slightly. Zhang and Mirza (2015) also observe this change in their study on Chinese firms. The reason for this decrease can be attributed to the higher demands made by banks towards their debtors as firms were not able to meet the standards of banks they became less levered. However Harrison and Widjaja (2013) and Deesomsak et al. (2004) find that the positive relationship increases in times of the financial crisis. Indicating that companies with the same degree of tangibility where more levered in times of the crisis.

The third hypothesis regarded that size would have a positive impact on leverage. Again both theories come to an agreement as they both argue that there is a positive relation among size and leverage. According to the Trade-off theory larger companies are more diversified and face decreasing bankruptcy costs. This allows them to take on more debt. Additionally the Pecking order theory argues that information asymmetries are less severe for bigger companies and thus raising debt becomes less difficult. Research within and outside of the Netherlands finds positive relations among firm size and leverage (Michaelas et al., 1999; Bauer, 2004; De Jong et al., 2008; De Bie and De Haan, 2007). The results of this research are in line with the findings of former mentioned scholars as a positive relation is found in both the pre-crisis and crisis period. Furthermore the crisis had an effect on the coefficient as it became more positive during the financial crisis. Deesomsak et al. (2004) also finds that the relation becomes more positive during the crisis. This means that a firm of the same size would be higher levered during the crisis compared to before crisis. Which would be odd considering that size is measured as a logarithm of total assets and banks required more collateral on their loans during the financial crisis. Contradicting the results of this study Zhang and Mirza (2015) find that the positive relation becomes more negative during the crisis. The increasing negative effect is caused by the unfavourable equity market during the financial crisis. This caused smaller firms that are more often subject to internal financial constraints to reach for debt financing which increased their leverage (Harrison and Widjaja, 2013).

The fourth hypothesis concerns growth opportunities and states that growth opportunities will have a positive impact on the leverage of a company. This is in line with the views of the Pecking order theory which argues that high growth firms often find themselves with inadequate internal resources to fund their new projects. As a consequence external financing like debt is acquired to help fund the projects. Studies performed in the Netherlands don't seem to agree with those executed beyond the Dutch borders. Within the Netherlands positive relations are observed whilst in other countries negative relations are more common findings. The results of this study should follow those of other studies executed in the Netherlands. However the result for this study states negative coefficients in both pre-crisis and crisis models. The coefficient tends to be influenced by the financial crisis as it becomes less negative in the 2008-2009 period. The results of this study are similar to those observed by Zhang and Mirza (2015). According to them a negative coefficient indicates that firms with more growth opportunities are less likely to depend on external financing. In contrast Harrison and Widjaja (2013) find that the coefficient becomes more negative because of the financial crisis. The rationale behind this increasing negativity can be attributed to the preference of firms towards debt financing during the financial crisis.

The fifth and last hypothesis states that liquidity would have a negative impact on the amount of debt in a company's capital structure. This negative relation follows the views of the Pecking order theory as is argues that highly liquid firms will use their internal finances first before reaching for external funds. Previous research does not agree on a negative or positive relation between liquidity and leverage. Also within the Netherlands the results are mixed although the majority does find a negative relation. The results of this research state a positive relation in both the pre-crisis and crisis period. The degree of positivity increases as a result of the financial crisis. Again the results of this study are in line with those of Zhang and Mirza (2015) who also find a positive relation in both timeframes and an increase in the degree of positivity from pre-crisis to crisis period. The result indicates that a firm given the same degree of liquidity becomes more levered during the financial crisis. A strange finding in times of a financial when external finance is scarce and difficult to obtain. This result rejects the Pecking order theory as external financing is chosen instead of using internal funds. As a consequence it follows the contradicting view of the Trade-off theory which argues that a firm with adequate liquidity can satisfy their liabilities with ease and thus will take on more debt.

7. CONCLUSION

This paper aimed at investigating whether the financial crisis influenced a specific group of capital structure determinants

within the Netherlands. It compared a pre-crisis timeframe that ranged from 2006-2007 and a crisis timeframe that ranged between 2008-2009. The research particularly aimed at closing a gap that existed within the current body of literature on capital structure determinants as research on the influence of the financial crisis is scarce and had not been done before within the context of the Netherlands. The findings that were discussed in the previous chapter appeared to often contradict the former work of scholars within the subject of capital structure. It seems that Dutch companies on average took on more debt during the financial crisis. This in despite of the higher demands made by banks towards debtors. In order to secure loans in times of financial turbulence and meet the standards set by banks tangibility ratios increased as companies saw prices of tangibles fall. As a possible consequence of these liquidity also fell in times of the financial crisis.

Regarding the influence of the determinants of this study on the dependent variable leverage it can be concluded that the financial crisis did influence the determinants of capital structure. Profitability even reversed its coefficient from a positive to a negative coefficient. Indicating a change in the dominant theory. The other variables did not change their sign of direction although most observed a considerable transformation in their values including the variable size and liquidity. Additionally it can also be concluded that the set of independent variables used in this study furnishes more explanatory power during the crisis than they did before. This indicates that theses variables have more influence on the capital structure decisions in times of a financial crisis. Suggesting that in addition to the determinants being country specific they might also be specific to certain events in time.

8. FUTURE RESEARCH AND LIMITATIONS

As mentioned before this paper investigated whether the financial crisis had an impact on capital structure determinants within the context of the Netherlands. It's findings should be taken with caution as the results are partially statistical insignificant. Another limitation of this paper is the choice of the specific timeframes. Academic literature on the financial crisis does not seem to come to a consensus as it comes to framing the period of the financial crisis. Different timeframes chosen can therefore lead to variating results. An additional limitation is given on the interpretation of this study. Namely the context causes the results of this study to be only representative for Dutch. This because current literature suggests that the determinants of capital structure are country specific. Furthermore the limited sample size causes this representativeness of this study to be rather limited.

9. REFERENCES

Ahmed, N., Ahmed, Z., & Ahmed, I. (2010). Determinants of capital structure: A case of life insurance sector of Pakistan. *European Journal of Economics, Finance and Administrative Sciences*, *24*, 7-12.

Akdal, S. (2011). How do firm characteristics affect capital structure? Some UK evidence. *Some UK Evidence (March 3, 2011)*.

Akinlo, O., & Asaolu, T. (2012). Profitability and leverage: Evidence from nigerian firms. *Global Journal of Business Research*, *6*(1), 17-25.

Baker, M., & Wurgler, J. (2002). Market timing and capital structure. The journal of finance, 57(1), 1-32.

Balios, D., Daskalakis, N., Eriotis, N., & Vasiliou, D. (2016). SMEs capital structure determinants during severe economic crisis: The case of Greece. *Cogent Economics & Finance*, *4*(1), 1145535.

Barclay, M. J., & Smith, C. W. (1999). The capital structure puzzle: another look at the evidence. *Journal of Applied Corporate Finance*, *12*(1), 8-20.

Barclay, M. J., Smith, C. W., & Watts, R. L. (1995). The determinants of corporate leverage and dividend policies. *Journal of applied corporate finance*,*7*(4), 4-19.

Barrell, R., & Davis, E. P. (2008). The Evolution of the Financial Crisis of 2007—8. *National Institute Economic Review*, *206*(1), 5-14.

Bauer, P. (2004). Determinants of capital structure: empirical evidence from the Czech Republic. *Czech Journal of Economics and Finance (Finance a uver)*,*54*(1-2), 2-21.

Bokpin, G. A. (2009). Macroeconomic development and capital structure decisions of firms: Evidence from emerging market economies. *Studies in economics and finance*, *26*(2), 129-142.

Bradley, M., Jarrell, G. A., & Kim, E. (1984). On the existence of an optimal capital structure: Theory and evidence. *The journal of Finance*, *39*(3), 857-878.

Butt, S., Khan, Z. A., & Nafees, B. (2013). Static Trade-off theory or Pecking Order Theory which one suits best to the financial sector. Evidence from Pakistan. *European Journal of Business and Management*, *5*(23), 131-140.

Campello, M., Giambona, E., Graham, J. R., & Harvey, C. R. (2011). Liquidity management and corporate investment during a financial crisis. *Review of Financial Studies*, *24*(6), 1944-1979.

Chen, J. J. (2004). Determinants of capital structure of Chinese-listed companies. *Journal of Business research*, *57*(12), 1341-1351.

Chen, L. H., Lensink, B. W., & Sterken, E. (1999). *The determinants of capital structure: Evidence from Dutch panel data*. University of Groningen.

Cook, D. O., & Tang, T. (2010). Macroeconomic conditions and capital structure adjustment speed. *Journal of Corporate Finance*, *16*(1), 73-87.

Cunat, V. (2007). Trade credit: suppliers as debt collectors and insurance providers. *Review of Financial Studies*, *20*(2), 491-527.

De Bie, T., & De Haan, L. (2007). Market timing and capital structure: Evidence for Dutch firms. *De Economist*, *155*(2), 183-206.

De Haan, L., & Hinloopen, J. (2003). Preference hierarchies for internal finance, bank loans, bond, and share issues: evidence for Dutch firms. *Journal of Empirical Finance*, *10*(5), 661-681.

De Jong, A. (1999). *An empirical analysis of capital structure decisions in Dutch firms* (No. b9498b3e-2937-4e4c-b951-a2bc44977196). Tilburg University, School of Economics and Management.

De Jong, A. (2002). The disciplining role of leverage in Dutch firms. *European Finance Review*, *6*(1), 31-62.

De Jong, A., & Veld, C. (2001). An empirical analysis of incremental capital structure decisions under managerial entrenchment. *Journal of Banking & Finance*, *25*(10), 1857-1895.

De Jong, A., Kabir, R., & Nguyen, T. T. (2008). Capital structure around the world: The roles of firm-and country-specific determinants. *Journal of Banking & Finance*, *32*(9), 1954-1969.

Deesomsak, R., Paudyal, K., & Pescetto, G. (2004). The determinants of capital structure: evidence from the Asia Pacific region. *Journal of multinational financial management*, *14*(4), 387-405.

Degryse, H., de Goeij, P., & Kappert, P. (2012). The impact of firm and industry characteristics on small firms' capital structure. *Small Business Economics*,*38*(4), 431-447.

Demirgüç-Kunt, A., & Maksimovic, V. (1999). Institutions, financial markets, and firm debt maturity. *Journal of financial economics*, *54*(3), 295-336.

Diana, M., Doctorand, U. B. B., & Gestiunea, F. D. Ş. E. Ş. (2013). Crisis Effects On Tangible Assets Revaluations A Study Over Romanian Buildings.*Annals-Economy Series*, *2*, 197-203.

Dierkes, S., & Schäfer, U. (2016). Corporate taxes, capital structure, and valuation: Combining Modigliani/Miller and Miles/Ezzell. *Review of Quantitative Finance and Accounting*, 1-21.

Donaldson, G. (1961). *Corporate debt capacity*.

Duca, J. V. (1986). Credit rationing and trade credit as an alternative source of short-term credit. *unpublished Ph.D. dissertation; Princeton University*

Fama, E. F. (1978). The effects of a firm's investment and financing decisions on the welfare of its security holders. *The American Economic Review*, *68*(3), 272-284.

Fama, E. F., & French, K. R. (2002). Testing trade-off and pecking order predictions about dividends and debt. *Review of financial studies*, *15*(1), 1-33.

Fosberg, R. H. (2012). Capital structure and the financial crisis. *Journal of Finance and Accountancy*, *11*, 1.

Frank, M. Z., & Goyal, V. K. (2003). Testing the pecking order theory of capital structure. *Journal of financial economics*, *67*(2), 217-248.

Frank, M. Z., & Goyal, V. K. (2007). Trade-off and pecking order theories of debt. *Available at SSRN 670543*.

Frank, M. Z., & Goyal, V. K. (2009). Capital structure decisions: which factors are reliably important?. *Financial management*, *38*(1), 1-37.

Garcia-Appendini, E., & Montoriol-Garriga, J. (2013). Firms as liquidity providers: Evidence from the 2007–2008 financial crisis. *Journal of Financial Economics*, *109*(1), 272-291.

Graham, J. R. (2000). How big are the tax benefits of debt?. *The Journal of Finance*, *55*(5), 1901-1941.

Graham, J. R., & Harvey, C. R. (2001). The theory and practice of corporate finance: Evidence from the field. *Journal of financial economics*, *60*(2), 187-243.

Hanousek, J., & Shamshur, A. (2011). A stubborn persistence: Is the stability of leverage ratios determined by the stability of the economy?. *Journal of corporate finance*, *17*(5), 1360-1376.

Harisson, B., & Widjaja, T. W. (2013). Did the financial crisis impact the capital structure of firms? *Discussion Papers in Economics*, *5*.

Harris, M., & Raviv, A. (1991). The theory of capital structure. *the Journal of Finance*, *46*(1), 297-355.

Hirshleifer, J. (1966). Investment decision under uncertainty: applications of the state-preference approach. *The Quarterly Journal of Economics*, 252-277.

Huang, R., & Ritter, J. R. (2005). Testing the market timing theory of capital structure. *Journal of Financial and Quantitative Analysis*, *1*, 221-246.

Iqbal, A., & Kume, O. (2014). Impact of financial crisis on firms' capital structure in UK, France, and Germany. *Multinational Finance Journal*, *18*(3/4), 249-280.

Ivashina, V., & Scharfstein, D. (2010). Bank lending during the financial crisis of 2008. *Journal of Financial economics*, *97*(3), 319-338.

Jaffee, D. M. (1971). Credit rationing and the commercial loan market. *John Wiley and Sons*

Jiménez, G., & Saurina, J. (2004). Collateral, type of lender and relationship banking as determinants of credit risk. *Journal of banking & Finance*, *28*(9), 2191-2212.

Jung, K., Kim, Y. C., & Stulz, R. (1996). Timing, investment opportunities, managerial discretion, and the security issue decision. *Journal of Financial Economics*, *42*(2), 159-186.

Kahle, K. M., & Stulz, R. M. (2013). Access to capital, investment, and the financial crisis. *Journal of Financial Economics*, *110*(2), 280-299.

Kashyap, A. K., Rajan, R., & Stein, J. C. (2008). *Rethinking capital regulation*. publisher not identified.

Korajczyk, R. A., & Levy, A. (2003). Capital structure choice: macroeconomic conditions and financial constraints. *Journal of financial economics*, *68*(1), 75-109.

Kraus, A., & Litzenberger, R. H. (1973). A state-preference model of optimal financial leverage. *The journal of finance*, *28*(4), 911-922.

Lambrinoudakis, C. (2014). Adjustment Cost Determinants and Target Capital Structure. Available at SSRN 2094228.

Lane, M. P. R., & Milesi-Ferretti, M. G. M. (2000). *External capital structure: theory and evidence* (No. 0-152). International Monetary Fund.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2000). Investor protection and corporate governance. Journal of financial economics, 58(1), 3-27.

Lemmon, M. L., & Zender, J. F. (2010). Debt capacity and tests of capital structure theories.

Levine, R. (1999). *Bank-based and market-based financial systems: Cross-country comparisons* (Vol. 2143). World Bank Publications.

Lipson, M. L., & Mortal, S. (2009). Liquidity and capital structure. *Journal of Financial Markets*, *12*(4), 611-644.

Long, M. S., & Malitz, I. B. (1985). Investment patterns and financial leverage. In *Corporate capital structures in the United States* (pp. 325-352). University of Chicago Press.

Loughran, T., Ritter, J. R., & Rydqvist, K. (1994). Initial public offerings: International insights. *Pacific-Basin Finance Journal*, *2*(2), 165-199.

Majumdar, S. K., & Chhibber, P. (1999). Capital structure and performance: Evidence from a transition economy on an aspect of corporate governance. *Public Choice*, *98*(3-4), 287-305.

Mazur, K. (2007). The determinants of capital structure choice: evidence from Polish companies. *International Advances in Economic Research*, *13*(4), 495-514

Meltzer, A. H. (1960). Mercantile credit, monetary policy, and size of firms. *The Review of Economics and Statistics*, 429-437.

Michaelas, N., Chittenden, F., & Poutziouris, P. (1999). Financial policy and capital structure choice in UK SMEs: Empirical evidence from company panel data. *Small business economics*, *12*(2), 113-130.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American economic review*, *48*(3), 261-297.

Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: a correction. *The American economic review*, *53*(3), 433-443.

Mokhova, N., & Zinecker, M. (2014). Macroeconomic factors and corporate capital structure. *Procedia-Social and Behavioral Sciences*, *110*, 530-540.

Morellec, E. (2001). Asset liquidity, capital structure, and secured debt. *Journal of financial economics*, *61*(2), 173-206.

Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of financial economics*, *5*(2), 147-175.

Myers, S. C. (1984). The capital structure puzzle. *The journal of finance*, *39*(3), 574-592.

Myers, S. C. (2001). Capital structure. *The journal of economic perspectives*,*15*(2), 81-102.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of financial economics*, *13*(2), 187-221.

Nguyen, T., & Wu, J. (2011). Capital structure determinants and convergence. *Bankers, Markets and Investors, Forthcoming*.

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

Proença, P., Laureano, R. M., & Laureano, L. M. (2014). Determinants of capital structure and the 2008 financial crisis: Evidence from Portuguese SMEs. *Procedia-Social and Behavioral Sciences*, *150*, 182-191.

Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *The journal of Finance*, *50*(5), 1421-1460.

Rajan, R., & Servaes, H. (1995). *The effect of market conditions on initial public offerings*. Graduate School of Business, University of Chicago.

Robichek, A. A., & Myers, S. C. (1965). *Optimal financing decisions*. Prentice Hall.

Shyam-Sunder, L., & Myers, S. C. (1999). Testing static tradeoff against pecking order models of capital structure. *Journal of financial economics*,*51*(2), 219-244.

Taggart, R. A. (1977). A model of corporate financing decisions. *The Journal of Finance*, *32*(5), 1467-1484.

Titman, S., & Wessels, R. (1988). The determinants of capital structure choice.*The Journal of finance*, *43*(1), 1-19.

Wilner, B. S. (2000). The exploitation of relationships in financial distress: The case of trade credit. *The Journal of Finance*, *55*(1), 153-178.

Young, B., & Semmler, W. (2011). The European sovereign debt crisis: Is Germany to blame?. *German Politics & Society*, *29*(1), 1-24.

Zhang, X., & Mirza, S.S. (2015). Determinants of Capital Structure of Firms in Pre-Post Financial Crisis: Evidence from China. *Journal of Finance and Accounting* Vol.6, No.12, 2015