Master Thesis

Debt level and Firm Performance: Empirical evidence based on Dutch firms

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Abstract

In this research, the relationship between debt level and firm performance of Dutch listed firms is examined using panel data from the period 2013-2018 collected from the ORBIS database. Firm performance is measured by four performance measures ROA, ROE, Tobin's Q, and stock return. Debt level is divided into short-term debt, long-term debt, and total debt, and the control variables are size, profitability, growth, asset structure, and age. An ordinary least square (OLS) regression analysis is conducted, and results showed that none of the hypotheses were supported. The results revealed a significant negative influence of debt level on firm performance, meaning an increase in debt lowers the firm performance. The control variables size and profitability show a significant positive impact on firm performance whereas the control variable asset structure has a significant negative impact.

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1. Introduction

1.1 Background

Capital structure and firm performance have been under the spell of accounting and finance for many years. It originated with the theory of Modigliani and Miller which indicated that capital structure has no influence on firm performance based on a perfect market (Modigliani & Miller, 1958). However, because there is no perfect market in the real world, various studies have been carried out into capital structure and firm performance. Consequently, theories have emerged that show that capital structure has an influence on firm performance. Examples are agency cost theory (Jensen and Meckling 1976), trade-off theory (Kraus and Litzenberger 1973), and pecking-order theory (Myers and Majluf, 1984).

Based on empirical studies, it can be stated that leverage has its influences within a company. Yazdanfar and Öhman (2015) stated that for achieving profitability and a fixed value, it is essential to have a favorable debt level as possible to increase the size of the company. However, according to Van Auken and Holman (1995), such a business environment as aforementioned can lead to an inappropriate capital structure with a higher risk of insolvency. It is stated that there is an important relationship between the debt level and operating difficulties, financial distress, and bankruptcy (Van Auken and Holman 1995). What can be inferred from this is that a firm needs to determine what is the most favorable debt level to a certain extent that the firm can deal with the consequences. Because, according to tax theories, it is most advantageous for profitable firms to pay interest on debt that is tax-deductible (Michaelas, Chittenden and, Poutziouris 1999)

The capital structure of firms can have, therefore, in several ways an influence on firm performance. Certain studies are conducted about this topic with different results in various markets (Le and Phan, 2017; Vuong, Vu, and Mitra, 2017). However, a few studies have focused on Europe, including the Netherlands (Forte and Tavares 2019). This study focuses exclusively on Dutch firms to provide supporting evidence on the relationship between debt level and firm performance in the Netherlands.

To explore this, the following research question is used: “Does debt level influence firm performance of Dutch firms”. This analysis is carried out according to quantitative research with data obtained from the ORBIS database in conjunction with calculations.

1.2 Importance of this research

This study is a continuation of several previous studies that have measured capital structure and firm performance. Research by Gleason, Mathur, and Mathur (2000) has already studied the relationship between debt level and firm performance based on data from European countries including the Netherlands from the year 1995. However, firms in the Netherlands experienced a financial crisis from 2008 till 2011 what caused firms to adopt a different capital structure with less leverage and more net equity (Moradi & Paulet, 2019). Therefore, this study examines the relationship between debt level and firm performance based on Dutch data over the period 2013 to 2018 to determine whether firms in the Netherlands are making sufficient use of debt that influences their firm performance. Also, the structure of debt maturity and its determinants does influence firm performance. So, in this research debt level is divided into short-term debt, long-term debt, and several determinants are examined that influence the capital structure. With the results of this study, advice can be given to Dutch firms for helping them make financial decisions regarding the debt level.

Several studies have been conducted on this topic, however, to the best of my knowledge no research has been done on this topic about firms in the Netherlands after the financial debt crisis. The financial debt crisis has caused firms to use a different capital structure and make less use of debt. This study will find out whether less debt has a positive or negative influence on firm performance.

1.3 Outline

The remainder of this paper is structured as follows. Section 2 presents the literature review of previous empirical studies and the hypotheses. Section 3 presents the research method used in this study. Section 4 presents how data is gathered. Section 5 presents the results of the data analyses. Chapter 6 a conclusion and discussion will be drawn.

2. Literature review

2.1 Firm's capital structure

Firms build up assets and receivables over time. The capital structure of a firm shows the way how these assets and receivables are financed. According to Bradley, Jarrell, and Kim (1984), research into the theory of capital structure has been going on for a quarter of the past century. In the mid-1950s, Modigliani and Miller came up with the theory that capital structure does not influence firm value. However, in the 1970s it was already argued that the optimal capital structure should consider the tax advantages of borrowed money and the trade-off with bankruptcy costs. After this, several studies have emerged theories that explain how the capital structure may affect firm value. Examples are agency cost theory (Jensen & Meckling, 1976), trade-off theory (Kraus & Litzenberger, 1973), and pecking-order theory (Myers & Majluf, 1984) that will be treated below.

2.1.1 Modigliani and Miller Theory

Considering that there has been speculation about the capital structure of companies for years, came Modigliani and Miller in 1958 with the Modigliani and Miller theory (MM theory) proofing that a firm's value is not influenced by the capital structure (Modigliani & Miller, 1958). It is explained that the firm is valued based on the assets of the company. Therefore, any combination of debt and equity does not affect the firm value. This statement has triggered many researchers because, after this theory, several theories prove the opposite and indicate that capital structure has an actual influence on firm performance.

However, it should be mentioned that the MM theory considers a perfect market where there are no taxes, no bankruptcy and transaction costs, market information is not symmetric, lending and borrowing is available for all investors at the same interest rate and investors have homogeneous expectations about the profitability of the firm, all managers desire firm value maximization, and firms operating with similar conditions have a consistent level of risk.

2.1.2 Agency costs theory.

The agency costs theory is developed by Jensen and Meckling in 1976 and shows the impact of capital structure on firm value. According to the agency cost theory, managers, shareholders, and debt holders have different interests in the firm (Jensen & Meckling, 1976). The agency cost theory discusses that shareholders expect firm value maximization by managers, while managers operate for personal interests, resulting in which not all the expectations of shareholders will be met. Besides, it also describes that conflicts can arise between debt holders and shareholders because both have a different degree of risk. So, it can be mentioned that the agency cost theory can be divided into two principals: agency costs of equity and agency costs of debt.

The agency risk of equity observes that managers act from their own interests. According to Jensen and Meckling (1976), managers try to entrench themselves and pursue actions for their own interest if they can control the operations of the firm. Acting out of personal interest by the managers

that may not be the best for the value of the firm can be defined as the "moral hazard" problem (Weill, 2008). They frequently succeed in this as finding corporate control directors often involves high costs for shareholders. According to Mande, Park, and Son (2012), are entrenched managers inclined to take opportunistic and risky investments, even though these investments are not in the interest of shareholders. This can make equity financing less attractive than debt financing for shareholders.

The agency risk of debt has, according to Jensen and Meckling (1976), a positive link between debt and firm value related to managers and shareholders. High debt will result in higher interest expenses, which in turn will make managers work harder and invest in a profitable project to pay the extra expenses and avoid bankruptcy costs. This, in turn, affects that the managers will perform mainly for the benefit of the company, and are less able to work for their own interests (Margaritis & Psillaki 2010). However, relating to the conflict between shareholders and debtholders, debt can also have a negative influence on firm performance. High debt ensures that firms cannot invest optimally as they are required to meet the conditions of the debtholders. This can deter investment in profitable projects.

2.1.3 Trade-off Theory

According to Kraus and Litzenberger (1973), the Trade-off theory describes that firms can maximize firm value by creating an optimal capital structure through debt issuance. The costs of interest on the debt are tax-deductible causing a decrease in a firm's taxable income. However, it should be considered that debt goes along with financial distress costs. The purpose of the trade-off theory is to find the optimal capital whereby costs and benefits of debt must be compromised to increase firm value. In addition to tax-deductible benefits, agency costs should also be considered in the trade-off theory. In research of Frank and Goyal (2009) is stated that that the financial policies affect the managers of the firm. As a result, the managers are less able to make under and over investments.

Firms consider reaching the optimal point of maximizing the decrease in taxable income but are cautious about the eventual costs of financial distress. It can be stated that, before the optimal point is reached, debt has a positive effect on firm value as the benefits of the tax advantage exceed the costs of debt (Modigliani and Miller, 1963). However, when the optimal point is crossed by using more debt, it will entail financial distress costs. The tax benefit of debt will not outweigh the additional costs of financial distress (Myers, 1984). This means that when the optimal point is reached, additional debt will have a negative impact on firm value.

2.1.4 Pecking-order theory

Another theory, the pecking-order theory developed by Myers and Majluf, (1984), states firms prefer internal to external financing to avoid transaction costs, issuing costs, and minimize information asymmetry. For this reason, firms also prefer debt to equity if external financing is needed because debt financiers require less information than equity holders. This will take place according to a hierarchical method in which internal financing will be chosen first, then debt is considered, and the

final choice is equity as external funding.

Firms ideally start financing new projects or investments using internal funding. This allows a firm to decide how much money to invest without disclosing information about the meaning of the investment. External financers require this information because they want to know where their money is being invested in before they start lending money. But, on average firms do not have sufficient internal funds to cover the investment (Frank & Goyal 2003). Therefore, they will need external financing to cover the entire investment which will take place according to the hierarchical method of the pecking-order theory.

As aforementioned, a firm would first invest all available internal funds and prefer to cover the investment and supplement the remaining investment with debt rather than with equity financing. The drawbacks of external financing are transaction costs, issue costs of equity, and information asymmetry. According to Myers and Maljuf (1984), when information asymmetry exists between investors and management, firms must rely on different financing policies to distinguish themselves in the market. That is why internal financing would always be preferred as no information needs to be exchanged (Wang & Lin 2010). Also, lenders of external financing reimburse the transaction costs as they take the risk of investing in a business. These costs are lower for debt providers in comparison to issuing stock because stockholders are at higher risk (Bagley, Ghosh, and Yaari, 1998).

The Pecking-order theory and Trade-Off theory are often compared to determine the most favorable way of choosing a capital structure. Firms try to adjust to the optimal debt ratio to have a perfect balance in financial costs and tax advantages based on the Trade-Off Theory. But the Pecking-order theory also favors leverage, but it does not mention the optimal leverage ratio of firms (Serrasqueiro & Caetano, 2015).

Table 1 – Overview of the theories

Theories	Impact of capital structure on firm performance	Empirical evidence
<u>Agency costs theory:</u> Increasing debt causes higher interest costs and will put more pressure on managers.	Pressure on managers ensures them to focus on the firm's interests and not on personal interests, thereby increasing firm performance.	High debt increases pressure on managers resulting in positive firm investments (Weill, 2008; Margaritis & Psillaki, 2010).
Increasing debt hinders new optimal investments.	High debt prevents firms from investing optimally because they are required to meet the conditions of the debtholders, causing a negative influence on firm performance.	Firms with high debts have less capacity for new investments (Jensen & Meckling, 1976; Margaritis & Psillaki, 2010).
<u>Trade-off theory:</u> Increasing debt causes higher interest costs that provide firm tax benefits	The costs of interest on the debt are tax-deductible causing a decrease in a firm's taxable income, thereby increasing firm performance.	Creating an optimal debt structure to have tax benefits (Kraus & Litzenberger, 1973; Frank & Goyal, 2009).
Increasing debt causes an increasing probability of financial distress.	Firms with too much debt can get into financial distress which will have a negative impact on firm performance.	By crossing the optimal debt structure, tax benefits of debt will not outweigh the additional costs of financial distress (Modigliani & Miller, 1963; Myers, 1984).
<u>Pecking-order theory:</u> Firms prefer internal to external financing in a hierarchical way.	Firms prefer financing in a hierarchical way to avoid transaction costs, issuing costs, and minimize information asymmetry as much as possible, thereby increasing firm performance	Firms prefer internal to external financing, and debt over equity. (Myers & Majluf, 1984; Frank & Goyal, 2003).

2.2 Determinants of capital structure

As mentioned above, several theories describe how the capital structure of firms is established. However, there are also determinants that influence capital structure. In this research, characteristics are tested for their influence on the capital structure at firm- and industry level. The characteristics at firm level are firm size, firm age, growth, asset structure, and profitability. At the industry level, companies are tested to see if industry differences affect the capital structure. The determinants will be discussed through literature.

2.2.1 Determinants of capital structure at firm level.

To determine the firm-level characteristics, previous studies are used that have shown which characteristics influence capital structure of firms. Consequently, it has been stated that firm size, age, growth, asset structure, and profitability mainly influence how firms organize their capital structure.

One of the determinants of a firm's capital structure is size. Titman and Wessels (1988) stated that larger firms have lower variance of earnings because these firm's operations are more diversified. Also, lenders consider it more likely to expect a refund from large companies than from smaller ones. Hence, lenders therefore must pay extra attention to smaller companies to see if they can actually pay it back, which in turn entails agency costs. As a result, larger firms can create a higher debt ratio compared to smaller companies (Castanias, 1983).

Empirical evidence shows that size has an impact on the debt level of firms. Several studies display that size has a significant positive influence on the debt level (Friend and Lang, 1988; Shyam-Sunder and Myers, 1999; Huynh, et al. 2015). They conclude that large firms are more likely to take on debt financing rather than equity financing. Small businesses do not have the same accessibility as large companies to take on debt. Therefore, smaller firms are more likely to choose equity financing.

A second determinant that influences capital structure is firm age. Firms that have are remaining active longer build up a reputation that shows they are a more reliable firm for debt lenders. Also, firms can show with their track record of the past years that they are more reliable than start-ups, which results in a lower risk for the debt lenders, lowering the cost of debt. In addition, Huygebaert (2003), stated that investors and lenders endear older firms that face fewer adverse selection and moral hazard problems in comparison to younger firms. Younger firms have relatively a higher degree of uncertainty in contrast to older firms making older firms preferable for lenders.

Empirical evidence presents a relationship between firm age and debt level. In the study of Ezeoha, and Botha (2012), is stated that firms have, over the years, built up a higher collateral value and are thus more likely to be less constrained in borrowing and have greater access to debt. Hence, age has a positive significant influence on capital structure of firms. However, Michaelas et al. (1999) indicate that just as the pecking-order theory, aged firms do need external financing as they have built up enough retained earnings to finance their investments.

A third determinant that influences a firm's capital structure is growth. As growth will affect a firm's internal refunds, firms will be more likely to have an incentive to take on more debt to keep expanding (Hall, Hutchinson, and Michaelas, 2004). In research of Marsh (1982) is also mentioned that growing firms take on relatively more debt. But Myers (1977) states an extreme result: firms with valuable growth opportunities would never issue risky debt. The reason is that that a conflict of interest may arise between the debt takers and debt lenders. Despite the risk that debt lenders take with growing businesses, they only receive the interest and the borrowed money back. This implies that long-term debt will have a higher cost than short-term debt.

The empirical evidence of growth influencing capital structure is unconvincing. The research of Titman and Wessels (1988) shows a positive relationship between growth and debt level. Also, according to the research of Baral (2004), does growth rate have a major role in the determination of financial leverage. He mentioned that due to the growth of a firm, there is a higher demand for funds whereby debt is the most preferable. However, the results of Danila, Noreen, Azizan, Farid, and Ahmed (2020) imply a negative relation between firm growth opportunities and debt level.

The fourth determinant influencing capital structure is asset structure. Banks want to minimize the risk when they issue a loan. A common way banks use to reduce risk is to require collateral. Storey (1994) admits that bank financing level depends substantially on the firm's asset structure. So, firms with more assets to put as collateral are having relatively easier access to debt financing with lower costs. If a firm has a large proportion of assets, it will also have a higher liquidation value (Harris and Raviv, 1991). As this liquidation value is higher than the debt amount, it will reduce the adverse selection and moral hazard costs. Altogether, this will result that these firms have a higher debt level in their capital structure.

Empirical evidence shows that asset structure has a positive influence on the leverage of firms. This positive relationship has been shown in several studies (Wedig, Sloan, Hassan, Morrisey, 1988; Shyam-Sunder and Myers 1999; Hovakimian, Hovakimian, & Tehranian 2004). However, other studies show that the positive relationship only involves long-term debt and asset structure. They find a negative relationship between short-term debt and asset structure (Van der Wijst & Thurik, 1993; Chittenden et al., 1996). This can be justified by the fact that short-term debt does not require collateral.

The fifth and last determinant that influences debt level is profitability. Firms that achieve high profits will have sufficient funds available to finance their new investments. The pecking-order theory has already shown that firms prefer internal funds over external financing (Myers, 1984). Therefore, higher profits will go hand in hand with lower debt levels. However, according to the trade-off theory, it is advantageous to take on debt to have higher tax savings. Also, high profitable firms are a lower risk for lenders, allowing these firms to take on a higher debt level than less-profit firms.

Empirical evidence has shown a negative relationship between profitability and debt level. Research of Shyam-Sunder and Myers (1999) and Michaelas et al. (1999) shows that firms with higher

profitability have a lower debt level. But Kayhan and Titman (2007) indicate that highly profitable firms are in a likely better position to take tax shield advantage, resulting in a higher debt ratio.

2.2.2 Determinants of capital structure at industry-level

In addition to determinants at the firm level, there are also determinants that have an influence at the industry level. Firms that share the same primary business activities can be defined as an industry. However, each industry has its general capital structure. For example, firms that provide services will have a different capital structure than manufacturing firms. A manufacturing firm needs various machines, large buildings, and a logistics process to operate, while a service firm can operate with merely a (small) office. Research of Jie (2019) noticed a significant difference in the average level of capital structure between different industries. He stated: "Due to different business models and different levels of risk, the capital structure has different trends in different industries" (P.194). In the real estate industry, for instance, the debt level appeared to be getting higher and higher after ten years. While in the media or textile and clothing industry, for example, the debt level decreased over years.

Another determinant at the industry level is the degree of competition in an industry that affects the capital structure of the firm. According to MacKay and Phillips (2005), in a relatively high degree of competition, firms try to create as optimal debt level as possible. This allows them to minimize costs to differentiate from competitors. However, when the degree of competition in an industry is low, firms will make less effort to reach the optimal debt level. Managers will then opt for a lower debt ratio as they will feel a little less pressure.

2.3 Debt level and firm performance

As explained in the various theories above, there are several influences that cause the debt levels of firms to be low or high. It started with the MM theory that suggested that capital structure did not influence firm value. This was based on a perfect market, where there were no external influences on the capital structure. Since in real life no perfect market exists, several studies and theories have emerged that suggest that capital structure does have an influence on firm value. According to the trade-off theory, it is beneficial to create the best possible debt ratio to reduce tax shield and agency costs. They found a positive influence of debt levels on firm performance. But, the pecking-order theory states that firms prefer internal financing over external financing, whereby debt is preferable to equity. Hence, they claim that the debt level has a negative impact on firm performance.

2.3.1 Internal finance and firm performance

Start-up firms will have little to no internal funds to make investments that allow the firm to grow. These firms cannot escape external funding to make new investments. Firms that already have been operating tend to have positive profits over years and keep these remain in the company as internal funds. They can therefore finance new investments with internal financing. Research of Frank and Goyal (2003) found that larger firms prefer internal financing over external financing and do lead

to some reduction in debt issues. However, they also found that internal financing is often not enough to finance the average investments of a firm. Myers and Majluf (1984) prefer internal financing as it minimizes information asymmetry and transaction costs. This means that internal financing is less costly than debt financing and might indicate a negative correlation between debt and firm performance.

2.3.2 Debt finance and firm performance

Various research has been conducted about debt financing and firm performance. Differences in industry, size of the firm, short-term debt, and long-term debt are considered in these different studies. In research of Margaritis & Psillaki (2010) is stated that there is a relationship between leverage and firm performance. Research is done in three different French manufacturing industries and in each industry, it is found that leverage has a positive effect on firm performance. This positive effect applies to both the two traditional manufacturing industries and a manufacturing growth industry. More recent research by Aripin & Abdulmumuni (2020) also found a positive relationship for Nigerian manufacturing firms. These firms are recommended to apply the agency theory to create an optimal debt level, resulting in a positive effect on firm performance. However, the research of Gleason, Mathur, & Mathur (2000) used data from retailers of 14 European countries and found a negative relationship between capital structure and performance. They suggest that agency conflicts cause firms to go beyond the optimal level of leverage, resulting in a negative effect on firm performance. Mesquita & Lara (2013) researched 70 Brazilian industrial and service firms over the period 1995-2001 to find whether short-term debt and long-term debt have the same relationship on firm performance. However, this research found that short-term debt has a significantly positive influence on the rate on return while long-term debt seems to be negative on the rate on return. Forte & Tavares (2019) found similar results whereas long-term debt has a positive influence on firm performance and short-term debt a positive influence.

In the research of Yazdanfar & Öhman (2015) are the overall findings that short-term debt and long-term debt have a significantly negative influence on the firm performance. Less debt financing can reduce the costs associated with information asymmetry, lead to lower agency costs, and increase profitability. In research of Ahmad et al (2012) is stated that short-term debt and long-term debt are positively related to firm performance. Short-term debt is generally less expensive and hence, an increase in short-term debt with a relatively low-interest rate will lead to an increase in the profit level. A higher level of long-term debt in the capital structure is directly related to higher levels of performance. The higher level of performance can be attributed to the tax advantage of interest and the disciplining role imposed by higher long-term debt that reduces agency costs.

2.4 Conceptual framework

In figure 1 below, you can see the conceptual framework between de independent variables, the dependent variables, and the control variables.

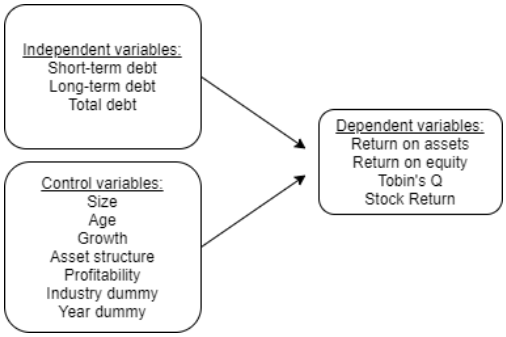

Figure 1

3. Hypothesis formulation

The theory of Modigliani and Miller claims that capital structure does not influence firm performance. But this is based on a perfect capital market. However, in the real world firms must deal with an imperfect market and it was implied that capital structure does influence firm performance.

In terms of studies on external finance and firm performance, many have been conducted. Several studies have shown a relationship between external financing and firm performance. Some researchers found a positive relationship (Detthamrong, Chancharat, & Vithessonthi, 2017; Tripathy, and Shaik 2020). Whereas some other researchers found a negative relationship (Dawar 2014; Tsuruta 2017; Ibhagui and Olokoyo 2018 Li, Niskanen and Niskanen 2019). However, other studies provided evidence of what varies between capital structure and firm performance.

The empirical evidence has shown mixed results in several studies. A study of Le & Phan (2017), stated a significantly negative relationship between capital structure and firm performance based on firms in emerging markets. For these results, 2797 non-financial firms in Vietnam were used. This study shows that the interest rate in Vietnam is much higher than in other countries which involves additional costs, financial distress, and liquidity issues. These financial costs are greater in comparison to the tax shield benefits causing a negative effect on firm performance. In addition, this study estimated that for high-growth industries or countries a negative relationship was more common, while a positive relationship was more common in low-growth industries or countries. According to Yazdanfar & Öhman (2015), does leverage has a significant negative effect on firm performance because SME owners are risking losing control of the firm through a high debt level. Also, high leverage entails agency costs that could be large sums of money for SME owners. This study is based, over the period 2009-2012, on Swedish SME's active in a developed market composed of 15.897 firms in five different industries.

However, several empirical papers document a positive effect of leverage on firm performance. Margaritis & Psillaki (2010), examine how higher leverage has a positive influence on firm performance. The researchers experience that a higher debt ratio lowers agency costs, reduces inefficiency, and thereby leads to an improvement in the firm's performance. These results are based on French firms active in two different manufacturing industries over the period from 2002 to 2005. Also, Abdullah & Tursoy (2019), found a positive relationship between capital structure and firm performance in a developed market based on an example of non-financial firms listed in Germany over a period 1993-2016. Their research shows that a higher debt level results in an increase in Return on Assets and Return on Equity. An argument might be that a high debt level puts significant pressure on managers to generate enough cash flow by profitable investments in order to pay interest costs and avoid bankruptcy. Also, it has been pointed out that a high debt level results in lower agency costs. Another argument is reducing taxable income by interest costs related to the debt level. Because the research of Abdullah & Tursoy (2019), concluded a positive association between capital structure and

firm performance among German listed firms, is also expected that this relation will emerge for firms in the Netherlands. Therefore, the following hypothesis is stated:

H1. There is a positive relationship between debt level and firm performance for Dutch firms.

Research by Forte & Tavares (2019) found that leverage can have both a positive and a negative impact on business performance. In this study, the results become visible between countries with high protection of property rights and creditors' rights and countries with lower protection of property rights and creditors' rights. with high values variables rights & credit and countries with lower values variables rights and credit. Property rights can be defined as the protection of the rightfully acquired property by the investor. The protection of creditors' rights can be defined as the exchange in credit, labor, and product markets, and their regulatory restraints. Countries with a lower value of variables have short-term debt a positive influence on firm performance, while long-term debt has a negative influence on firm performance. Also, the total debt seems to have a positive influence on firm performance but is caused by the larger share of short-term debt on the total debt. Countries with a higher value of variables have short-term debt a positive influence on firm performance, and long-term debt has also a positive influence on firm performance. As in the research of Forte & Tavares (2019), the "Freedom in the World" report is used to determine the level of variable rights and credit. This report indicates that the Netherlands has relatively high scores on both variables which means there are proper rights and credit for investors and creditors. Therefore, it can be expected that there is a positive influence of short-term and long-term debt on firm performance. Also, the agency theory describes that that higher debt ensures that managers focus more on profitable investments, which in turn leads to better firm performance. Research by Margaritis & Psillaki (2010) supports this theory and found also a positive relationship. Therefore, the following hypothesis is stated:

H2. There is a positive relationship between short-term debt and firm performance.

H3. There is a positive relationship between long-term debt and firm performance

4. Research method

4.1 Methods

As mentioned earlier, there have been several studies on capital structure and firm performance. a common way to test this is by using multivariate regression analysis (Dawar 2014; Tsuruta 2017; Detthamrong, Chancharat, and Vithessonthi, 2017; Ibhagui and Olokoyo 2018 Li, Niskanen and Niskanen 2019; Tripathy and Shaik 2020). According to these studies, are the pooled Ordinary Least Squares (OLS), Random Effect (RE), and Fixed Effect (FE) estimation methods commonly used, and the Two-Stage Least Squares (2SLS) is rarely used. These methods will be explained further below.

4.1.1 Ordinary Least Squares

An OLS regression is a commonly used method for identifying a relationship. Zdaniuk (2014) defines an OLS regression as "*the analysis is fitting a model of a relationship between one or more explanatory variables and a continuous or at least interval outcome variable that minimizes the sum of square errors, where an error is the difference between the actual and the predicted value of the outcome variable*." P.4515. The goal of an OLS regression analysis is to minimize the sum of square errors, to have a more consistent predicted outcome. In addition, the OLS regression analyses must meet the following assumptions: linearity, homoscedasticity, exogeneity, non-autocorrelation, not stochastic, and no multicollinearity.

Major studies that have been conducted on capital structure and firm performance have performed OLS regression analyses. The research of Sheikh and Wang (2013) investigates if the capital structure affected the performance of non-financial firms listed on the Karachi Stock Exchange during 2004-2009. Using an OLS regression analysis, they found that capital structure has a negative influence on firm performance this applies to short-term, long-term, and total debt. Also, Le & Phan (2017) utilized an OLS regression analysis to test the relationship between capital structure and firm performance based on Vietnamese listed firms during 2007-2012. They have also found a negative influence of capital structure on firm performance.

4.1.2 Random and fixed effect model

Another common method that is used is the random and fixed effects model.
According to Abdullah and Tursoy (2019), has RE and FE the benefit that it takes specific error components at the firm level into account, which may make this method more effective than the OLS method. The individual-specific effect is a random variable that is uncorrelated with the explanatory variables in the random effect model, while in the fixed effect model the random variable can be correlated with the explanatory variables. The Hausman test can be conducted to determine whether to use the RE or the FE (Hausman, 1978).

4.1.3 Two-stage least squares

The 2SLS is a regression analysis that can be used when relationships between the variables are bidirectional. The 2SLS regression uses instrumental variables that are uncorrelated with the error terms in order to compute estimated values of problematic predictors. Subsequently, those computed values are used to estimate a linear regression model of the dependent variable. The Hausman test can also be used to check if the variables are jointly determined, resulting in whether the OLS method or the 2SLS can be used. Research of Rahim & Shah (2019) used the 2SLS regression to get unbiased estimates of the parameters as soon as the endogeneity problem occurred. However, the 2SLS regression has been rarely used in previous studies.

4.2 Variables

In this section, the dependent variables, the independent variables, and the control variables are further explained. The dependent variable is firm performance and is measured by the following measures: ROE, ROA, and Tobin's Q. The independent variable will consist of the short-term debt ratio, long-term debt ratio, and total debt ratio. The control variables are Size, Age, Growth, Asset structure, and Profitability. An overview of all these variables can be found in table 2.

4.2.1 Dependent variables

The dependent variable for this research is firm performance. Firm performance is measured by return on assets (ROA) and return on equity (ROE) (Vuong, Vu, and Mitra, 2017). The ROA is calculated as net income divided by total assets and the ROE is calculated as net income divided by shareholder equity. According to Forte & Tavares (2019), Both measures are easily accessible and the most common measures for presenting the accounting performance of a firm. For capturing a firm's market performance, Tobin's Q is used with the calculation of total market firm value divided by total book value (Le and Phan 2017). Tobin's Q is a common method to calculate the market value of a firm and is used in this research as a market performance measure. The last dependent variable in this research is Stock return. Stock return will be calculated by stock price end of year minus stock price begin of year, divided by stock price end of year (Razak et al., 2020). Stock return is a method to calculate a firm's value increase or decrease due to its operations. Therefore, this calculation will be performed to measure firm performance. Besides, stock return is also one of the remaining goals of investors.

4.2.2 Independent variables

For examining the influence of debt level on firm performance, the variables will be divided into different measures. The debt level is the independent variable, divided into three stages. Short-term credit, long-term credit, and total debt. These measures of debt level have already been used in several empirical literatures (Abor 2005; Yazdanfar and Öhman, 2015, Le and Phan 2017). To achieve a numerical and comparable insight into how much debt a company uses, a percentage is calculated for each debt level. Short-term debt will be measured as the ratio of short-term debt divided by the total

assets. Long-term debt will be measured as the ratio of long-term debt divided by the total assets. As last, to clarify the total leverage of a company, the following ratio is calculated: Total debt / Total Assets.

4.2.3 Control variables

Prior research has shown that besides the dependent variable and independent variable, also other variables have an influence on the relationship between capital structure and firm performance (Shyam-Sunder and Myers 1999; Yazdanfar and Öhman, 2015, Le and Phan 2017). The determinants described in section 2.2 are the control variables that have an influence on firm performance These include firm size, age, growth, asset structure, and profitability.

The literature review shows that size, age, and growth all have a positive influence on the debt level (Titman and Wessels 1988; Friend and Lang, 1988; Shyam-Sunder and Myers, 1999; Ezeoha, and Botha 2012). In addition, it appears that for asset structure, only long-term debt is positively related to asset structure, while short-term debt is negatively related (Wedig, Sloan, Hassan, Morrisey, 1988; Chittenden et al., 1996). The last control variable at firm level is profitability. Research by Michaelas et al. 1999 has shown a negative relationship between profitability and debt level. As a result of the previous empirical literature, the following measures of control variables will be used in this research. Size will be measured by the log of total assets, age will be measured by the natural log of the number of years since the firm first started, and growth is measured by the percentage of change in total assets. Due to the fact that mainly the fixed assets can be used as collateral, the degree of fixed assets will be measured from the total assets for the control variable asset structure. Profitability will be measured by the earnings before interest and taxes divided by the total sales. The first dummy variable is year dummy. This research is data collected over multiple years and, therefore, year dummies are included to capture time-specific fixed effects (Zeitun and Tian, 2007). To test whether industry does have an influence on the capital structure, an industry dummy will be used to measure this influence. Under the regulations of Euronext, all firms will be classified as stated in the Industry Classification Benchmark (ICB). The firms are identified, according to the ICB hierarchy, into 19 super-sectors. Table 3 gives an overview of the 19 super-sectors.

Table 2: Variables overview

Variables	Name	Abbreviations	Calculation method	References	Predicted sign
Dependent	Return on assets	ROA	Net income / Total assets	Vuong, Vu, & Mitra, 2017; Le & Phan 2017	
	Return on equity	ROE	Net income / Total equity	Vuong, Vu, & Mitra, 2017; Le & Phan 2017	
	Tobin's Q	Tobin's Q	Market value of total equity + Book value of total debt) / Book value of total assets	Le & Phan 2017; Forte & Tavares, 2019	
	Stock return	Stock return	(Stock price end of year – Stock price begin of year) / Stock price begin of year	Lamont, 2000; Razak et al., 2020	
Independent	Short-term debt ratio	STD	Short-term debt / Total assets	Abor, 2005; Yazdanfar & Öhman, 2015; Le & Phan, 2017	Neg.
	Long-term debt ratio	LTD	Long-term debt / Total assets	Abor, 2005; Yazdanfar & Öhman, 2015; Le & Phan, 2017	Pos.
	Total debt ratio	TD	Total debt / Total assets	Abor, 2005; Yazdanfar & Öhman, 2015; Le & Phan, 2017	Pos.
	Size	Size	Natural log of total assets	Friend & Lang, 1988; Shyam-Sunder & Myers,	Pos.

				1999; Huynh et al., 2015	
	Profitability	PROF	EBITDA / Total sales	Shyam-Sunder & Myers, 1999; Michaelas et al., (1999)	Neg.
Control	Growth	Growth	Percentage of change in total assets	Titman & Wessels, 1988; Baral, 2004	Pos.
	Asset structure	Assets	Fixed assets / Total assets	Wedig et al., 1988; Shyam-Sunder & Myers, 1999; Hovakimian et al., 2004	Pos./Neg.
	Age	Age	Natural log of the number of years since the firm first started	Michaelas et al., 1999; Ezeoha, & Botha, 2012	Pos.
	Year dummy	Year dummy	1 for a specific year, otherwise 0	Zeitun & Tian, 2007; Le & Phan, 2017	
	Industry dummy	Industry dummy	1 for a specific industry, otherwise 0	MacKay & Phillips, 2005; Jie, 2019	

Table 3: 19 Super-sectors

No	Name	ID	No	Name	ID
1	Banks	BK	11	Media	MD
2	Insurance companies	IN	12	Travel & Leisure	TL
3	Financial services	FS	13	Chemicals	CH
4	Real Estate	RE	14	Basic resources	BR
5	Construction & Materials	CM	15	Oil & Gas	OG
6	Industrial goods & services	IGS	16	Telecommunication	TC
7	Automobiles & Parts	AP	17	Health care	HC
8	Food & Beverage	FB	18	Technology	TG

9	Personal & Household goods	PHG	19	Utilities	UT
10	Retail	RT			

4.3 Empirical model

In this research, panel data procedures are used because the sample of Euronext is made up of different firms and over time. The three common estimation methods OLS, RE, and FE are used to estimate the relationship between debt level and firm performance measures (Sheikh and Wang, 2013). For a scenario where there are no firm-specific and time-specific effects, the OLS method is the most appropriate. The FE estimation model allows that the sample may vary in firm. However, the sample restricts the slope parameters to be constant across all firms and time periods. The benefit of the RE estimation method is that it is assumed that firms may be random and uncorrelated with the debt level. The Hausmann test will show if the OLS regression is sufficient or whether the RE or FE will be used. In addition, previous research has already been investigating the relationship between capital structure and firm performance (Le & Phan 2017; Vuong, Vu, & Mitra 2017; Aripin, & Abdulmumuni, 2020). Again, an OLS regression method will be used, but now the determinants of this research are added as control variables. Therefore, the following multiple regression model is used to test hypothesis H1:

$$Perf_{i,t} = \beta_0 + \beta_1 LEV_{i,t} + \beta_2 Size_{i,t} + \beta_3 Age_{i,t} + \beta_4 Growth_{i,t} + \beta_5 Assets_{i,t} + \beta_6 PROF_{i,t} + \beta_7 IND + \beta_8 YEAR + \varepsilon_{it}$$

However, the above-mentioned multiple regression does not take into account the difference between short-term and long-term debt. So, the following multiple regression model is created to test hypotheses H2 whereby the short-term debt is tested:

$$Perf_{i,t} = \beta_0 + \beta_1 STD_{i,t} + \beta_2 Size_{i,t} + \beta_3 PROF_{i,t} + \beta_4 Growth_{i,t} + \beta_5 Assets_{i,t} + \beta_6 Age_{i,t} + \beta_7 IND + \beta_8 YEAR + \varepsilon_{it}$$

And the last multiple regression model is created to test the influence of long-term debt:

$$Perf_{i,t} = \beta_0 + \beta_1 LTD_{i,t} + \beta_2 Size_{i,t} + \beta_3 PROF_{i,t} + \beta_4 Growth_{i,t} + \beta_5 Assets_{i,t} + \beta_6 Age_{i,t} + \beta_7 IND + \beta 8 YEAR + \varepsilon_{it}$$

where:

Perf = Performance of firm i at time t;
LEV = leverage of firm i at time t;
STD = Short-term debt of firm i at time t;
LTD = Long-term debt of firm i at time t;
Size = Size of firm i at time t;
PROF = Profitability of firm i at time t;

Growth	= Growth of firm i at time t;
Assets	= Asset structure of firm i a time t;
Age	= Age of firm i at time t;
Industry	= dummy variable of firm i;
Year	= dummy variable of year t;
ε	= the error term of firm i in year t;

4.4 Multicollinearity

Before the regression analysis will be performed, the independent and control variables will be tested on multicollinearity. If two or more independent variables are highly correlated with each other in a regression model, multicollinearity problems may arise. A correlation matrix displays the relationships between the variables. If two variables have a correlation at highest, the result will be 1, while there is no correlation between the two variables if the result is 0. However, to test whether the correlation does not significantly influence the results, the Variation Influence Factor (VIF) can be used. If the outcome of the VIF is 1, then there is a complete absence of multicollinearity. As values of the VIF are above the 5, then might multicollinearity problems occur (Daoud, 2017).

4.5 Robustness test

To check the results on robustness are the following approaches are used to test this. First, for the industry that has the largest share of influence will a subsample be created to test whether the results are in line with the results of the OLS regression analysis. Also, an OLS regression analysis will be performed with one-period lagged of independent and control variables.

5. Data

For this research, data of all companies listed on the Amsterdam Euronext is used over the period 2013 to 2018. These firms were active over the period and the required information, as annual data of financial reporting, is published. The financial reporting is obtained via the online database ORBIS. This database contains comprehensive information about firms in The Netherlands. However, financial firms (i.e., banks, and insurance companies) will be excluded from the sample due to the difference in financial structure (Phan, 2018).

The total number of companies on the Amsterdam Euronext is 133. However, as mentioned before, companies with a US Standard Industrial classification (US SIC) code between 6000-6799 will be excluded as they belong to the Finance, Insurance, and Real Estate industry. The total sample in this study amounts to 91 companies. Table 4 gives an overview of which companies and industries this sample consists of.

Table 4: Number of industries used in this regression analysis.

Industry	**Number of firms**	**In percentage**
Agriculture, Forestry and Fishing	1	1.10%
Construction	3	3.30%
Manufacturing	46	50.55%
Mining	3	3.30%
Retail Trade	3	3.30%
Services	21	23.08%
Transportation, Communications, Electric, Gas and Sanitary service	10	10.99%
Wholesale Trade	4	4,40%
Total	**91**	**100.00%**

6. Results

6.1 Descriptive statistics

The statistics of the variables: capital structure, firm performance, and control variables are all summarized in table 5. These results represent firms listed on the Amsterdam Euronext from 2013 to 2018. The dependent and control variables are winsorized if values excess the first and 99th percentiles, as in previous research of Ahn, Denis, & Denis (2006).

In this research, the dependent variables exist of the ROA, ROE, Tobin's Q, and Stock return. The ROA has a mean of 0.022. Research by Le & Phan (2017) found a ROA mean of 0.0632. For the ROE, Le & Phan, 2017 found a mean of 0.1030. The ROE mean is higher than the mean in this study (0.021). The Tobin's Q in this research is 1.307. Research by Le & Phan (2017) found a lower mean, namely 1.1518, and research by Dada & Ghazali (2016) found a higher Tobin's Q mean value of 1.72. Frijns, Gilbert, & Reumers (2008) found a Tobin's Q mean of 1.40 for firms listed on the Euronext Amsterdam in 2005. According to the stock return, in this research, a shareholder made an average return of 6.7%. In a study by Lamont, (2000) a shareholder made an average higher return of 9.4%. However, inflation was taken into account in the study of Lamont, (2000) as it covered a long period from 1949 to 1993.

The independent variables are short-term debt and long-term debt ratio. For this research, the mean of short-term debt is 0.322. Research by Le & Phan (2017) found a mean of 0.4109 and Ibhagui & Olokoyo (2018) found a mean of 0.4592. They also found a long-term debt ratio mean of 0.1083 and 0.2757 respectively. In this study, the long-term debt mean is 0.282. De Jong & Van Dijk (2007) found a short-term debt ratio mean of 0.435 for Dutch firms over the period 1996-1998. In this study, both the long-term debt ratio and the short-term debt ratio are close together. This is not the case in Le & Phan (2017), where firms are mainly financed by short-term debt rather than long-term debt. The mean of total debt ratio in this research is 0.605. Ibhagui & Olokoyo (2018) found a total debt mean of 0.735 and Le and Phan found a mean of 0.5192.

Control variables in this research are Size, Profitability, Growth, Asset structure, and Age. The first control variable is Size with a mean of 13.55, Whereas Ibhagui & Olokoyo (2018) found a mean of 6.1719. This is more than half as low in growth as in this study. The Profitability mean in this study of 0.085 corresponds better to the study by De Bie & De Haan (2007) where a mean of 0.105 is found. The mean of Growth in this study is 0.188, which is lower than firms in an emerging market as in the research of Le & Phan (2017) where a growth mean of 0.2454 was found. The mean of Asset structure in this research is 0.566. Research by De Bie & De Haan, (2007) found a mean of 0.296 which means that less than one of third of the total assets are fixed assets of firms between 1983 to 1997 in The Netherlands.

Table 5: Descriptive statistics

Variables	Valid	Std. Dev.	Mean	Min	Q1	Median	Q3	Max
Dependent variables								
ROA	501	0.123	0.022	(0.481)	(0.003)	0.041	0.071	0.437
ROE	489	0.508	0.021	(3.101)	0	0.096	0.161	1.814
Tobin's Q	468	1.658	1.307	0.085	0.498	0.892	1.367	11.127
Stock return	463	0.407	0.067	(0.771)	(0.146)	0.026	0.236	1.936
Independent variables								
STD	509	0.173	0.322	0.019	0.207	0.293	0.399	0.907
LTD	495	0.228	0.282	0	0.081	0.265	0.442	0.837
TD	496	0.210	0.605	0.050	0.473	0.620	0.756	1.391
Control variables								
Size (x €1 mln)	510	43,289	11,832	0.08	113	891	6,075	411,275
Prof.	481	0.325	0.085	(2.064)	0.051	0.104	0.204	0.615
Growth	491	1.091	0.188	(0.825)	(0.090)	(0.004)	0.131	8.945
Asset	510	0.228	0.556	0	0.396	0.580	0.730	0.974
Age (years)	533	1.063	3.581	0.541	2.833	3.434	4.466	5.925

This table reports the total valid observations (valid), standard deviation (STD), mean, minimum (Min), quartile 1 (Q1), median, quartile 3 (Q3) and maximum (Max) of all variables. The dependent and control variables are all winsorized at the 1st and 99th percentiles and before the logarithm change of variable Size and Age.

6.2 Correlation Analysis

The correlation coefficients between the variables are presented in table 6 which are used in the regression models. As expected, the ROA and ROE are highly correlated, with a correlation coefficient of 0.785, because both are firm performance measures that are using net income. However, Tobin's Q is also a performance measure but not correlated with the ROA or ROE. So, in this research seems that there is no significant relationship between Tobin's Q and ROA or ROE. Debt level is the independent variable that is divided into STD, LTD, and TD. The STD is only significantly and negatively correlated with Tobin's Q with a correlation coefficient of -1.41. For LTD there is no significant relationship between the performance variables but is insignificant negative correlated with ROA and ROE and positive insignificant correlated with Tobin's Q. The TD had a significant negative correlation with the ROA and Tobin's Q at -0.128 and -0.095 separately, whilst performance measure ROA is significant and negative correlated at 1% significance level and Tobin's Q at 5% significance level. Stock return is also a performance measure, however, there is no significant correlation with ROA, ROE, or Tobin's Q

The first control variable size is significantly related to the performance variables at the 1% significance level. Both ROA and ROE are positive significant (0.309 and 0.436), while Tobin's Q is negative significant related (-0.089). There seems no significant correlation between size and stock return. However, size is positively significant related to LTD and TD with 0.225 and 0.108 at the 5% significance level, while STD is negatively significant related with -1.62 at the 1% significance level. The second control variable profitability is positively significant related to both ROA and ROE for 0.506 and 0.436 respectively, and Tobin's Q is negatively significant related at -0.165. For stock return, there is no significant correlation with the second control variable. Besides, size and profitability are significantly positive correlated with 0.327 at the 1% significance level. The third variable growth is positive and negative related to the performance variables. Growth is negative but insignificantly related to Tobin's Q with -0.014 but is negative significantly related to the ROA and ROE with -0.129 and -0.104. There is a positive significant correlation with stock return with 0.216 at the 1% significance level. Regarding the debt level, growth is positively significant related to LTD and TD but there seems no significant correlation between growth and STD. In addition, it is found that there is no significant correlation between growth and the other control variables. The fourth variable asset structure is positively significant related to ROA, ROE, LTD, TD, Size, and Profitability, whilst there is a negative significant correlation with Tobin's Q and STD. The last control variable age, there is a positive significant correlation between ROA and profitability. This implies that older firms have higher ROA and higher profitability. All other variables are insignificant correlated with age. In the last column, the VIF is shown for each independent variable and control variable. The result of the VIF can be used to determine whether there are multicollinearity problems in the analysis. The results of table 5 show that the VIF values are below 5, so multicollinearity does not need to be considered

6.3 Regression analysis

Multivariate regression analysis is performed via SPSS to test and answer the stated three hypotheses. Table 7 shows the unstandardized coefficients with the associated significance level. For each firm performance measure, the methods were performed to test whether debt level has an impact on firm performance. In addition, control variables are also used in each method.

6.3.1 Debt ratios and firm performance

In table 7, the three different debt level measurements are shown. In column 1 the method with short-term debt is used, in column 2 the long-term debt method and, in column 3 the total debt method. Per method, all control variables and dummy variables are included. These 3 methods are used to test the regression with the four different performance measures. What is immediately apparent is that the debt level measures that have a significant regression all have a negative impact on firm performance. This result is consistent with the results from research by Dawar (2014), Yazdanfar & Öhman (2015), and Le & Phan (2017).

As shown in table 7, the short-term debt has a significant negative impact on the performance measure Tobin's Q with a coefficient of -2.412***. It seems that short-term debt has also a negative influence on ROA and Stock return, but there is no significant evidence for these results. Long-term debt has a significant negative influence on ROA and ROE with a coefficient of -0.066*** and -0.265** meaning that with every 1 percent increase in long-term debt, holding all other variables constant, the ROA and ROE decrease by 0.066% and 0.265%, respectively. Stock return seems also to be negative affected by LTD, but the coefficient is not significant. The last debt ratio, total debt ratio, has a significant negative influence on three performance measures ROA, ROE, and Tobin's Q with a coefficient of -0.081***, -0.205*, and -0.790***.

6.3.2 Control variables and firm performance

Each method includes the control variables of size, profitability, growth, asset structure, and age. The results show that the first control variable size has a significant positive effect on ROE and ROA on each method while Tobin's Q is significantly negative influenced by size on each method. On stock return, variable size has no effect. Research by Ibhagui & Olokoyo (2018) found similar results of size on Tobin's Q, but in their research, they found that size has a negative impact on both ROA and ROE which is not consistent with this research. The second control variable profitability has in this research a significant positive influence on ROA and ROE. This means that an increase in profitability causes a higher ROA and ROE. A mutation in profitability does not have a significant impact on Tobin's Q and Stock return, based on the results. The third control variable Growth has a significant impact on all methods for ROE and Stock return. As the results show, Growth has a negative influence on ROE, while Growth has a positive influence on Stock return. This means that the greater the growth of a company, the higher the stock return will be. Asset structure is the fourth control variable and has a significant negative impact on ROA and Tobin's Q. This means that firms

with more fixed assets relative to total assets perform worse than those with fewer fixed assets. The ROE and Stock return are not significantly influenced by asset structure. For the last control variable age, there is a positive significant relationship between ROA and age at 10% confidence level. For the other three performance measures, there seems to be a positive relationship, however, none of these outcomes is significant.

6.3.3 Hypothesis 1: Relationship between debt level and firm performance for Dutch firms

In H1. the following hypothesis was established: There is a positive relationship between debt level and firm performance for Dutch firms. However, the results of table 7 show that there is no positive relationship, but a negative relationship between debt level and firm performance. Namely, for ROA, ROE, and Tobin's Q, it appears that when the total debt increases, the performance measures decrease. This in turn implies that for every 1 percent growth in total debt ratio, holding all other variables constant, the ROA decreases by 0.081%, the ROE decreases by 0.205%, and Tobin's Q decreases by 0.790. With these results, hypothesis H1 can be rejected and that means that debt level has a negative impact on firm performance. The R-square of the total debt method on the performance measure is on a good value. The adjusted R-square of ROA is around 0.30 meaning that 30% of the change in ROA of Dutch listed firms can be explained by this model. The R-square of ROE and Tobin's Q are also sufficient with a value of 0.208 and 0.165. Compared to the study by Le & Phan (2017), the adjusted R-squared measures are consistent with this study.

The rejection of hypothesis H1 is in line with the pecking-order theory and the trade-off theory. As the pecking-order theory describes, firms prefer internal financing because debt financing involves additional costs such as transaction costs and issuing costs. In addition, information asymmetry is minimized through internal financing. The trade-off theory expects a higher probability of financial distress when increasing debt which will have a negative impact on firm performance. The results in this study support the trade-off theory.

6.3.4 Hypothesis 2: Relationship between short-term debt and firm performance for Dutch firms

To be more specific about debt level, the following hypothesis is conducted: H2: There is a positive relationship between short-term debt and firm performance. For H2. according to the results in table 7, for short-term debt there seems to be a negative relationship between ROA and stock return, however, both coefficients are not significant. Only Tobin's Q is negatively significant influenced by short-term debt. This means that for every 1 percent increase in short-term debt, Tobin's Q decreases by 2.412 units, holding all other variables constant. With these results, hypothesis H2 can be rejected and can be stated that short-term debt does not have a positive influence on firm performance. The adjusted R-square value of the short-term method is at a relatively good level. For instance, the ROA, ROE, Tobin's Q, and Stock return are at 0.288, 0.201, 0.227, and 0.204, respectively.

6.3.5 Hypothesis 3: Relationship between long-term debt and firm performance for Dutch firms

The following hypothesis H3 is conducted to test the relationship between long-term debt and firm performance: There is a positive relationship between long-term debt and firm performance. The results in table 7 show that long-term debt is negative significantly related to ROA and ROE. Stock return seems to be negatively influenced by long-term debt but is not significant. Only Tobin's Q seems to be positively influenced, but the relationship is not significant. However, as both ROA and ROE do show a negative significant relationship, Hypothesis H3 can be rejected which means that there is no positive relationship between long-term debt and firm performance. Due to the negative relationship between ROA and ROE, it can even be considered that there is a negative influence of long-term debt on the firm performance.

The results in table 7 imply that for every 1 percent growth in long-term debt, holding all other variables constant, the ROA decreases by 0.066% and the ROE decreases by 0.265%. The adjusted R-square is a relatively good measure, as the results show that the ROA, the ROE, Tobin's Q, and Stock return have an adjusted R-square of 0.295, 0.211, 0.151, and 0.167, respectively. This means that this method determines a 30% change in ROA, 21% in ROE, 15% in Tobin's Q, and 17% in Stock return.

Table 6: Correlation matrix

Correlations

	ROA	ROE	Tobin's Q	Stock return	STD	LTD	TD	Size	Prof.	Growth	Asset	Age	VIF
ROA	1												
ROE	.785**	1											
Tobin's Q	-0.010	-0.089	1.000										
Stock return	0.031	0.052	0.052	1.000									
STD	-0.057	-0.002	-.141**	-0.045	1.000								1.902
LTD	-0.085	-0.050	0.036	-0.042	-.489**	1.000							2.129
TD	-.128**	-0.065	-.095*	-0.059	.268**	.712**	1.000						2.864
Size	.309**	.316**	-.313**	0.021	-.162**	.225**	.108*	1.000					1.245
Prof.	.506**	.436**	-.165**	-0.063	-0.040	.148**	.098*	.327**	1.000				1.203
Growth	-.129**	-.104*	-0.014	.216**	-0.035	.110*	.090*	-0.053	-0.016	1			1.021
Asset	.103*	.143**	-.255**	0.063	-.402**	.470**	.186**	.407**	.277**	0.049	1		1.603
Age	.268*	0.198	-0.203	-0.184	0.062	-0.110	-0.090	0.188	.327**	-0.049	0	1	1.041

The definitions of the variables are given in table 2 **. Correlation is significant at the 0.01 level (2-tailed), *. Correlation is significant at the 0.05 level (2-tailed).

Table 7 OLS regression results based on the full sample to test the influence of debt level on firm performance

Variables	ROA			ROE			Tobin's Q			Stock return		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
STD	-0.049			0.069			-2.412***			-0.132		
	(-1.505)			(0.45)			(-5.962)			(-1.059)		
LTD		-0.066***			-0.265**			0.279			-0.096	
		(-2.657)			(-2.38)			(0.869)			(-0.94)	
TD			-0.081***			-0.205*			-0.790***			-0.124
			(-3.52)			(-1.942)			(-2.773)			(-1.384)
Size	0.006***	0.007***	0.006***	0.025***	0.028***	0.026***	-0.109***	-0.086***	-0.078***	0.008	0.008	0.008
	(2.773)	(3.319)	(3.18)	(2.751)	(3.059)	(2.89)	(-4.336)	(-3.307)	(-3.059)	(0.978)	(1.04)	(1)
Profitability	0.196***	0.195***	0.199***	0.635***	0.639***	0.646***	-0.03	-0.097	-0.054	0.036	0.049	0.056
	(11.483)	(11.515)	(11.765)	(8.593)	(8.717)	(8.789)	(-0.137)	(-0.436)	(-0.242)	(0.52)	(0.717)	(0.812)
Growth	-0.005	-0.005	-0.004	-0.044**	-0.041**	-0.04**	-0.025	-0.029	-0.015	0.076***	0.075***	0.076***
	(-1.197)	(-1.127)	(-1.014)	(-2.313)	(-2.175)	(-2.114)	(-0.467)	(-0.523)	(-0.274)	(4.447)	(4.414)	(4.446)
Asset structure	-0.106***	-0.061**	-0.079***	-0.169	-0.074	-0.163	-2.106***	-1.443***	-1.196***	-0.03	0.027	0.006
	(-4.103)	(-2.309)	(-3.297)	(-1.441)	(-0.625)	(-1.487)	(-6.617)	(-4.273)	(-3.898)	(-0.301)	(0.259)	(0.061)
Age	0.008*	0.007	0.007	0.017	0.013	0.015	0.034	0.026	0.013	0.005	0.004	0.003
	(1.685)	(1.391)	(1.375)	(0.78)	(0.589)	(0.696)	(0.564)	(0.424)	(0.219)	(0.228)	(0.18)	(0.146)
Constant	-0.008	-0.038	0.005	-0.316*	-0.298*	-0.191	4.438***	2.976***	3.32***	-0.298**	-0.208	-0.137
	(-0.195)	(-1.098)	(0.143)	(-1.829)	(-1.925)	(-1.179)	(9.349)	(6.836)	(7.376)	(-1.981)	(-1.625)	(-1.017)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	456	454	455	443	441	442	425	421	422	400	396	397
Adjusted R2	0.288	0.295	0.304	0.201	0.211	0.208	0.227	0.151	0.165	0.204	0.167	0.170

The definitions of the variables are given in table 2. ***. The unstandardized coefficient is significant at the 0.01 level (2-tailed), **. The unstandardized coefficient is significant at the 0.05 level (2-tailed), and *. The unstandardized coefficient is significant at the 0.10 level (2-tailed). The T-statistics are represent in the parenthesis.

6.4 Robustness tests

The robustness check will be performed to check whether the results meet the reliability and validity of the regression. In addition, this is a good opportunity to test the results as the results do not comply with the formulated hypotheses. Therefore, first, a check will be done on a subsample in Industry. As manufacturing has the largest share in Industry, a subsample with only manufacturing firms and a subsample without manufacturing industry will be created and the same analysis will be performed. The second robustness test will be performed by creating a subsample between large-sized firms and small-sized firms. The third robustness test is a one-period lagged regression analysis where the independent and control variables are lagged.

6.4.1 Robustness test subsample analysis

The first robustness check is carried out with a subsample to test the hypotheses. The results of this robustness check can be found in table 8 & table 9 in appendix 1. As revealed in the full sample regression, all three hypotheses were rejected. The results of the subsample regression with only manufacturing firms, and the subsample without the manufacturing firms also show that the three hypotheses must be rejected. A few results from both subsamples are not significant that are significant in the full sample. However, these results still show that debt level does not have a positive influence on firm performance, while the hypotheses stated that it did. Therefore, it can be stated that the robustness test reinforces the results from the full sample. In addition, what the subsample with only manufacturing does present is that profitability has a significant positive influence on Tobin's Q. These values were already significant for the ROA and ROE in the full sample, but not for Tobin's Q in the full sample and the subsample without manufacturing firms.

6.4.2 Robustness test large and small firms

The second robustness test is carried out between large and small firms. This regression analysis with a divided sample is performed to increase the validity of the results of the main OLS regression. The full sample is divided into large-sized and small-sized firms by using the median of Size. All firms that have the variable Size higher than the median of 13.69 are defined as large, and firms that have a lower value than the median are defined as small. The results of this robustness test can be found in table 10 & table 11 in appendix 1. Results in table 10 of subsample large-sized firms show a significant negative impact of LTD and TD on ROA. The ROE is significantly negative by STD on ROE and Tobin’s Q is significantly negative influenced by STD and TD. Subsample small-sized firms in table 11 show almost no significant results. Only STD has a significant negative impact on Tobin’s Q, while LTD has a significant positive impact on Tobin’s Q.

6.4.2 Robustness test lagged independent and control variables

The third robustness test is the regression with lagged independent and control variables. The results of this analysis are shown in table 12 in appendix 1. The regression with lagged independent

and control variables is a commonly used robustness test in econometrics models to reduce revered causality. This technique shows that independent and control variables influence the dependent variable and not the other way around. The analysis with the lagged independent and control variables is consistent with the results of the non-lagged regression analysis. In addition, the lagged regression analyses resulted in less significant results for both ROA, ROE, Tobin's Q, and Stock return. Only LTD has still a significant negative effect on ROA, while for STD and TD there are no more significant results. This third robustness test also shows that the hypotheses can be rejected since it is not proven that debt levels have a positive influence on firm performance. According to the results of the lagged analysis can also be concluded that there is no reverse causality as there still seems to be a negative influence of total debt on firm performance, and not the other way around.

7. Conclusion

7.1 Summary

The purpose of this research is to examine the relationship between debt level on firm performance of Dutch listed firms. Firms in the Netherlands have endured a financial debt crisis between the period 2011 to 2013 which has caused that the capital structure had to be organized differently with less use of debt. Therefore, this study examines the relationship between debt level and firm performance based on Dutch data over the period 2013 to 2018 to determine whether firms in the Netherlands are making sufficient use of debt that influences their firm performance. To answer the research question, "Does debt level affect the business performance of Dutch companies?" three hypotheses were formulated to draw a conclusion on the research question.
Hypothesis 1 expects a positive influence of debt level on firm performance. However, the results in table 7 show that the influence of debt level on firm performance is rather negative for three of the four performance measures. So, this implies that debt level has a negative influence on firm performance, and hypothesis 1 is rejected. These results contradict the research of Abdullah & Tursoy (2019) because they found a positive relationship between capital structure and firm performance in a developed market based on listed firms in Germany.

Hypothesis 2 expects a positive influence of short-term debt on firm performance. This is in line with the research of Forte &Tavaras (2019) who found a positive impact for countries with high values variables rights & credit. The results of table 7, however, show that short-term debt has no positive influence on the firm performance of Dutch listed firms. In addition, Short-term debt has a significant negative influence on Tobin's Q. Nevertheless, there is no positive influence between short-term debt and firm performance and thus hypothesis 2 is rejected.

Hypothesis 3 expects a positive influence of long-term debt on firm performance. Results in table 7 reveal the opposite, showing that long-term debt has a negative significant impact on ROA and ROE. These results are in line with the results of Dawar (2014) and Le & Phan (2017) who also found a negative relationship between long-term debt and firm performance. Therefore, hypothesis 3 is rejected because it has a significant negative influence on two performance measures.

To summarize, results show that short-term debt, long-term debt, and total debt have a negative impact on certain performance measures. For example, ROA, ROE, and Tobin's Q are significantly negative influenced by the total debt. Tobin's Q is significantly negative influenced by STD and LTD has a significant negative impact on ROA and ROE.

In addition to the debt level measures, control variables were also tested to see what influence they have on the performance measures. The results show that the control variable Size has a significant positive influence on ROA and ROE and a significant negative influence on Tobin's Q. The

second control variable Profitability has also a significant positive influence on ROA and ROE. The third control variable Growth has a negative influence on ROE. However, Stock return is significantly positively affected by growth. The fourth control variable asset structure has a negative influence on both ROA and Tobin's Q. The last control variable Age does only influence ROA positively significant.

7.2 Limitations and recommendations

This study has some limitations which might have had some impact on the results. First, the sample size of 91 listed firms is relatively low to the total number of firms in the Netherlands. Second, the sample consists only of firms that are publicly listed, and not privately held firms. The difference between these two types of firms is that publicly listed firms must comply with certain laws and regulations, which privately held firms do not have to. Therefore, the results of this study apply only to publicly listed firms. Another limitation in this research is that the data could suffer from the survivorship bias because firms that did not exist for the whole sample period were excluded. A third limitation of this research is that the results are only based on quantitative data and no qualitative data.

A recommendation is to research privately held firms about the influence of debt level and firm performance and then compare these results. Another recommendation is to collect qualitative data through interviews with both firm managers and lenders that can give different results on the influence of debt levels on firm performance.

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Appendixes

Appendix 1 - Robustness test

Table 8 ***OLS regression results based on a subsample of manufacturing firms only to test the influence of debt level on firm performance.***

Variables	ROA			ROE			Tobin's Q			Stock return		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
STD	-0.093			0.085			-1.518***			-0.142		
	(-1.624)			-0.315			(-3.057)			(-0.782)		
LTD		-0.042			-0.291*			0.104			-0.083	
		(-1.16)			(-1.695)			-0.374			(-0.673)	
TD			-0.072**			-0.236			-0.142			-0.110
			(-2.097)			(-1.427)			(-0.545)			(-0.959)
Size	0.007**	0.007**	0.007**	0.035***	0.036***	0.036***	-0.048**	-0.023	-0.022	0.008	0.010	0.010
	-2.454	-2.525	-2.515	-2.603	-2.691	-2.660	(-1.997)	(-1.103)	(-1.085)	-0.899	-1.081	-1.072
Profitability	0.21***	0.207***	0.209***	0.716***	0.716***	0.722***	0.76***	0.697***	0.712***	0.165	0.165	0.168
	-7.914	-7.768	-7.890	-5.775	-5.800	-5.840	-2.778	-2.995	-3.059	-1.606	-1.599	-1.626
Growth	0.001	0.001	0.001	0.010	0.011	0.011	-0.009	-0.010	-0.009	0.02***	0.02***	0.021***
	(0.681)	(0.727)	(0.835)	(1.2)	(1.38)	(1.375)	(-0.646)	(-0.841)	(-0.746)	(3.687)	(3.711)	(3.743)
Asset structure	-0.133***	-0.089**	-0.096**	-0.292	-0.197	-0.289*	-2.119***	-1.406***	-1.335***	-0.218*	-0.126	-0.142
	(-3.354)	(-2.185)	(-2.56)	(-1.567)	(-1.042)	(-1.653)	(-6.235)	(-4.622)	(-4.701)	(-1.692)	(-0.92)	(-1.121)
Age	0.006	0.005	0.005	0.033	0.031	0.034	-0.022	-0.047	-0.048	-0.006	-0.010	-0.010
	-1.054	-0.799	-0.847	-1.188	-1.115	-1.231	(-0.43)	(-1.069)	(-1.106)	(-0.311)	(-0.491)	(-0.478)
Constant	0.001	-0.04	-0.007	-0.526**	-0.497**	-0.394*	3.158***	2.037***	2.096***	0.157	0.071	0.122
	-0.013	(-0.85)	(-0.142)	(-2.107)	(-2.252)	(-1.698)	-6.971	-5.907	-5.785	-0.918	-0.462	-0.744
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	232	231	231	230	229	229	222	220	220	204	202	202
Adjusted R2	0.265	0.26	0.271	0.183	0.194	0.191	0.2	0.135	0.135	0.172	0.171	0.173

The definitions of the variables are given in table 2. ***. The unstandardized coefficient is significant at the 0.01 level (2-tailed), **. The unstandardized coefficient is significant at the 0.05 level (2-tailed), and *. The unstandardized coefficient is significant at the 0.10 level (2-tailed).
The T-statistics are represent in the parenthesis.

Table 9 ***OLS regression results based on a subsample without manufacturing firms to test the influence of debt level on firm performance.***

Variables	ROA			ROE			Tobin's Q			Stock return		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
STD	-0.116***			0.103			-3.466***			-0.065		
	(-2.997)			-0.246			(-5.44)			(-0.376)		
LTD		-0.002			-0.536			1.901***			-0.243	
		(-0.041)			(-1.389)			-2.745			(-1.32)	
TD			-0.085**			-0.355			-1.155**			-0.185
			(-2.57)			(-1.03)			(-2.056)			(-1.288)
Size	0.002	0.004	0.006*	0.040	0.059*	0.049	-0.143***	-0.161***	-0.060	-0.006	-0.001	-0.005
	-0.766	-1.079	-1.900	-1.316	-1.765	-1.552	(-2.928)	(-2.732)	(-1.079)	(-0.472)	(-0.05)	(-0.404)
Profitability	0.175***	0.169***	0.173***	0.725***	0.714***	0.737***	-0.107	-0.425	-0.477	-0.12*	-0.050	-0.036
	-8.468	-8.058	-8.369	-3.643	-3.617	-3.731	(-0.452)	(-1.237)	(-1.381)	(-1.865)	(-0.581)	(-0.419)
Growth	-0.004*	-0.003	-0.003	-0.037*	-0.034*	-0.036*	-0.006	-0.010	0.003	0.014	0.015*	0.014
	(-1.69)	(-1.558)	(-1.461)	(-1.792)	(-1.678)	(-1.743)	(-0.183)	(-0.291)	(0.095)	(1.481)	(1.657)	(1.588)
Asset structure	-0.138***	-0.093**	-0.08**	0.043	0.289	0.058	-1.89***	-1.414**	-0.210	0.071	0.170	0.071
	(-3.895)	(-2.318)	(-2.423)	(0.116)	(0.746)	(0.174)	(-3.259)	(-2.063)	(-0.359)	(0.465)	(0.973)	(0.485)
Age	0.012*	0.012*	0.010	-0.015	-0.028	-0.020	0.132	0.172	0.099	0.011	0.004	0.006
	-1.788	-1.729	-1.438	(-0.204)	(-0.392)	(-0.272)	-1.098	-1.343	-0.766	-0.353	-0.122	-0.182
Constant	0.025	-0.063	-0.038	-0.590	-0.749	-0.437	5.08***	3.124***	2.538***	0.266	0.183	0.355*
	-0.474	(-1.279)	(-0.821)	(-1.12)	(-1.577)	(-0.962)	-5.797	-3.622	-3.102	-1.114	-0.837	-1.721
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	219	219	219	208	208	208	198	197	197	191	190	190
Adjusted R2	0.295	0.265	0.288	0.068	0.076	0.072	0.138	0.041	0.025	0.126	0.126	0.126

The definitions of the variables are given in table 2. ***. The unstandardized coefficient is significant at the 0.01 level (2-tailed), **. The unstandardized coefficient is significant at the 0.05 level (2-tailed), and *. The unstandardized coefficient is significant at the 0.10 level (2-tailed).
The T-statistics are represent in the parenthesis.

Table 10 ***OLS regression results based on a subsample of large firms to test the influence of debt level on firm performance.***

Variables	ROA			ROE			Tobin's Q			Stock return		
	-1	-2	-3	-1	-2	-3	-1	-2	-3	-1	-2	-3
STD	-0,066			0,454**			-1,756***			-0,091		
	(-1,622)			(2,395)			(-5,712)			(-0,479)		
LTD		-0,062**			-0,116			-0,259			-0,228	
		(-2,077)			(-0,826)			(-1,071)			(-1,582)	
TD			-0,084***			0,107			-0,956***			-0,228*
			(-3,063)			(0,831)			(-4,648)			(-1,756)
Size	0,005	0,003	0,004	0,005	0,009	0,011	-0,06**	-0,082***	-0,078***	0,003	0	0,003
	(1,23)	(0,886)	(1,063)	(0,282)	(0,523)	(0,599)	(-2,171)	(-2,775)	(-2,772)	(0,175)	(0,02)	(0,152)
Profitability	0,154***	0,184***	0,179***	0,383**	0,368*	0,307	1,271***	1,85***	1,856***	-0,089	-0,005	-0,035
	(3,721)	(4,369)	(4,394)	(2,037)	(1,891)	(1,606)	(3,915)	(5,295)	(5,763)	(-0,457)	(-0,026)	(-0,178)
Growth	-0,001	-0,001	-0,001	-0,001	0	-0,001	0,005	0,004	0,007	0,005	0,006	0,006
	(-0,66)	(-0,593)	(-0,55)	(-0,093)	(-0,012)	(-0,104)	(0,492)	(0,343)	(0,603)	(0,723)	(0,771)	(0,787)
Asset structure	-0,154***	-0,111***	-0,129***	-0,279*	-0,367**	-0,411**	-1,48***	-0,921***	-0,946***	0,232	0,338*	0.269
	(-4,16)	(-3,056)	(-3,747)	(-1,667)	(-2,188)	(-2,556)	(-5,688)	(-3,326)	(-3,742)	(1,312)	(1,949)	(1.623)
Age	0,003	0,006	0,006	-0,018	-0,018	-0,024	-0,004	0,016	0,031	-0,042	-0,036	-0.039
	(0,638)	(1,076)	(1,055)	(-0,749)	(-0,741)	(-0,97)	(-0,1)	(0,382)	(0,788)	(-1,493)	(-1,263)	(-1.375)
Constant	0,071	0,053	0,085	0,149	0,294	0,236	3,179***	2,599***	2,966***	-0,191	-0,201	-0.122
	(1,205)	(0,939)	(1,477)	(0,553)	(1,1)	(0,87)	(7,482)	(5,87)	(6,901)	(-0,688)	(-0,75)	(-0.445)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	237	237	237	229	229	229	222	222	222	204	204	204
Adjusted R2	0.16	0.167	0.185	0.071	0.124	0.049	0.416	0.326	0.388	0.226	0.161	0.163

The definitions of the variables are given in table 2. ***. The unstandardized coefficient is significant at the 0.01 level (2-tailed), **. The unstandardized coefficient is significant at the 0.05 level (2-tailed), and *. The unstandardized coefficient is significant at the 0.10 level (2-tailed).
The T-statistics are represent in the parenthesis.

Table 11 ***OLS regression results based on a subsample of small firms to test the influence of debt level on firm performance.***

Variables	ROA			ROE			Tobin's Q			Stock return		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
STD	-0.059			0.175			-2.848***			-0.048		
	(-1.214)			(0.381)			(-3.878)			(-0.269)		
LTD		-0.006			-0.567			1.607**			-0.085	
		(-0.143)			(-1.581)			(2.464)			(-0.515)	
TD			-0.039			-0.413			-0.182			-0.039
			(-1.045)			(-1.211)			(-0.31)			(-0.274)
Size	0.02***	0.022***	0.021***	0.151***	0.156***	0.144***	-0.076	0.076	0.09	0.011	0.009	0.007
	(3.298)	(3.636)	(3.576)	(2.924)	(3.083)	(2.86)	(-0.856)	(0.856)	(0.994)	(0.516)	(0.406)	(0.327)
Profitability	0.196***	0.192***	0.193***	0.68***	0.666***	0.698***	0.013	-0.333	-0.382	-0.091	-0.002	0.003
	(9.173)	(9.02)	(9.114)	(3.74)	(3.703)	(3.885)	(0.048)	(-1.019)	(-1.151)	(-1.414)	(-0.025)	(0.037)
Growth	0	0	0	-0.012	-0.007	-0.008	-0.009	-0.025	-0.012	0.025***	0.027***	0.027***
	(-0.084)	(-0.055)	(0.063)	(-0.675)	(-0.429)	(-0.469)	(-0.309)	(-0.823)	(-0.389)	(3.508)	(3.669)	(3.635)
Asset structure	-0.088**	-0.07	-0.067*	0.282	0.463	0.271	-2.564***	-1.848***	-1.14*	-0.078	-0.089	-0.121
	(-2.089)	(-1.571)	(-1.659)	(0.756)	(1.214)	(0.769)	(-4.181)	(-2.711)	(-1.784)	(-0.531)	(-0.532)	(-0.792)
Age	0.015*	0.016**	0.015*	0.059	0.055	0.051	-0.033	-0.012	-0.015	0	-0.008	-0.008
	(1.855)	(2.008)	(1.882)	(0.85)	(0.798)	(0.73)	(-0.257)	(-0.093)	(-0.119)	(-0.006)	(-0.266)	(-0.282)
Constant	-0.189**	-0.244***	-0.232**	-2.375***	-2.361***	-1.968***	4.701***	1.14	1.05	0.038	0.151	0.195
	(-1.978)	(-2.848)	(-2.552)	(-2.889)	(-3.262)	(-2.623)	(3.355)	(0.882)	(0.758)	(0.111)	(0.472)	(0.574)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	218	217	217	213	212	212	202	199	199	195	192	192
Adjusted R2	,384	,379	,383	,148	,157	,153	,062	,013	-0.2	,147	,154	,154

The definitions of the variables are given in table 2. ***. The unstandardized coefficient is significant at the 0.01 level (2-tailed), **. The unstandardized coefficient is significant at the 0.05 level (2-tailed), and *. The unstandardized coefficient is significant at the 0.10 level (2-tailed).
The T-statistics are represent in the parenthesis.

Table 12 OLS regression results with lagged independent and control variables to test the influence of debt level on firm performance

Variables	ROA			ROE			Tobin's Q			Stock return		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
STD	0.003			-0.048			0.537			-0.113		
	(0.069)			(-0.219)			(0.942)			(-0.798)		
LTD		-0.054*			-0.182			-0.353			-0.02	
		(-1.708)			(-1.079)			(-0.756)			(-0.184)	
TD			-0.043			-0.165			-0.07			-0.109
			(-1.457)			(-1.056)			(-0.17)			(-1.125)
Size	0.012***	0.012***	0.012***	0.042***	0.046***	0.045***	-0.055	-0.051	-0.055	-0.003	0.008	0.008
	(4.726)	(4.701)	(4.577)	(3.124)	(3.323)	(3.265)	(-1.489)	(-1.33)	(-1.43)	(-0.308)	(0.914)	(0.926)
Profitability	0.066***	0.073***	0.075***	0.074	0.062	0.068	-0.261	-0.417	-0.418	0.036	-0.156**	-0.15**
	(4.144)	(3.703)	(3.793)	(0.881)	(0.592)	(0.648)	(-1.131)	(-1.417)	(-1.415)	(0.665)	(-2.363)	(-2.27)
Growth	-0.001	-0.001	-0.001	0	0.002	0.002	-0.031	-0.03	-0.031	0.002	0.003	0.003
	(-0.865)	(-0.736)	(-0.734)	(0.049)	(0.162)	(0.166)	(-1.16)	(-1.122)	(-1.15)	(0.368)	(0.411)	(0.481)
Asset structure	-0.1***	-0.078**	-0.096***	-0.158	-0.04	-0.096	0.346	0.447	0.291	-0.196*	-0.047	-0.042
	(-3.139)	(-2.279)	(-3.08)	(-0.935)	(-0.222)	(-0.58)	(0.753)	(0.905)	(0.65)	(-1.743)	(-0.404)	(-0.389)
Age	0.001	0	0	0.03	0.026	0.026	-0.161*	-0.171*	-0.167*	0.014	0.013	0.012
	(0.242)	(0.022)	(0.076)	(0.943)	(0.796)	(0.809)	(-1.742)	(-1.833)	(-1.786)	(0.641)	(0.6)	(0.56)
Constant	-0.08*	-0.077*	-0.053	-0.436*	-0.51**	-0.42*	2.1***	2.319***	2.38***	-0.062	-0.306**	-0.248
	(-1.679)	(-1.765)	(-1.157)	(-1.74)	(-2.222)	(-1.745)	(3.027)	(3.669)	(3.57)	(-0.368)	(-2.076)	(-1.595)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	428	425	425	419	416	416	394	391	391	395	392	392
Adjusted R2	0.109	0.109	0.107	0.017	0.021	0.02	0.118	0.12	0.119	0.111	0.119	0.122

The definitions of the variables are given in table 2. ***. The unstandardized coefficient is significant at the 0.01 level (2-tailed), **. The unstandardized coefficient is significant at the 0.05 level (2-tailed), and *. The unstandardized coefficient is significant at the 0.10 level (2-tailed).
The T-statistics are represent in the parenthesis.