

The determinants of capital structure: An empirical study on Dutch firms

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In this thesis I will research the influence of a certain set of determinants on the capital structure of Dutch stock-market listed firms. First I will select a number of firm-specific determinants as independent variables, whose influence on the capital structure I will test in multiple analyses. I will compare the influence of the firm specific variables across different time periods to capture the influence of the recent financial crisis on the relationship between the variables and the capital structure. It turns out multiple of my firm specific variables had a significant relationship, while the relationships were indeed different across the multiple selected time periods.

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Keywords

Capital structure, determinants, economic crisis, firm specific, macroeconomic

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4th IBA Bachelor Thesis Conference, November 6th, 2014, Enschede, The Netherlands.

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1. INTRODUCTION

Obtaining the right amount of capital is, of course, vital for every kind of firm in order to be able to fulfill its actions and operations, but the structure of capital can have major implications for the firm as well. The structure of capital is about how much of the capital of the organization is comprised out of differing amounts of equity and debt. The relative amount of debt a company uses is often measured as the leverage ratio, which is measured by the total amount of debt divided by the total amount of assets. Although the leverage ratio is researched most often in earlier literature on this subject, there is quite a difference the total leverage in which overall debts are measured and the long term debt ratio. The precise determinants of long term debt ratio also seem to be different, so it is important to research these variables separately in order to get a clear picture on the actual capital structure.

There are already hundreds of articles on capital structure and what its firm-specific determinants are, as researchers are trying to find out how firms finance themselves and which factors influence this decision, however, even today finance experts do not agree on the precise determinants. Commonly known theories on this subject include the trade-off theory, the pecking order theory and the market timing theory, but none have gathered enough conclusive evidence to be taken as the universal theory.

There are many firm-specific factors which seem to influence capital structure decision according to earlier research. Examples of factors that seem to influence capital structure in a certain way are the size of company, the profitability, the annual growth rate, liquidity and tangibility.

A lot of research on this subject has been done on firms in the US, but research suggests that the influence of multiple factors is quite different for different countries. Some factors seem to be a lot more influential in one country compared to other countries, which might be explained by the different financial environments and economic as well as institutional traditions. It is therefore interesting to see what the exact determinants are for Dutch firms specifically, as it might be quite different from other countries that are more thoroughly researched.

With its immense influence on economies of countries around the world, it is hardly surprising when the global economic crisis of 2008 turns out to have influenced the capital structure of firms, as Fosberg(2012) has determined in the case of companies in the US. Like many other markets and sectors, the financial sector was heavily influenced, which made sure there was a decline in the amount of financing the other companies could get their hands on. As a result of the crisis, firms increased their relative amount of debt financing, which changed their capital structure. Although the economic crisis is currently considered to be over and the affected economies of the world are slowly recovering, the results of the crisis on both the economy and companies itself is still quite visible.

Next to just influencing the capital structure, earlier research indicates that the crisis has even influenced the relationship between some of their determinants and the capital structure.

This research gives a clear picture on the capital structure and a couple of firm-specific determinants of Dutch firms, which contributes to a better understanding of the behavior of these firms. This research can also shed light on the influence of economic crises on the capital structure and if a solid relationship is found this may, after consequential future research, be of predictive value for Dutch firms.

As the influence of the determinants seems to be different for different countries, I will research the influence of the multiple firm-specific factors that have been proven to influence capital structure in earlier research on Dutch firms specifically. I will determine the influence of the economic crisis on the capital structure of Dutch firms and in which direction, comparing the data between the years 2005 and 2010. I will also research the influence of the crisis on the relationship itself between the other determinants and the capital structure.

In short, this research has the following goals;

- To get a clearer picture on which firm-specific factors influence the capital structure in Dutch firms.
- To determine the influence of the crisis on the capital structure
- To see if the economic crisis has a distorting influence on the relation between the firm specific determinants and the capital structure

Based on this, I have formulated the following main research question: What are the determinants of the capital structure of Dutch firms? To help answer the main question I have formulated the following sub questions:

- What is the influence of the chosen determinants on the capital structure of the chosen firms?
- What is the influence of the economic crisis on the capital structure of the chosen firms?
- What is the influence of the economic crisis on the relationship between the chosen determinants and the capital structure of the chosen firms?

This paper has been organized as follows: In chapter 2 I will give a review on existing literature on this subject, highlighting important findings, theories and specific articles that are relevant for my research. In chapter 3 I will explain the data and research methodology used in this research. In chapter 4 I will list and discuss the results of my analysis and in chapter 5 I will give my conclusion.

2. LITERATURE REVIEW

2.1 Theory on capital structure

Many researchers view the work of Modigliani and Miller (1958) as the starting point of many financial theories about capital structure. They claimed that under a number of fundamental conditions the value of a firm is independent from its financing decisions, or in other words, that the capital structure is irrelevant for the value of the firm. These conditions included unrealistic ones such as the absence of taxes, asymmetric information and costs of bankruptcy. Although this situation was highly theoretical and unrealistic, this research formed the basis for future research as people began to research under which conditions the capital structure was relevant, starting from the conditions of Modigliani and Miller.

2.2 Trade-off theory

Many theories have been brought forward since then, one of the more well known of these theories is the trade-off theory (Kraus and Litzenberger, 1973) that states that there are benefits and costs when using debt to finance your company. The interest that has to be paid for debt financing is tax-deductible, which gives large financial benefits to debt financing as opposed to equity. However, these benefits cannot be gained indefinitely by increasing the amount of debt financing.

When you have a relatively higher percentage of debt, the larger the costs and the smaller the benefit of adding more debt, which causes a certain optimal capital structure for each company in which the total benefit of adding more debt would equal the

costs, which is the point when companies shouldn't obtain more debt.

2.3 Pecking order theory

Another important theory is the Pecking order theory (Myers and Majluf, 1984). Instead of stating that each company has an optimum total amount of debt, it says that companies prefer one type of financing over the other. It states that there is a certain hierarchy between the different sources of financing. Companies would prefer to use internal financing for as much as is possible, after this they would prefer to use debt financing and lastly they use equity finance. However, the debate on the precise determinants is still going on.

Many determinants have been researched that would influence the capital structure, however a conclusive answer has never been found. I will pick multiple determinants that according to earlier research should influence capital structure and research the relation between them and the capital structure of Dutch firms specifically.

2.4 Market timing theory

Market timing theory claims that when companies make the decision of capital structure, the timing of the market is more important than firm specific determinants (Baker and Wurgler, 2002). They will primarily base their decision on how the financial markets value debt and equity respectively and make their decision based on that. For example, when the market value of their company is high, managers would be more inclined to issue equity. When their market values have dropped however, they would be more inclined to repurchase their equity. According to Baker and Wurgler, there is no optimal capital structure, as their evidence indicates that decisions are made based on the fluctuations in the market valuations. Although market timing theory is quite well-known in this area of research, I will not research the effect of market timing on capital structure in this thesis.

2.5 Influence of the crisis

The economic crisis of 2008 was one of the most influential events in recent years, being viewed as the heaviest financial crisis since 1930. This had tremendous influence on the performance of many companies across the world. Many researchers, like Fosberg (2012) for example, have also described the influence of the economic crisis on capital structure. Fosberg found that the companies he had researched increased their relative amount of debt. This has inspired me to research the influence of the crisis on the capital structure of Dutch firms specifically in which I expect a relatively higher amount of debt.

Earlier research has concluded that the relationship between certain firm-specific determinants and the capital structure was actually influenced itself by the economic crisis. In my own research I will compare the strength of the influence of the determinants as measured in the different time periods of my study (before the crisis and crisis period) to see if this is also the case in the determinants I chose.

3. DATA AND METHODOLOGY

3.1 Methodology

The capital structure of firms consists out of differing amounts of debt and equity. There is however quite a difference between short term and long-term debts. In order to give a more complete picture of the influence of the chosen determinants on the leverage of companies, I will also use the long term debt ratio in order to specifically measure the amount of long term

debts, as well as the overall leverage ratio for the total amount of debts.

Therefore I will use the following dependent variables:

Leverage ratio:

Which I will measure as total debts and liabilities divided by the value of the total assets (Delcours, 2007).

Due to limited available data, I will use total debts and liabilities as a proxy for total debts. Like all monetary values both variables are measured in thousands of Euro's. The only exception on this rule in this thesis is the market price of the stocks, which is used to calculate the growth opportunity and is measured in Euro's.

Long term debt ratio:

Which I will measure as the amount of long term debt divided by the total assets (Michaelas, Chittenden and Poutziouris, 1999).

I have chosen multiple determinants that were shown to influence the capital structure of firms in earlier research. They will act as independent variables in my research.

Size

According to trade-off theory, there is a positive relationship between size and leverage. One of the important reasons for this is the trade-off between the agency costs and the costs of bankruptcy, as larger firms have a lower chance of going bankrupt and their bankruptcy costs are relatively lower as well (Deesomsak, Paudyal and Pescetto, 2004). This gives them a tendency to obtain more debt financing. Other arguments for the positive relation include that the monitoring costs for the firm are relatively lower for larger companies, just as the agency costs of debt. Another benefit is that they have easier access to the credit market due to their size, which enables them to get external financing with less difficulty compared to smaller firms. The positive relationship has been stated to be true in many countries according earlier research, like the research of Rajan and Zingales (1995) and the research of Deesomsak et al. (2004).

So the capital structure of Dutch stock-market listed firms is likely to have a positive relationship with size as larger firms tend to employ more debt in total in their capital structure according to theory. I will measure size in this research by using the natural logarithm of the total assets.

Profitability

Profit seems to influence the capital structure, as the amount of debts a firm has seems to be inversely related to the amount of profits it makes. According to pecking order theory, firms have a hierarchy of preference on which sources of financing they use, in which they would rather use internal financing than other sources like debt or equity. As firms that are more profitable have a larger supply of internal financing available, they will have to use less debt, which would cause profitability to have a negative relationship with leverage. (Deesomsak et al, 2004) I will measure profitability by dividing the earnings before interest, also known as EBIT, by the total assets.

Growth opportunity

According to earlier research the growth opportunities of a company is negatively related to leverage. Due to the fact that growth opportunities cannot be used as collateral, the trade-off theory claims that firms who have a higher growth opportunity will use less debt when compared to companies with more tangible assets. (Delcours, 2007). I will measure this variable as: (the balance sheet total - Book value of equity) + Number of

stocks \times Stock price) / Balance sheet total (De Bie and Haan, 2007)

The negative relationship might be due to the relatively higher costs as well as the higher agency costs of financial distress for firms that are growing relatively fast. Because of higher costs of debt, this would contribute to a negative relationship with leverage.

Another explanation is that the negative relation is caused by the tendency of companies to time the issuing of their stock precisely when their stock price is relatively high. So that their market value of equity is quite large compared to the earnings or book value of equity. This would cause firms that have a high market to book ratio to have a lot of equity, which explains the negative relationship to leverage.

Liquidity

According to the pecking order theory, liquidity is negatively correlated with leverage. This is due to the theory that firms would prefer to use internal financing, of which relatively more is available for firms with a higher liquidity. (Deesomsak et al, 2004).

Another matter of influence on this relationship is that managers of firms can consciously manipulate their liquid assets for the benefit of their shareholders. By doing this however they would increase the agency costs of debt. This effect can also contribute to the negative relationship. Deesomsak et al (2004) have found liquidity to be negatively related to leverage in firms in multiple Asian countries. As its significance seems to depend on the country, I will research this factor to see what its relation to Dutch firms is. I also expect this relationship to be negative based on pecking order theory. I will measure liquidity as the total current assets divided by the total current liabilities.

Tangibility

As more tangible assets is associated with a greater use of debt financing (Fosberg, 2012) firms with a higher tangibility rating could have a higher leverage than others.

According to trade-off theory, this relationship is partly explained due to the fact that these larger amounts of tangible assets can be used as collateral (Huang & Song 2006) for loans. This also causes the risk of agency costs to be less. Therefore firms with a higher tangibility have a tendency to obtain more debts. Pecking order theory also agrees on this positive relationship (Frank and Goyal, 2003)

Therefore I am curious for the effect of tangibility on Dutch firms.

I will measure tangibility as fixed assets divided by total assets.

Using a regression analysis I will research the effect and the direction of the effect of these determinants on the multiple dependent variables. I will therefore formulate the following hypotheses:

H1: Larger Dutch stock-market listed firms tend to have a higher leverage

H2: More profitable Dutch stock-market listed firms tend to have a lower leverage

H3: Dutch stock-market listed firms with a higher opportunity for growth tend to have a lower leverage

H4: Dutch stock-market listed firms who have more liquidity tend to have a lower leverage

H5: Dutch stock-market listed firms with a higher tangibility tend to have a higher leverage

In order to answer these hypotheses, I will look at the truth they seem to hold according to my results for both the overall leverage and the long term debt ratio.

The financial crisis of 2008 has been proven to have influenced the capital structure of firms in other countries. To test what the precise influence was on the capital structure of Dutch firms I will compare the capital structures using two time periods: Before the crisis (2005 – 2007) and crisis period (2008 – 2010).

Earlier research has also indicated that the relationship between certain determinants and the capital structure was quite different during the crisis compared to other periods, as some factors grew in influence while others shrank. In order to test this for the determinants I chose for this research, I will compare the influence of the determinants between the two different time periods.

Based on this, I formulate my sixth hypothesis:

H6: The relationship between the chosen firm-specific factors and the capital structure of Dutch stock-market listed firms is likely to be influenced by the financial crisis of 2008.

In order to test my hypotheses I will use a regression analysis with the ordinary least squares (OLS) method. Because I have two separate dependent variables I will use two separate formulas:

$$Y_{it} \text{ (Leverage ratio)} = \alpha + \beta_1 \text{ SIZE}_{it-1} + \beta_2 \text{ PROF}_{it-1} + \beta_3 \text{ GROWTH}_{it-1} + \beta_4 \text{ LIQUIDITY}_{it-1} + \beta_5 \text{ TANGIBILITY}_{it-1} + \varepsilon_{it}$$

$$Y_{it} \text{ (Long term debt ratio)} = \alpha + \beta_1 \text{ SIZE}_{it-1} + \beta_2 \text{ PROF}_{it-1} + \beta_3 \text{ GROWTH}_{it-1} + \beta_4 \text{ LIQUIDITY}_{it-1} + \beta_5 \text{ TANGIBILITY}_{it-1} + \varepsilon_{it}$$

In these formulas i is the individual company, ε is the standard error, t is the year.

There is a risk that the dependent variables actually have an influence on the independent variables in this research. In order to prevent this from disturbing the research, the data of the independent variables has been lagged one period in comparison to the dependent variables. (Deesomsak et al, 2004)

To test H6 I will compare the results of the regression for the firm-specific determinants across the different time periods.

3.2 Data and sample

As a sample, I will research Dutch firms that are stock market listed, using data from 2004 (due to the lagged independent variables) until 2010. I will report data from 2005 and 2007 as the period before the crisis and 2008 until 2010 as crisis period. I have chosen 2008 as the starting year of the crisis period for this research as it is in 2008 that the global stock markets crashed after the fall of the Lehman Brothers bank. 2008 is also the year in which the influence of the crisis on capital structure is first visible according to table 3. I have chosen 2008 until 2010 as a period of three years in which the financial crisis is either present, or the influence of the crisis at least is still present in the economy of the Netherlands.

To be included in this research, I have made a set of requirements for the firms:

1. The companies should not be in the finance sector, so I will exclude insurance firms and banks for example. This is due to the reason that companies in the finance sector have a quite different capital structure compared to other firms (Rajan and Zingales, 1995).

To prevent this from influencing the outcome, I will exclude them from this research.

2. The firms should be stock market listed for the entire period of my research, which is 2004 until 2010.
3. Certain data of the firms that I need for this research, like the data for the independent variables for example, should be available in their financial statements for the entire period of my research.

The outliers of data will be removed, to prevent them from disturbing the statistics and normality. I have removed all outliers with a distance of more than 2 standard deviations from the mean of the variable.

When data was missing for a certain variable in a single year, I removed the entire firm-year observation. If the firm consistently lacked data, I removed it from my research. After these methods I used data of 48 companies, of which I have used 216 firm-year observations. I have gathered my data from Orbis.

4. EMPIRICAL FINDINGS AND ANALYSIS

4.1 Descriptive statistics and correlation matrixes

First I will give a list of the descriptive statistics of the firm specific variables, which is table 1.

Descriptive statistics: Firm-specific determinants					
	Mean	Median	STD	Min	Max
Leverage	0,59	0,56	0,15	0,28	0,94
LTD	0,17	0,16	0,12	0,00	0,46
Size	13,59	13,71	1,87	9,32	17,42
Tangibility	0,58	0,58	0,21	0,13	1,00
Liquidity	1,23	1,27	0,53	0,05	2,75
Growth	1,41	1,33	0,41	0,77	2,54
Profitability	0,07	0,08	0,06	-0,13	0,20

Table 1: Descriptive statistics of the firm specific variables.

	Calculated as:
Leverage	Total debts & liabilities / Total assets
LTD	Long term debt / Total assets
Size	Ln (Total assets)
Tangibility	Fixed assets / Total assets
Liquidity	Total current assets / Total current liabilities
Growth	(Total assets - Book value of equity + Market value of equity) / Total assets
Profitability	EBIT / Total assets

Table 2: Calculation methods of the variables

As can be seen, the mean and median of each of the variables is quite close to each other, as it should be. It is however noticeable how large the STD of Size is in comparison to the others, as well as the large values for its Min and Max.

In order to show the impact of the financial crisis on the leverage of Dutch firms, I have made a table with the yearly averages of the leverage ratio and the long term debt ratio.

	Leverage ratio	LTDR
2010	0,56	0,16
2009	0,56	0,17
2008	0,63	0,20
2007	0,57	0,16
2006	0,58	0,16
2005	0,60	0,17

Table 3: Yearly averages of capital structure

It is interesting to see that the impact of the financial crisis is visible in this table. The leverage ratio and LTDR are both remarkably higher in 2008, the year I chose as the starting year of the crisis period, compared to the yearly trend in the variables. It is also worth noticing that the capital structures seem to have practically returned to their normal trend in 2009.

I have made a table with the values of Pearson correlation coefficients to calculate the correlation of the relationship between all of the firm specific variables. In order to answer H9, I have made separate analyses for the two different time periods and an analysis for the combined time period. The separate tables are table 4 and 5, the combined table is table 6. Although multiple independent variables have significant correlations with each other, there is no multicollinearity problem. I have done a VIF test to calculate this, and as the VIF values for all the tables were all lower than 2.2, these data are usable.

The number of * marks means how significant the relationship between the two variables is. So *** means that the correlation is significant at the 0,05 level, which means that the possibility that there is no true correlation is less than 5%. In other words, the more marks, the more certain the correlation is.

	Leverage	LTDR	Size	Profitability	Growth	Liquidity	Tangibility
Leverage	1,00						
LTDR	0,37***	1,00					
Size	0,21*	0,36***	1,00				
Profitability	0,04	0,13	0,08	1,00			
Growth	-0,09	-0,13	-0,02	0,43***	1,00		
Liquidity	-0,17	(-0,36***	(-0,23	0,36***	0,28**	1,00	
Tangibility	-0,19	0,53***	0,34***	-0,14	-0,13	(-0,66***	1,00

* Correlation is significant at the 5% level (2-tailed)
 ** Correlation is significant at the 1% level (2-tailed)
 *** Correlation is significant at the 0,1% level (2-tailed)

Table 4: Correlation table pre-crisis (2005-2007)

	Leverage	LTDR	Size	Profitability	Growth	Liquidity	Tangibility
Leverage	1,00						
LTDR	0,47***	1,00					
Size	0,29**	0,60***	1,00				
Profitability	-0,13	0,14	0,05	1,00			
Growth	0,08	0,12	-0,02	0,65***	1,00		
Liquidity	(-0,25*	(-0,33***	-0,09	0,12	0,09	1,00	
Tangibility	-0,09	0,51***	0,29**	0,01	-0,05	(-0,63***	1,00

* Correlation is significant at the 5% level (2-tailed)
 ** Correlation is significant at the 1% level (2-tailed)
 *** Correlation is significant at the 0,1% level (2-tailed)

Table 5: Correlation table crisis period (2008-2010)

	Leverage	LTDR	Size	Profitability	Growth	Liquidity	Tangibility
Leverage	1,00						
LTDR	0,42***	1,00					
Size	0,25**	0,49***	1,00				
Profitability	-0,06	0,12	0,06	1,00			
Growth	-0,01	-0,01	-0,02	0,57***	1,00		
Liquidity	(-0,21**	(-0,34***	-0,15	0,21**	0,19*	1,00	
Tangibility	-0,14	0,52***	0,31***	-0,07	-0,10	(-0,65***	1,00

* Correlation is significant at the 5% level (2-tailed)
 ** Correlation is significant at the 1% level (2-tailed)
 *** Correlation is significant at the 0,1% level (2-tailed)

Table 6: Correlation table total period (2005-2010)

First, I will discuss the correlations of the variables of the total period, after which I will elaborate on the specific differences between the pre-crisis and crisis periods.

First I report a relatively strong and significant relationship between the leverage and the long term debt ratio (which I will call LTDR from now on). This makes sense, as leverage measures the amount of total debts, so that firms with a larger amount of long term debts have a relatively higher leverage.

I expected a positive relationship between size and leverage, and I have found a strong and significant correlation, although this one is significant at $P < 0,01$. Liquidity also follows my expectation with a negative correlation.

For LTDR I report a strong correlation with size, which is significant at the $P < 0,001$ level. Liquidity also follows my expectations. Tangibility is also positively correlated with LTDR, as I had predicted and with quite a strong and significant correlation.

However, I also expected to see a negative correlations between profitability and leverage as well as LTDR, but the correlations are really weak, and in the case of profitability and LTDR is even in the wrong direction. I also expected tangibility to be positively correlated to leverage, but I find a negative, weak and insignificant value. Growth doesn't show the negative correlation that I expected as well.

Differences between the periods:

The correlation of LTDR and leverage, just as leverage and size increases in strength in the crisis period compared to the pre-crisis period.

Liquidity wasn't significantly correlated with leverage before the crisis, but during the crisis it has a negative relationship with a significance level of $P < 0,05$. The changes in the correlations of profitability and growth are small and insignificant.

Compared to before the crisis, the correlation of LTDR and size increases in strength from 0,36 to 0,60, which is quite a lot. The correlations with liquidity and tangibility become slightly stronger. The other changes are minimal.

4.2 OLS regressions

The results of the Ordinary Least Squares regression I have done on the influence of the firm specific variables on the long term debt ratio can be found in table 7. I have separated the results based on the two separate time periods I have stated and the combined total period.

First I will look at the relationships of the variables during the whole period. After that, I will elaborate on the differences between the separate time periods.

I report a significant positive relationship between size and LTDR, which I had expected in hypothesis 1. The coefficient is quite small however, although the significance is high. This means that it is quite certain that larger Dutch firms have relatively more long term debts, although the difference is really small.

What I did not expect was a positive relationship between LTDR and profitability, which seems to be quite strong, although significant at $p < 0,05$ which isn't as significant as the other two relationships. Hypothesis 2 seems to be wrong for the LTDR, as firms that are more profitable seem to have more long term debts.

An explanation for this can come from trade-off theory. As firms that are more profitable have to pay more taxes (Frank and Goyal, 2008) they look for ways to shield themselves from this. As interest on debt is deductible from taxes, they would tend to use more debt.

I also expected a negative relationship between growth opportunity and LTDR, but the relationship is not significant, so hypothesis 3 is wrong for the LTDR. Firms with a higher growth opportunity do not seem to have a lower amount of debt. I will elaborate on this in the part about the relationship between growth opportunity and leverage.

The negative relationship between liquidity and LTDR was expected, but it turns out to be insignificant, so my hypothesis 4 does not hold for the LTDR. Firms with a higher liquidity do not seem to have a lower amount of debt. An explanation for this result in my research is found in the article by Voulgaris, Asteriou and Agiomirgianakis (2004), where it is stated that liquidity does not influence the capital structure of larger firms. And as I'm only researching listed firms this is a possible explanation.

As I had expected based on my theory, there is a positive relationship between tangibility and LTDR. This means that firms with a higher amount of fixed assets seem to have a larger amount of debt. Hypothesis 5 seems to be true for the LTDR.

Another important thing to note is the adjusted R Square, which signifies how much of the variance of the dependent variable is explained by the model being researched. In this case it seems to be 0,40 for the entire period. So 42% of the variance of Long term debt ratio seems to be explained by the factors in this model. This means there are other important determinants that I

Pre-crisis				Crisis period			Total period		
	Coefficients	t Stat	P-value	Coefficients	t Stat	P-value	Coefficients	t Stat	P-value
Intercept	-0,08	-0,95	0,34	(-)0,40***	-4,98	0,00	(-)0,25***	-4,10	0,00
Size	0,01*	1,99	0,05	0,03***	6,94	0,00	0,02***	6,37	0,00
Profitability	0,74**	2,99	0,00	0,08	0,44	0,66	0,34*	2,41	0,02
Growth	-0,04	-1,80	0,07	0,04	1,40	0,16	-0,01	-0,56	0,57
Liquidity	-0,02	-0,77	0,45	-0,02	-1,21	0,23	-0,02	-1,16	0,25
Tangibility	0,23***	3,99	0,00	0,19**	3,24	0,00	0,21***	5,00	0,00
Adjusted R Square			0,35			0,49			0,40
Observations			118			111			216
* . Correlation is significant at the 5% level (2-tailed)									
** . Correlation is significant at the 1% level (2-tailed)									
*** . Correlation is significant at the 0,1% level (2-tailed)									

Table 7: OLS regression of the long term debt ratio

Pre-crisis				Crisis period			Total period		
	Coefficients	t Stat	P-value	Coefficients	t Stat	P-value	Coefficients	t Stat	P-value
Intercept	0,72***	5,54	0,00	0,47***	4,55	0,00	0,61***	7,43	0,00
Size	0,02**	3,15	0,00	0,031***	5,16	0,00	0,03***	5,89	0,00
Profitabili	0,58	1,60	0,11	(-)0,58*	-2,50	0,01	-0,10	-0,50	0,61
Growth	-0,03	-0,81	0,42	0,10**	2,70	0,01	0,02	0,87	0,39
Liquidity	(-)0,17***	-4,69	0,00	(-)0,14***	-5,46	0,00	(-)0,15***	-7,10	0,00
Tangibili	(-)0,47***	-5,55	0,00	(-)0,40***	-5,23	0,00	(-)0,44***	-7,69	0,00
Adjusted R Square			0,26	Adjusted R Square		0,34	Adj. R Square		0,28
Observations			105	Observations		111	Observations		216
*. Correlation is significant at the 5% level (2-tailed)									
**. Correlation is significant at the 1% level (2-tailed)									
***. Correlation is significant at the 0,1% level (2-tailed)									
Table 8: OLS regression of leverage ratio									

haven't researched.

Difference in time periods:

The difference between the time periods is quite visible. Although the relationships of size and tangibility with LTDR do not change much, the relationship between profitability and LTDR changes by a large amount. As it has a coefficient of 0,74, which is quite strong, before the crisis which is also highly significant. But this relationship loses its significance and strength in the crisis period.

The relationships of growth and liquidity with LTDR do change a bit, but they stay small and insignificant.

Leverage ratio

As expected in my hypothesis, there is a positive relationship between size and leverage. It is highly significant at the $P < 0,001$ level, but very weak. This means that larger firms have a higher amount of debt, although the difference is really small. The result of a positive relationship is in line with the trade-off theory, and of the earlier results of Deesomsak et al (2004), Rajan and Zingales (1995) and De Jong, Kabir and Nguyen (2008). Hypothesis 1 seems to be true for the leverage ratio variable.

I expected a negative relationship between profitability and leverage based on the pecking order theory, but the relationships are not significant. This means that firms that are more profitable do not seem to have a lower amount of debts. This is not in line with quite a lot of earlier research like the work of Rajan and Zingales (1995) who empirically found a negative relationship. However, I cannot confirm hypothesis 2 for leverage.

Based on trade-off theory, I expected a negative relationship between growth opportunity but the coefficient is really low, not consistently negative, as well as insignificant. It seems that firms with a higher growth opportunity do not seem to have a lower amount of debts. Although a lot of earlier research report a negative relationship in many countries (Rajan and Zingales, 1995), Deesomsak et al also found this relationship not to be significant for all their researched countries. Furthermore de Jong et al (2008) also find growth opportunity to have an insignificant influence on the leverage of Dutch firms. I cannot accept hypothesis 3 for leverage.

The determinant of liquidity behaves as expected, a significant negative relationship with leverage as predicted by the pecking

order theory. This means that firms that have a higher liquidity indeed have a lower amount of debt. Deesomsak et al find a similar negative relationship for all their researched countries. Hypothesis 4 seems to be true for the leverage variable.

The result for tangibility was quite surprising. I had expected a positive relationship based on trade-off theory, but it turns out there is a negative relationship between tangibility and leverage. In other words: Firms with a higher value of tangible assets have a lower amount of debt.

This conflicts with my theory and with earlier results. Rajan and Zingales(1995) have found a positive relationship between tangibility and leverage. Deesomsak et al (2004) found a positive relationship as well for firms of multiple far eastern countries, although it was only significant for firms in Australia. Even the pecking order theory agrees that there should be a positive relationship tangibility(Frank and Goyal, 2003). De Jong et al (2008) also report a positive relation with Dutch firms. The reason why it has a negative relationship here is unknown to me at the moment. I cannot accept hypothesis 5 for the leverage ratio variable.

Differences between time periods:

The relationships of tangibility, liquidity, growth and size barely change when comparing the two time periods. However, the relationship with profitability, changes from a positive but insignificant one before the crisis to a significant negative relationship after the crisis. I had also expected a negative relationship between profitability and leverage, but I did not expect to only find it in one specific time period.

In the total period the adjusted R squared lower compared to the results of the long term debt ratio, being only 0,28 for leverage. Apparently 0,62 percent of the variance of the leverage ratio is caused by other factors not included in this research.

5. CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH

The goal of this paper was to research the influence of the chosen determinants on the capital structure of Dutch stock market listed companies.

Multiple firm-specific determinants behave quite as I expected, like firm size for example. However, there were also unexpected results. The variables of profitability and growth seem to have little influence in both leverage and LTDR. It also has to be noted that the variables had quite a different influence on the overall leverage and on the long term debt ratio. Therefore it is important to make this distinction in future research.

As I had expected, some relationships between the firm specific determinants and the capital structure seem to be influenced by the financial crisis. Many coefficients gained a little bit of influence compared to the previous time period, or lost a bit during the crisis. But some actually had a large difference between the time periods. Like the relationship between profitability and leverage and its relationship with LTDR. Both relations were quite strongly changed in a different direction when you compare the time periods. The exact cause of this change is still unclear however. Another example of a relatively large change is the stronger and more significant correlation of liquidity during the crisis. Hypothesis 6 cannot be stated to be true with certainty for all variables, although it does seem to hold truth for the determinant of profitability. For future research I would suggest the question why the relationship between the mentioned determinants and capital structure is influenced by the financial crisis.

A limitation of this study was the number of researched years for the macroeconomic factors. To get a clearer picture on this relationship in future research, it is advised to include more years. Although less severe, a higher amount of researched companies would have given a clearer picture on the relationships and the differences between the relationships across time periods than in this research.

Although the market-timing theory is quite well known, I have chosen not to include it into my research, even though there is quite some evidence that supports this theory. The influence of this theory could be included in further research to get a clear picture of its influence on the capital structure of Dutch firms.

An extra dependent variable that could be used in future research is the short-term debt ratio, which would give a more complete picture on the influences on different kinds of debts when researched in combination with the others. Due to limited availability of data, it was not possible to include that variable in this research.

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