

How does capital structure affect firm's profitability? Evidence from non-financial companies listed on the Italian Stock Exchange during the period 2013 to 2018

Marino Tatone

Dissertation submitted in partial fulfilment of the requirement
for the degree of Master of Business Administration
of the University of Wales Trinity Saint David, London campus

School of Business

February 2020

Module code: LCMB7020

Supervisor: Jia Miao

Abstract

The purpose of the dissertation is to empirically establish the relationship between capital structure and firm's profitability. The investigation has been done using panel data of 23 non-financial companies listed on the Financial Times Stock Exchange – Milano Indice di Borsa (FTSE - MIB) during the period from 2013 to 2018. The analysis uses two profitability measures, including Return on assets (ROA) and Return on equity (ROE) as dependent variables. Capital structure measures, including short-term debt ratio (STDR), long-term debt ratio (LTDR), and total debt ratio (TDR) have been implemented as independent variables. Firm's size and growth rate of total assets have been implemented as control variables.

Since the regression model includes three debt-equity ratios (STDR, LTDR, and TDR), to avoid the multicollinearity problem, these variables have been implemented separately. As a result, six regression models in total have been studied.

Empirical results show that capital structure affects firm's profitability. Specifically, there is a negative relationship between i) STDR and firm's profitability; ii) LTDR and firm's profitability and iii) TDR and firm's profitability. Size has a positive relationship with profitability, whereas no significant relationship has been found between growth rate of total assets and profitability. Besides, between short and long-term debt, it has been found that Italian companies should issue a higher portion of long-term debt in their capital structure to increase their profitability.

The study intends to support a financial manager to define an optimal capital structure which is essential to improve the firm's profitability. The study also intends to support shareholders to have a better understanding of capital structure and firm's profitability indicators of corporations in which

they would like to invest. Future research should increase the sample size and implement more variables, to better understand the variability in a firm's profitability.

Acknowledgements

I would like to express my gratitude to all those who supported me over the last year while doing my MBA with University of Wales Trinity Saint David.

First of all, I would like to thank my Supervisor, Dr Jia Miao for his contributions. He provided valuable input and excellent guidance to this study.

I would like to thank my mum, my dad and my sister who always supported me. I could not get anything done without you. I would like to thank my grandparents. I have missed you all these two years!

I would like to thank my managers Warley, Federica, Joao, Gerard, Arianna, Quicke, Carmen, Riccardo and Shan. I also would like to thank my colleagues and friends Fabio, Alessia, Moana, Sabrina, Snezhana, Paulette, Silvia, Fran, Francesca and Ajda. I want you guys to know how much I appreciate you and your friendship. I would like to thank my special friends Stefania and Marianna. I am blessed to have a friend like you in my life. I would like to thank my ex-colleagues and friends Serena, Matteo, Tommaso, Raffaella and Ilaria. I miss you guys!

Lastly, I would like to thank myself. For the first time in my life, I am finally feeling proud of myself. Ad majora!

List of Figures

Figure 1: Conceptual Framework	38
Figure 2: Trend in ROA and ROE of 23 non-financial firms listed on the FTSE MIB – 2013-2018.	42

List of Tables

Table 1: Literature review summary	25
Table 2: Descriptive Statistics	40
Table 3 Correlation Matrix	44
Table 4: VIF test	46
Table 5: OLS results – ROA and ROE – STDR, Size and Growth	47
Table 6: OLS results – ROA and ROE – LTDR, Size and Growth	48
Table 7: OLS results – ROA and ROE – TDR, Size and Growth	50
Table 8: Summary hypotheses	55

List of Acronyms

FTSE	Financial Times Stock Exchange
LTDR	Long-term debt ratio
M&M	Modigliani and Miller
MIB	Milano Indice di Borsa
ROA	Return on asset
ROE	Return on equity
SMEs	Small and medium-sized enterprises
STD	Short-term debt ratio
TDR	Total debt ratio
VIF	Variance Inflation Factor

Tables of Contents

Abstract	ii
Acknowledgements	iv
List of Figures	v
List of Tables	vi
List of Acronyms	vii
Tables of Contents	viii
Chapter one: Introduction	2
1.1 Introduction	2
1.2 Capital structure concept	4
1.2.1 Equity financing	5
1.2.2 Debt financing	6
1.2.3 Hybrid instruments	7
1.3 Firm's profitability concept	7
1.4 Background of the study	8
1.5 Significance of the study	9
1.6 Key Objectives	10
1.6.1 General Objective	10
1.6.2 Specific Objectives	10
1.7 Structure of the Dissertation	11

Chapter two: Literature review	12
2.1 Introduction	12
2.2 Theoretical framework	12
2.2.1 Modigliani and Miller (M&M) Theory.....	13
2.2.2 Trade-Off theory	14
2.2.3 Pecking Order Theory	15
2.2.4 Agency cost Theory	16
2.2.5 Market timing Theory	17
2.3 Some empirical studies.....	17
2.3.1 Positive relationship between capital structure and firm's profitability	19
2.3.2 Negative relationship between capital structure and firm's profitability.....	21
2.3.3 Capital structure and firm's profitability – Italy	23
2.4 Summary	25
Chapter three: Data, Variables, Hypotheses and Research methodology	28
3.1 Introduction	28
3.2 Data	28
3.2.1 Panel data	29
3.3 Choice of variables.....	30
3.3.1 Independent variables	30
3.3.2 Dependent variables.....	31
3.3.3 Control Variables	32

3.4	Hypotheses	33
3.4.1	Capital structure and firm's profitability	33
3.4.2	Short term debt and firm's profitability	34
3.4.3	Long-term debt and firm's profitability	35
3.4.4	Total debt and firm's profitability	35
3.4.5	Firm's size and firm's profitability – Growth and firm's profitability	36
3.5	Methodology of the Study	36
Chapter four: Empirical results and discussion of the results		39
4.1	Introduction	39
4.2	Descriptive statistics	40
4.3	Multicollinearity	43
4.3.1	Correlation matrix	44
4.3.2	VIF test	45
4.4	Empirical results	46
4.4.1	Short-term debt	47
4.4.2	Long-term debt	48
4.4.3	Total debt	50
4.5	Discussion	51
4.5.1	Does capital structure affect firm's profitability?	51
4.5.2	Does short-term debt affect firm's profitability?	52
4.5.3	Does long-term debt affect firm's profitability?	52

4.5.4	Does total debt affect firm's profitability?.....	53
4.5.5	Does firm's size affect firm's profitability?.....	54
4.5.6	Does growth rate of asset affect firm's profitability?	54
4.6	Summary hypotheses.....	55
4.7	Short or long-term debt?.....	55
Chapter five: Conclusions, limitations and recommendations.....		57
5.1	Introduction	57
5.2	Conclusions	57
5.3	Limitations of the study and Recommendations for Future research.....	60
References.....		61

Chapter one: Introduction

1.1 Introduction

Financial managers must understand the importance of profitability and develop strategies to retain a competitive advantage in the long run which is essential for survivability and prosperity for any firm. Firm's profitability could be affected by many factors (such as reputation, economic growth, exchange rate, cost of production and so on); however, capital structure is one of the drivers of profitability (Nguyen and Nguyen, 2015). "Capital structure decision poses a lot of challenges to firms" (Modugu, 2013 p. 14). In the field of corporate finance, capital structure refers to the various options used by a business in financing its assets (Bhaduri, 2002). To put it differently, capital structure is the mixture between debt and equity issued by a firm to finance its operations, investments and growth. The debt-equity balance is one of the most crucial decisions for business organisations because of the need to maximise the firm's profitability as well as the ability to deal with its competitive environment (Gill, Biger, and Mathur, 2011). The debt and equity mixture, in effect, determines the cost of the capital of a firm. It is generally known that the value of a company can be maximised by minimising its cost of capital (Tailab, 2014). As a rule of thumb, the optimal capital structure is the best mix between debt and equity that minimises the cost of capital and maximises the market value of a business as well as the shareholders' wealth.

The association between capital structure and a firm's profitability of corporations is a subject that has attracted attention and interest of financial managers since the 1950's, when, in 1958, Modigliani and Miller (M&M) published their theorem, also known as "*Capital structure irrelevance principle*" in the journal "The American Economic Review". In their first paper, where they did not consider the effect of taxes in their theorem, Modigliani and Miller (1958) stated that the value of an unlevered (a

firm that has no debt in its capital structure) firm is equal to the value of a levered firm (a firm that has debt in its capital structure). That is, there is not an optimal leverage ratio as debt and equity are perfectly substitute. The first M&M's theorem is based on restrictive and unrealistic assumptions and in a perfect capital market condition. In their following paper, Modigliani and Miller (1963) considered the effect of taxes, and they argued that firms that have a higher debt level in the capital structure (levered firms) are more valued due to the tax shield effect.

Later on, different theories came up, contradicting those proposed by Modigliani and Miller (1958), suggesting that the debt-equity mixture might be relevant to a firm's profitability. The Trade-Off theory suggests that firms should seek the debt level that minimizes the possibility of bankruptcy while simultaneously maximizes the advantage lead from debt tax-shield (Myers, 1984). Therefore, an optimal leverage level is achieved by offsetting the benefit arising from interest payments and costs of issuing debt (Jahanzeb et al., 2014). The Pecking Order theory, delivered by Myers and Majluf (1984) and Myers (1984), on the other hand, advises that the cost of financing increases with asymmetric information. Firms, therefore, should prioritize the source of financing first from internal funds (e.g., retained earning), second from debt and third from equity. The Pecking Order theory, however, does not take into consideration an optimal leverage level (Meyers 1984; Mostafa and Boregowda, 2014). The agency cost theory, delivered by Jensen and Meckling (1976), argues that the optimal leverage level involves a trade-off between the costs related to debt issues and the costs related to equity issues. The most recent capital structure theory, the Market Timing theory, states that companies would issue new stock when the stock price is over-valuated and buy back stock when the stock price is under-valuated (Baker and Wurgler, 2002). Although considerable efforts have been made and several theories have been advanced in interpreting the relationship between capital structure and firm's profitability, researchers and economists have not able to find a model of capital structure valid for any organization.

In the last decade, in fact, many economists have analysed the empirical relationship between leverage and firm's profitability all over the world. There are findings stating that a negative relationship exists between leverage (debt level) and profitability, such as Titman and Wessels (1988); Omondi and Muturi (2013); Nguyen and Nguyen (2015); and Vuong, Vu and Mitra (2017). According to these findings, an unlevered firm is considered more profitable. However, the impact of leverage on profitability is still argued for. Other findings, in fact, state a positive relationship, such as Roden and Lewllen (1995); Holz (2002); Hadlock and James (2002); Robertson and Dessì (2003); Abor (2005); and Gill, Biger and Mathur (2011). A positive relationship between leverage and profitability means that levered firms are considered more profitable.

The aim of the dissertation will be to analyse if capital structure affects firm's profitability. The investigation will employ panel data of 23 non-financial companies listed on the Financial Times Stock Exchange (FTSE) – Milano Indice di Borsa (MIB) during the period 2013 to 2018. ROA and ROE will be implemented as the dependent variables. STDR, LTDR and, TDR will be implemented as the independent variables. Firm's size and growth rate of assets will be the control variables. To avoid the multicollinearity problem, the three debt-equity ratios (STDR, LTDR, and TDR) have been implemented separately. Therefore, in total, six regression models will be analysed.

1.2 Capital structure concept

Capital structure refers to the various options used by a business in financing its assets (Bhaduri, 2002). Specifically, a firm's capital structure refers to the proportion of equity and debt maintained by a firm (Rai and Danilevskaia, 2005). Those debt and equity are generally shown on the right-hand side of the firm's balance sheet. How a firm chooses to raise its capital might depend on numerous

factors, including the economy and the future perception of it, as well as the characteristic of a company. The way capital is raised in a business can have an impact on the success and profitability of a company (Modugu, 2013). Besides, according to Rai and Danilevskaia (2005), the depth of legal protection is another factor that can influence the choice of the proportion of debt and equity. Ordinarily, firms finance their assets, daily operations and their investment projects by three main sources of financing, 1) retained earnings (internal equity), 2) debt (debt capital), and 3) new shares (external equity). Commonly, since equity charges no fixed costs, at the start-up stage of a company, equity is preferred than debt; after that stage, and in the remainder of the business cycle, debt financing becomes the more used financing source (Nguyen and Nguyen, 2015).

A company that has in its capital structure just equity is recognised as an unlevered company. Contrary, a company that has in its capital structure debt is considered a levered firm. Debt and equity financing are diverse with regard to the way companies receive capital, as well as the way companies, return money back to the lender. These differences are shown below (1.2.1, 1.2.2 and 1.2.3).

1.2.1 Equity financing

When managers decide to cover the company's activities by equity, they can retain the company's earnings or issue new shares. The main two types of shares are common shares and preferred shares. The main differences between common and preferred shares are, 1) voting rights, 2) dividend policy and 3) liquidation preferences. Commonly, common shareholders are given voting rights (proportional to the number of shares owned). Preferred shareholders, generally, do not have voting rights. The price of securities, for both common and preferred shareholders, is based on the company's earnings. Preferred shareholders are normally guaranteed a fixed dividend in perpetuity.

In a liquidation case, preferred shareholders have a greater claim than common shareholders to the company's assets. However, in case of bankruptcy or in the event of liquidation, preferred shareholders' claims are subordinated to those of debtholders, and debtholders are more likely to continue receiving income even during hard times than preferred shareholders (Brighman and Daves, 2007, p 689). Equity financing is flexible as a firm can decide how much to initially charge for each share, how many new shares to issue as well as when to issue them. Firms can issue further shares to raise capital after the initial public offering (IPO). Unlike bonds, the stock shares are not debt. That is, firms do not have to be repaid. In other words, managers can re-invest the company's retained earnings. Equity does not require fix costs, then, as previously mentioned, at start-up stage of a firm equity is preferred than debt.

1.2.2 Debt financing

On the other hand, when managers decide to cover the company's activities by debt, they can choose between private debt and public debt. More precisely, managers can raise the company's capital by borrowing from the bank (bank loan), financial institution or by issuing bond. Debtholders will receive a fixed rate of interest regardless of firm's performance and as preferred shareholders, they have no voting rights. The main advantage of issuing debt is that debt interest that accrues on debt is commonly tax-deductible, offering powerful savings to the shareholders; however, a higher portion of debt leads to an increase in the likelihood of bankruptcy, and in that case, shareholders more likely will demand a higher rate of return (Rai and Danilevskaia, 2005). After the start-up stage of a firm, debt is generally preferred than equity due to tax-shield effect (interest expense on debt are tax-deductible).

1.2.3 Hybrid instruments

Hybrid instruments are the last element of capital structure. Hybrid instruments combine features of both debt securities and equity securities. Convertible bonds, convertible preferred shares and capital notes are some types of hybrid instruments.

In the dissertation, capital structure, leverage, and debt-to-equity ratio will be used synonymously.

1.3 Firm's profitability concept

Financial managers must understand the importance of profitability and develop strategies to retain a competitive advantage in the long run which is essential for survivability and prosperity for any firm. In other words, firm's profitability is one of the main factors that can be evaluated by investors and shareholders to determine their stock investment (Rosikah et al., 2018). The firm's profitability is related to the ability of a business to generate profit over a certain period (Saragih, 2018). A single factor might be not sufficient to reflect every aspect of a firm's profitability and therefore the use of several factors allows a better evaluation of the financial profile of firms (Omondi and Muturi, 2013). According to Omondi and Muturi (2013), in addition, a firm's profitability can be evaluated by 1) firm's productivity (efficient transformation of inputs into outputs); 2) firm's profitability (firm's costs have to be smaller than firm's earnings) and 3) market premium (the level of which a firm's market value exceed its book value).

Profitability ratios are a rank of financial metrics that are utilized to access a firm's ability to achieve earning relative to its revenue, stakeholder's equity, operating costs, using data from a specific point in time. Firm's profitability could be affected by many factors; however, capital structure is one of the drivers of profitability (Nguyen and Nguyen, 2015). Return on Assets (ROA) and Return on Equity (ROE), which will be used in this study, are examples of profitability ratios.

1.4 Background of the study

The capital structure of a company is plausibly one of its most important decisions. As previously mentioned, theoretically, capital structure is defined as the accurate balance between debt and equity that a company utilizes to covers its assets, operations, and new investment opportunities. Practically, debt-equity mixture influences everything from the risk profile of the company, the ease of finding funds and the cost incurred, the return expected by its investors and lenders and its degree of isolation both from microeconomic economic decisions and from macroeconomic recessions.

Looking back from the past, corporations have struggled with a wrong combination of debt and equity. Corporations, during the credit expansion period, have often failed to create enough liquidity to survive the unavoidable recessions. Capital structure decisions impact the firm's profitability independent of the size (small, medium or large) of a firm.

Many attempts have been made to define the optimal capital structure since it is related to the ability to meet the shareholders' needs. Although studies on capital structure have a long past, economists and researchers have not yet attained a compromise on how debt-equity mixture could reflect on firm's profitability. Empirical studies carried out recently, such as Omondi and Muturi (2013); Nguyen and Nguyen (2015); Vuong, Vu and Mitra (2017) Holz (2002); Hadlock and James (2002);

Robertson and Dessì (2003); Abor (2005); and Gill, Biger and Mathur (2011) showed that debt-equity mixture has more relevance than in the M&M theorem. Therefore, there is no doubt about the existence of a strong correlation between capital structure and financial performance. However, it is still argued to how to achieve an optimal capital structure. That is, because there is a dissociation among different analyses. Some studies report a positive correlation between leverage and profitability, for instance Roden and Lewllen (1995); Holz (2002); Hadlock and James (2002); Robertson and Dessì (2003); Abor (2005); and Gill, Biger and Mathur (2011) whereas other state a negative relationship, Titman and Wessels (1988); Omondi and Muturi (2013); Nguyen and Nguyen (2015); and Vuong, Vu and Mitra (2017).

1.5 Significance of the study

In Italy, so far, there is not any empirical study of capital structure and firm's profitability for large and listed corporations. Thus, this aim of the dissertation will contribute empirical evidence on the effect of capital structure on the firm's profitability in Italy. The investigation will be performed using panel data of 23 non-financial companies listed on the Italian Stock Exchange (Borsa di Milano), from 2013 to 2018.

This study will provide empirical evidence on the impact of leverage on firm's profitability. The study intends to assist financial managers or finance officers in public listed corporations to advise on their management about their financing. This study intends to assist investors and shareholders. After reading this analysis, they will have a better knowledge of leverage and profitability indicators amongst the corporations in which they would like to invest. This study also intends to assist academicians who intend to research about capital structure and firm's profitability.

1.6 Key Objectives

1.6.1 General Objective

The general objective of this dissertation will be to investigate if a relationship stands between capital structure and firm's performance in Italy. To do that, a regression model will be fitted in this study. If there is a significant relationship between capital structure measures and profitability, then an association between those variables does exist, and vice-versa.

1.6.2 Specific Objectives

The specific objectives of this dissertation are to determine whether there is an association between (in Italy, during the period from 2013 to 2018):

- 1 Short-term debt to total assets and firm's performance (ROA and ROE)
- 2 Long-term debt to total assets and firm's performance (ROA and ROE)
- 3 Total debt to total assets and firm's performance (ROA and ROE)

Moreover, the regression model will include two control variables. Control variables have been implemented in the empirical model because the sub-purpose of this study will be to verify if there is any relationship between size and growth and firm's profitability. Another sub-purpose of this study is to clarify if short-term debt is more convenient than long-term debt or vice-versa.

1.7 Structure of the Dissertation

The current chapter provides an accurate overview of what capital structure and firm's profitability are. The current chapter also describes the background and significance of the study as well as the key objectives of the dissertation. Chapter 2 will provide a detailed literature review which will clarify definition of key concepts of the study. Theoretical literature and previous empirical studies will be reviewed. Chapter 3 will clarify the data, hypotheses and research methodology. Chapter 4 will show empirical results. Chapter 4 will also provide a detailed discussion of the research findings. Finally, Chapter 5 will clarify the conclusions, limitations and recommendations of the study.

Chapter two: Literature review

2.1 Introduction

The relationship between leverage and firm's profitability has been an important research subject during the last three decades. Both, theoretical framework and empirical analyses have produced ongoing debate in the field of corporate finance. This chapter of this dissertation is divided into two main parts. The first section will focus on reviewing four capital structure theories, including 1) the Modigliani and Miller theory, 2) the Trade-Off theory, 3) the Pecking Order theory, 4) the Agency Cost theory and, 5) the Market timing theory. In the second section of this chapter, some empirical studies related to the relationship between capital structure and firm's profitability will be presented. Previous studies will be divided into two groups. The first group will review empirical studies where it has been found a positive relationship between capital structure and firm's profitability, the second group will review empirical studies where a negative relationship has been found between such variables. Finally, in the last section of this chapter, some previous studies in Italy will be presented.

2.2 Theoretical framework

The association between leverage and firm's profitability is a subject that has attracted attention and interests of modern finance since 1958 when Modigliani and Miller published their theorem: "*The cost of capital, corporation finance and theory of investments*", also known as "*Irrelevance theory of capital structure*" on the American Economic Review in 1958. They were the first ones who have tried to answer the question about how the debt-equity mixture affects the firm's profitability. Thus,

the M&M theory is considered as the foundation theory in the field of modern corporate finance although it was later demonstrated to be a theoretical model without a sturdy empirical foundation (Abeywardhana, 2017).

In their first paper, Modigliani and Miller (1958), M&M state that under condition of fully efficient market, and in absence of taxation, a firm's total market value is not influenced by its capital structure. Later on, different capital structure theories (i.e., the Trade-Off theory, the Pecking Order theory, the Agency cost theory, and the Market Timing theory) came up which suggesting that the market value of a firm is affected by its capital structure. These modern capital structure theories include the effect of taxes, bankruptcy costs, agency costs, and information asymmetry.

2.2.1 Modigliani and Miller (M&M) Theory

In their first paper, Modigliani and Miller (1958), M&M pointed out proposition I and proposition II. The M&M's proposition I is also known as the "irrelevance proposition of capital structure". According to proposition I, a firm's total market value is constant and independent of its debt-equity mixture. In other words, the value of an unlevered firm (V_U) is equal to the value of a levered firm (V_L). That is, there is total absence of an optimal leverage ratio. Therefore, debt and equity are perfectly substitute. In this case, however, debt-equity mixture does not affect the firm's value only in a perfect capital market and, if: 1) there are no personal and corporate taxes; 2) there are not transaction costs; 3) there are not bankruptcy costs; 4) all investors have free access to market information. Proposition II of Modigliani and Miller (1958) states that a firm's debt-equity mixture does not affect its weighted average cost of capital (WACC). That is, a firm's value remains constant and unaffected by its debt-equity mixture.

The M&M's theory (1958), is based on restrictive and unrealistic assumptions that might not hold in the real world. Propositions I and II of Modigliani and Miller (1958), are exceptionally difficult to test directly (Myers, 2001).

Few years later, Modigliani and Miller improved their original version. In their following paper, Modigliani and Miller (1963), they included the effect of taxes to be closer to the reality, in their model. When taxes (personal and corporate) are included, a levered firm is more profitable than an unlevered firm due to the tax shield effect. Firms, therefore, should issue as much debt as possible in their capital structure to maximise their market value (Modigliani and Miller, 1963). Consequentially, a firm can decrease its WACC and increase its market value by increasing its debt level, since firms will end up paying less tax (tax shield effect).

2.2.2 Trade-Off theory

As mentioned earlier, one of the main assumptions in the M&M theorem (1958) is that they did not consider the effect of taxation in their model whereas this effect has been introduced in the Trade-Off theory and later in the M&M theorem (1963). Then, the trade-Off theory is a development of the M&M theory as this theory includes the effect of both, taxes and bankruptcy costs. In the traditional Trade-Off theory, “firm is viewed as setting a target debt-to-equity ratio and gradually moving towards it” (Myers, 1984 pp. 576). A higher debt level, therefore, will increase firm's value due to the tax shield effect; but on the other side, it will increase the bankruptcy's cost. In other words, when managers increase the debt portion in a firm's capital structure, debtholders will require higher interest rate and shareholders will claim higher profit for their investment.

Firms would prefer debt over equity up to the point where the marginal benefit associated with tax shield is equal to the marginal cost associated with the bankruptcy due to leverage (Adair and Adaskou, 2015). In addition, this theory argues that firms whose having high amount of intangible assets should finance their investment by issue equity, whereas firms with substantial tangible assets should issue debt in order to finance their investments (Harris and Raviv, 1990).

2.2.3 Pecking Order Theory

Like the M&M theorem, the Pecking order theory assumes a perfect capital market condition. Like the Trade-Off theory, the pecking order theory suggests a positive correlation between assets tangibility and leverage and between growth opportunities and leverage (Fama and French, 2002). The Trade-Off theory provides a positive relationship between debt-equity mixture and profitability, the Pecking Order theory provides that a profitable company uses less debt. The trade-Off theory states the existence of an optimal debt-to-equity ratio, whereas in the pecking order theory “the firm has no well-defined target debt-to-equity ratio” (Myers, 1984 pp. 576). The pecking order theory, delivered by Myers and Majluf (1984) and Myers (1984), suggests that the cost of financing is related to asymmetric information. Therefore, a firm should choose to finance its new investment first by internal source (i.e., excess liquid assets or retained earnings). Then, if internal funds are not enough to cover the costs of the new investment, a firm should issue new debt and the firm’s last option should be equity. Indeed, the main assumption of Myers and Majluf (1984) is that firms are undervalued due to the asymmetric information. That is, managers have inside information relating existing and new investment opportunities, but they cannot share that information. On the other hand, investors are aware of this problem concerning asymmetric information. Consequentially, investors discount the company’s existing and new risky securities when shares issues are revealed.

Managers would issue new stock if the value transfer from the existing to new shareholders is higher than offset than by the net present value of the new investment (Gill, Bigger and Mathur, 2011) and if they believe that the shares' price is overly priced than the actual stock price.

2.2.4 Agency cost Theory

Unlike all the aforementioned theories, the agency costs theory assumes that the interests of managers and shareholders are not always perfectly aligned, and managers tend to waste free cash flow in perquisites and unprofitable investments (Jensen and Meckling, 1976). They argue that if both parties (shareholders (called principal(s)) and manager (the agent)) act to maximise their utility, then there are good reasons to believe that the agent will not always act in favour of the principal(s).

Paying dividends to stakeholders diminishes resources and agent's power, so there will be a high probability of incurring in new capital financing purposes, that means monitoring the capital market. Managers tend to increase the company's size because this increases their incentives and their power.

With the aim of expanding the size of the company, managers also tend to invest money in projects that have negative net present value (NPV) (Jensen, 1986). Shareholders, therefore, prefer to receive dividends rather than agree with the agent to waste their money. Thus, a higher portion of debt in the company capital structure can be a reasonable method to balance this problem. A higher portion of debt, in fact, will increase interest rate as well as the principal payment of debt but at the same time, more debt will reduce the available free cash flow.

2.2.5 Market timing Theory

The most recent capital structure theory is known as the market timing theory. This theory was developed by Baker and Wurgler (2002). The market timing theory recommends that financial managers are able to establish when a firm should issue equity instead of debt and vice-versa. Precisely, the market timing theory suggests that managers should issue new stock when the stock price is high and buy back their shares when the stock price is relatively low. By doing so, the costs of the capital of a firm would be relatively lower. Managers, then, are able to increase the market value of current stakeholders at the expense of new stakeholders. The market timing theory states that if the cost of equity is low compared to the costs of debt, then firms are more likely to issue a higher portion of equity in their capital structure. This implies that for external financing decisions, firms choose external equity if the cost of equity is low, and firms choose debt under alternative conditions. In addition, according to Baker and Wurgler (2002), the market timing of equity issuances has durable effects on leverage.

2.3 Some empirical studies

“The relationship between capital structure and profitability cannot be ignored because the improvement in the profitability is necessary for the long-term survivability of the firm” (Gill, Biger and Mathur, 2011 pp. 3). In effect, empirical analyses about capital structure and firm’s performance started appearing in the 1980’s. Initially, these empirical analyses have been advanced using panel data of developed countries. For instance, (Marsh, 1982) uses data from the UK’s companies, Jalilavand and Harris (1984); Titman and Wessels, (1988) use data from U.S. firms. Rajan and Zingales (1995) have tried to analyse the determinants of capital structure using panel data from G7

countries. Later, economists and researchers have started to investigate the relationship between capital structure and firm's performance in developing and emerging countries. Wiwattanakantang (1999) employ data from Thailand, and Booth et al., (2001), for example, utilise data from ten developing countries and so on.

Among several empirical studies on capital structure and firm's performance, it can be said that capital structure affects the firm's profitability. Therefore, in this scenario economists and researchers employ leverage as independent variable and firm's profitability as dependent in order to find out the impact (positive or negative) of leverage on firm's performance. However, some empirical researches have been conducted in the opposite way. Oino and Ukaegbu (2015), for instance, investigate some selected firms listed in Nigerian Stock Exchange during the period from 2007 to 2012; they employ leverage (total leverage) as dependent variable and whereas some measures of profitability (return on assets (ROA), tangibility, effective tax rate and growth opportunities) as its explanation.

The aim of this analyse is to empirically establish the relationship between capital structure and firm's profitability. Therefore, in the regression model, leverage measures will be used as independent variables and firm's profitability measures as the dependent variables.

Although several empirical analyses have been advanced (in different time and different countries), the discussion about the relationship between leverage and firm's performance is still argued because in some analyses there is a positive correlation such as, Roden and Lewllen (1995); Holz (2002); Hadlock and James (2002); Robertson and Dessì (2003); Abor (2005); and Gill, Biger and Mathur (2011); and, in other surveys it has been found to be negative such as Titman and Wessels (1988); Omondi and Muturi (2013); Nguyen and Nguyen (2015); and Vuong, Vu and Mitra (2017). Also, some surveys report a mixed relationship between variables. It is than necessary to classify these empirical surveys into two groups. The first group includes some empirical analyses that report a

positive relationship while in the second group some empirical studies will be reviewed which report a negative relationship between leverage and firm's profitability.

2.3.1 Positive relationship between capital structure and firm's profitability

Gill, Biger and Mathur (2011) investigate the association between leverage and firm's profitability by using a sample of 272 American service and manufacturing companies listed on New York Stock Exchange during the period from 2005 to 2007. In their regression model, they use three capital structure measures, one firm's profitability measure, and three control variables. Independent variables (capital structure) include: 1) short-term debt over total assets; 2) long-term debt over total assets; and 3) total debt over total assets. Dependent variable (profitability) is represented by return on equity (ROE). Control variables include: 1) firm size; 2) sales growth and; 3) industry. They found positive correlation between leverage and firm's profitability. More precisely, short-term liabilities over total assets and total liabilities over total assets affect positively ROE in both industries, manufacturing and service. These finding suggests therefore that an increase in the short-term debt and in the total debt will lead to an improvement in the profitability of the firm due to the tax shield effect. Positive relationship has been found between long-term debt and profitability but in this case only for the manufacturing industry. This is understandable given that the two industries taken into consideration are different and for example investments in machinery or in equipment are almost non-existent in the service sector.

Gill, Biger and Mathur (2011) seek to extend Abor's (2005) findings and they use the same regression model in order to study how capital structure affects firm's performance. Abor (2005) investigates 22

companies listed on Ghana Stock Exchange for a period of four years (1998 - 2002) and he found that short-term debt and total debt influence positively ROE, but unlike Gill, Biger and Mathur (2011), Abor (2005) found a negative association between long-term debt and profitability due to the economic downturn in the U.S., and also because in the U.S. the interest rates on the long-term debt are lower than those in Ghana. No significant relationship has been found between growth and profitability as well as firm's size and profitability in both industries across American companies. It can be concluded that the optimal capital structure includes some debt, but not 100% of debt. Although interests on debt are tax deductible, a higher level of debt increases the risk of bankruptcy (Gill, Biger and Mathur, 2011).

Similar results have been found by Hadlock and James (2002). They investigate how companies choose debt (bank loans) rather than public securities in case of a marginal financial choice. The investigation (logit regression) uses a sample of 500 firms listed on the New York Stock Exchange (NYSE), American Stock Exchange (AMEX) and on the Nasdaq Stock Market during the period from 1980 to 1993. They found out that more profitable firms tend to use a larger portion of debt in their capital structure rather than equity (public securities).

Similar results, again in America (more precisely in the U.S.), have been found by Roden and Lewellen (1995) who used a sample of 107 leveraged buyout (LBO) during the period from 1981 to 1990, related to debt-equity decision. Through panel regression analysis, they find out a positive correlation between debt and profitability.

Holz (2002) finds a positive association between capital structure (long-term debt over total asset) and firm's profitability by exploring Chinese companies. This is because banks always tend to carefully review investment projects to ensure feasibility before giving loans to companies.

Robertson and Dessì (2003) examine the association among debt, incentives, and performance of British companies. They find out a positive correlation between leverage and performance. Moreover, they point out that companies that have fewer growth opportunities depend more on debt financing to take advantage of predicted growth opportunities. Furthermore, firm's performance will be improved when firms spend debt (borrowed money) for profitable investment projects.

2.3.2 Negative relationship between capital structure and firm's profitability

Vuong, Vu and Mitra (2017) investigate the relationship between capital structure and firm's profitability by analysing 739 British large corporation listed on London Stock Exchange during a ten-years period (2006 to 2015). Long-term debt over total assets, short-term debt over total assets and growth rate of assets have been employed as independent variables in their model. Return on equity (ROE), return on assets (ROA), Tobin's Q and earnings per share (EPS) have been employed as dependent variables. Control variable is the firm's size. Based on their findings, a high portion of long-term debt in the capital structure leads to worsening in the firm's performance in that they find out a negative relationship between these variables. It can be said therefore that these findings are not consistent with the M&M theory. They find out no association between leverage and EPS. Also, growth rate of assets (percentage change in total assets) has a negative impact on ROE, EPS and Tobin's Q whereas this variable has a positive impact on ROA. However, these coefficients are statistically insignificant.

Similar regression model has been utilised by Nguyen and Nguyen (2015) who investigate the Vietnam's Stock Exchange from 2006 to 2014. EPS has been not included and growth rate of assets

has been employed as control variable and not as independent variable. Apart from firm's size, tangibility has been included as control variable. Nguyen and Nguyen (2015) find out a negative relationship between capital structure and firm's performance for all the variables studied. According to Nguyen and Nguyen (2015) these results might be explained by two reasons. First, firm's performance might be affected by the agency conflict and therefore companies had to over leveraged themselves. Second, the poor judgment of creditor. Indeed, non-performing loans in Vietnam during 2006 and 2014 were fairly high.

As Nguyen and Nguyen (2015), Chakraborty (2010) investigates an emerging market. He analyses the determinants of capital structure of Indian non-financial companies. He uses a sample of 1169 firms listed either on the National Stock Exchange or on the Bombay Stock Exchange during thirteen-years period (1995 – 2008). He employs total debt to total assets and total debt over equity as independent variable and he found a badly influence of these measures on Earnings Before Interest and Taxes (EBIT) to total assets and cash flows to total assets. Chakraborty's results are then consistent with the Peking Order they as it find out that lower (higher) profitable firms use a higher (lower) portion of debt in their capital structure.

Another important contribute was done by Tailab (2014) who empirically investigated the impact of capital structure on financial performance. Tailab (2014) used a sample of 30 Energy American firm during a nine-years period (2005-2013). Multiple regression results showed that 34% of ROA and 10% of ROE were predicted by X-variables (short-term debt over total asset, long-term debt over total asset, total debt over total asset, and company size in terms of sales and in terms of assets). Among the X-variables, he found out i) a positive association between short-term debt ratio and ROE, ii) a negative association between total debt ratio and ROA and ROE, and iii) a negative association between company size in terms of sales and ROA. No significant relationship has been found among the other variables implemented in his model.

Omondi and Muturi (2013) studied 29 non-financial firms listed on the Nairobi Securities Exchange (in Kenya) during six years-period from 2006 to 2012. They confirm a negative relationship between leverage and financial performance. They find out that although interest on debt is tax-deductible, when firms increase their debt level beyond the optimal level, firm's profitability decreases as well as the possibility of bankruptcy increases. Based on the Omondi and Muturi findings, however, there is a positive association between firm's size and financial performance, and they suggest that companies should expand in a controlled way with the ambition of reaching an optimal size in order to benefit from economies of scale which can ultimately lead in higher firm's profitability.

Similar results have been found by Zeitun and Tian (2007) who used a sample of 167 Jordan companies. Specifically, a negative relationship has been found between i) short-term debt to total equity and ROA, ii) long-term debt to total equity and ROA, and iii) Total debt to total equity and ROA.

Titman and Wessels (1988) also confirm a negative association between debt level and firm's profitability by studying 496 American manufacturing company during the period from 1974 to 1982. They explain that small firms (due to low-risk tolerance for increasing the debt in their capital structure), retain a far-off relation with financial institution and this leads to an increase of interest rates compared to large corporations.

2.3.3 Capital structure and firm's profitability – Italy

Panno (2003) showed how companies select internal and external financing. He used logit and probit estimation using two samples, British and Italian companies during the period 1992 to 1996. He claimed that the UK market is more testable and in principle more rational with the main prescription

of the new developments of capital structure theories. UK companies (more efficient market) behave as if they had target leverage ratios in mind, and they lean to adjust towards those ratios as quickly as possible. In Italy (less efficient market) an optimal leverage ratio does not seem to be a major interest, and Italian firms tend to adjust their debt-equity ratio in response to other circumstances.

Contrarily, Raghuram and Zingales (1995) confirm that at an aggregate level, leverage is similar across the G7 economies (United States, Japan, Germany, France, Italy, United Kingdom and Canada).

According to Panno (2003) findings, in both markets, tax shield effect plays an important role in capital structure choice. Therefore, internal financing is preferred to external one as suggested by the Pecking Order theory. Also, in both markets firm's size has a positive effect on leverage.

More recently, Botta (2019) investigated the existence of an optimal capital structure using a sample of 647 Italian SMEs (just for hotel industry) for a ten years-period from 2006 to 2016. He found a positive relationship between debt and operating efficiency. A higher debt level forces manager to optimize the management of the firm, reduce default risk by efficiently managing company operations. On the other hand, he found a negative relationship between debt and assets growth. Levered companies, having reached their debt capacity, are averse to rely on external financing (equity) to further bolster and expand their operations, then, suffer from financial constraints. This lower disposition to invest in asset growth exposes to a lower ability to generate revenues and this effect is large enough to compensate the higher operating efficiency. Therefore, a lower debt level or a high debt level reduce SMEs financial performance (Botta, 2019).

2.4 Summary

This chapter of the dissertation has described and reviewed previous research on the relationship between capital structure and firm's profitability. Since the 1980's, many researchers and economists have tried to contribute to the existent gap in literature. Once again, previous results are varied, and it can be seen that there is no unique doctrine that alone can entirely explain the relationship between capital structure and firm's profitability. Since this topic is still arguable, it is high time to be analysed and compare its findings with theoretical frameworks as well as previous empirical studies.

Moreover, in Italy, the relationship between capital structure and firm's profitability has not been thoroughly analysed. Besides, analyses regarding the Italian market, such as Panno (2003) and Botta (2019) analysed earlier, have focused mainly on Italian SMEs. Therefore, this study will employ data of 23 non-financial corporations listed on the Italian Stock Exchange. Finally, it is hard to consider that leverage as measure of a firm's capital structure can solo reveals the relationship between such variables. As earlier seen, researchers have tried to explain such relationship including other variables (control variables) to advice to explain what are the factors that influence firm's profitability. Hence, the study will include two control variables, the firm's size and the growth rate of assets.

Table 1: Literature review summary

Author	Country/time	Findings
Gill, Biger and Mathur (2011)	272 American (service and manufacturing) companies listed on the New York Stock Exchange (2005 – 2007)	-STDR has a positive impact on ROE; -LTDR has a positive impact on ROE (manufacturing); -TDR has a positive impact on ROE.

Abor (2005)	22 companies listed on Ghana Stock Exchange (1998 – 2002)	-STDR has a positive impact on ROE; -LTDR has a negative impact on ROE; -TDR has a positive impact on ROE.
Vuong, Vu and Mitra (2017)	739 British companies listed on London Stock Exchange (2006 – 2015)	-STDR has not an impact on ROA and ROE; -LTDR has a negative impact on ROA and ROE.
Nguyen and Nguyen (2015)	147 companies listed on the Vietnam Stock Exchange (HCMC) (2006 – 2014)	-STDR has a negative impact on ROA and ROE; -LTDR has a negative impact on ROA ad ROE; -TDR has a negative impact on ROA and ROE;
Tailab (2014)	30 Energy American companies (2005 – 2013)	-STDR has a positive impact on ROE; -TDR has a negative impact on ROA and ROE;
Omondi and Muturi (2013)	29 companies listed on the Nairobi Securities Exchange (2006 -2012)	-TDR has a negative impact on ROA.

Zeitun and Tian (2007)	167 Jordan companies (1989 – 2003)	-STDR has a negative impact on ROA; -LTDR has a negative impact on ROA; -TDR has a negative impact on ROA.
------------------------	------------------------------------	---

This table summarises studies on the relationship between capital structure and firm's profitability that used STDR, LTDR and TDR as independent variables, and ROA and ROE as dependent variables.

Chapter three: Data, Variables, Hypotheses and Research methodology

3.1 Introduction

This chapter of the dissertation is as follows. The first section will present the types of data used in the study. The second section of this chapter will describe the variables (independent, dependent and control) included in the regression analysis. The third section will show the hypotheses used in the model for answering the research questions. Finally, the last section will describe the research methodology of the study.

3.2 Data

The empirical study of the dissertation is based on secondary data. The sample utilised includes some selected companies listed on the Italian Stock Exchange, “La Borsa di Milano”. More precisely, the sample utilized includes all non-financial companies listed on the Financial Times Stock Exchange: “Milano Indice di Borsa” (FTSE - MIB). The FTSE MIB is the primary benchmark Index for the Italian equity markets. The FTSE MIB Index consists of the forty most-traded stock classes on the Italian Stock Exchange and it captures approximately 80% of the domestic market capitalisation.

According to Fama and French (1992), the connotation of capital structure in non-financial and financial companies is different. While high leverage is possibly normal for financial firms, this leverage level in financial firms might indicate financial distress. Also, Flannery (1994) suggests that

financial firms and non-financial firms are affected by debt level in the same way but, banks operate usually with a higher level of leverage. Therefore, seventeen companies in total will be excluded from the analysis because they are financial firms.

The selected sample includes a total of 23 non-financial corporations. Data of these twenty-three companies are collected in six-years period from 2013 to 2018, which builds panel data. In total it has been found 138 observations. Financial reports used for ratios computation are annual firm's balance sheets and firm's income statements of non-financial corporations listed on the FTSE MIB published from 2013 to 2018.

3.2.1 Panel data

As just mentioned, the study of the dissertation concerns using of regression analysis using panel data. Panel data is commonly defined as repeated observations on the same economic units (in this case firms) over several times periods. Panel data have both cross-section and time-series data dimensions. Cross-section data contain observations that have been made on individual units at one moment in time. Time-series data, on the other hand, contain observations on a set of variables over time without any individual dimension (Dupont-Kieffer and Pirotte, 2011). "In short, panel data have space as well as time dimension" (Gujarati, 2003 pp. 636). Panel data are more efficient than cross-section data, as well as time-series data and panel data increase the sample size considerably.

The use of panel data is then in line with the aims and objectives of the dissertation. Multiple variables (debt ratios, profitability ratios, firm's size and growth rate of asset), indeed, being used in the regression model, and companies being tested and measured annually over six years. Panel data are

considered to be most convenient for exploring the relationship between debt-equity mixture and profitability ratios.

3.3 Choice of variables

This section aims to illustrate and interpret the variables (independent, dependent and control) included for enabling the aims and objectives of the dissertation to be achieved.

3.3.1 Independent variables

Leverage ratios will act as independent variable for the study of the dissertation. Leverage can show varying association (positive or negative) with profitability depending on the leverage ratio utilized. As mentioned in the last chapter, for instance, Abor (2005) finds out that short-term debt over total assets and total debt over total assets have a positive relationship with firm's profitability; however, he points out that long-term debt affects negatively firm's performance (mixed result). As the association with firm's profitability might vary between leverage measures, the analysis will include three different leverage measures in order to ensure that the findings are useful for achieving the propose of the dissertation.

Short-term debt ratio and long-term debt ratios have been employed as measures of leverage by Gill, Biger and Mathur (2011); Tailab (2014); Abor (2005); Nguyen and Nguyen (2015); and Vuong, Vu and Mitra (2017). Total debt ratio has been used by Gill, Biger and Mathur (2011); Tailab (2014);

Abor (2005); and Nguyen and Nguyen (2015). In the study of the dissertation, STDR, LTDR and TDR have been used as measures of capital structure.

STDR, LTDR and TDR have been calculated as follows:

$$1) \text{ Short – term debt ratio (STDR)} = \frac{(\text{Short-term debt})}{\text{Total assets}};$$

$$2) \text{ Long – term debt ratio (LTDR)} = \frac{(\text{Long-term debt})}{\text{Total assets}};$$

$$3) \text{ Total debt ratio (TDR)} = \frac{(\text{short-term debt} + \text{long-term debt})}{\text{Total assets}};$$

3.3.2 Dependent variables

Profitability ratios will be used as dependent variable for the study of the dissertation. Previous surveys show that there are various methods that can be utilized to measure profitability.

ROA, for instance, has been used by Vuong, Vu and Mitra (2017); and Nguyen and Nguyen (2015); Tailab (2014), and ROE by Nguyen and Nguyen (2015); Vuong, Vu and Mitra (2017); Tailab (2014), Gill, Biger and Mathur (2011) and Abor (2005). In the study of the dissertation, ROA and ROE have been used as measures of profitability.

ROA and ROE have been calculated as follows:

$$1) \text{ Return on Asset (ROA)} = \frac{\text{Net income}}{\text{Total assets}};$$

$$2) \text{ Return on Equity (ROE)} = \frac{\text{Net income}}{\text{Total equity}}.$$

3.3.3 Control Variables

Two control variables (firm's size and growth rate of asset) have been implemented in the study to help explain the variation in profitability. Firm's size and growth rate of asset, therefore, increase the explanatory power of the regression model.

According to Ramaswamy (2001), Frank and Goyal (2003), and Vuong, Vu and Mitra (2017), firm's size might influence a firm's profitability because small firms have less capability and capacity than larger ones. In the study of the dissertation, firm's size has been implemented as control variable. Firm's size has been measured in different methods throughout previous research. Firm's size has been included in the analysis to control the effect of company's size on ROA and ROE. Vuong, Vu and Mitra (2017) have implemented the rate growth of assets as independent variables. In this study, the growth variable has been implemented as control variables because the main objective of this study is to empirically establish the relationship between capital structure and profitability.

In the study of the dissertation, firm's size and growth rate of assets have been calculated as follows:

$$1) \text{ Firm size} = \text{natural logarithm of total assets}$$

$$2) \text{ Growth rate of total assets (\%)} = \frac{\text{Total assets}(t) - \text{Total assets}(t-1)}{\text{Total assets}(t-1)}.$$

Firm's size and the rate growth of assets are introduced in the regression model to account for fluctuations in profitability that cannot exclusively be defined by debt-equity ratios.

3.4 Hypotheses

This section describes the hypotheses for enabling the purpose of the dissertation to be reached.

3.4.1 Capital structure and firm's profitability

The general objective of this study is to investigate if there exists a relationship between leverage and profitability. Since the relationship between capital structure and profitability is still argued for, it is logical to consider if an association exists and how it places in reference to earlier analysed theories.

Insignificant relationship between debt-equity ratios and profitability supports the M&M theory, Modigliani and Miller (1958). Positive relationship reinforces the M&M theory, Modigliani and Miller (1963) as well as the Trade-Off theory delivered by Myers (1984). Negative relationship reinforces the Pecking order theory delivered by Myers and Majluf (1984) and Myers (1984).

Starting from the general objective of this study, the first hypotheses are the following:

- H_0 (a): there is no relationship between leverage and profitability
- H_A (b): there is a relationship between leverage and profitability

As previously mentioned, the first economist who tried to answer that question were Modigliani and Miller in 1958. In their first paper, they conclude that there is no relationship between debt-equity ratios and profitability and therefore H_0 is verified in their model. However, the assumptions of their model are restrictive and unrealistic and other theories came up. These new theories (the Trade-Off theory, the Pecking-order theory and the Agency cost theory) attest that a relationship between leverage and profitability does exist. Empirical surveys discussed in the last section, also attest that

there exists a relationship, therefore H_A is verified. Given the previous empirical results, it is expected to find a relationship between capital structure and firm's profitability.

However, since this first hypothesis is too general, more specific research questions are discussed below.

3.4.2 Short term debt and firm's profitability

Previous empirical conclusions have shown conflicts with results on the association between short-term debt and profitability. Previous empirical results suggest a negative relationship between these variables (Ohman and Yazfanfar, 2015; Nguyen and Nguyen, 2015; Zeitun and Tian, 2007). Positive relationship has been found by Gill, Biger and Mathur (2011); Tailab (2014), and Abor, 2005). Either positive or negative impacts on profitability, verify H_0 . However, Vuong, Vu and Mitra (2017) found positive but insignificant relationship between short-term debt and ROA as well as short-term debt and ROE; then H_1 is verified in their analysis.

Since the above-mentioned surveys show different results, it then makes sense to hypothesize the following:

- H_0 (1): Short-term debt does not affect ROA
- H_1 (1): Short-term debt does affect ROE
- H_0 (2): Short-term debt does not affect ROA
- H_1 (2): Short-term debt does affect ROE

3.4.3 Long-term debt and firm's profitability

The relationship between long-term debt and profitability analysed in previous analyses report different results. Indeed, a negative association has been found by Nguyen and Nguyen (2015) and Vuong, Vu and Mitra (2017); and a positive relationship has also been found by Gill, Biger and Mathur (2011). Gill, Biger and Mathur (2011) however, find a positive relationship just in the manufacturing industry and juts between long-term debt and ROE. Tailab (2014), found out an insignificant relationship between long-term debt and profitability.

Since the above-mentioned surveys show different results, it then makes sense to hypothesize the following:

- H_0 (3): Long-term debt does not affect ROA
- H_1 (3): Long-term debt does affect ROE
- H_0 (4): Long-term debt does not affect ROA
- H_1 (4): Long-term debt does affect ROE

3.4.4 Total debt and firm's profitability

The relationship between total debt and profitability analysed in previous analyses report different results. A negative relationship between total debt and profitability has been found by Nguyen and Nguyen (2015); a positive one has been found by Gill, Biger and Mathur (2011).

Since the above-mentioned surveys show different results, it then makes sense to hypothesize the following:

- H_0 (5): Total debt does not affect ROA
- H_1 (5): Total debt does affect ROA
- H_0 (6): Total debt does not affect ROE
- H_1 (6): Total debt does affect ROE

3.4.5 Firm's size and firm's profitability – Growth and firm's profitability

The regression model includes two control variables: size and growth. Vuong, Vu and Mitra (2017), found a positive relationship between size and profitability, but no significant relationship has been found between firm's growth and profitability. No significant relationship between size and growth and profitability have been also found by Gill, Biger and Biger (2011). On the other hand, Tailab (2014), found a negative relationship between company's size (in terms of sales) and ROE; and insignificant relationship between size and ROA and ROE.

3.5 Methodology of the Study

In the empirical study of the dissertation, the multiple regression model is carried out in order to find out the relationship between debt-equity and profitability ratios. Contrarily to the simple regression model, the multiple regression analysis involves one dependent variable and two (or more than two) or explanatory variables. This study involves a balanced panel as each firm has the same number of time series observations.

The methodology implemented in the study of the dissertation is as follows.

$$ROA_{I,t} = \beta_0 + \beta_1 STD_{I,t} + \beta_2 SIZE_{I,t} + \beta_3 GROTWH_{I,t} + \varepsilon_{I,t} \quad (1)$$

$$ROE_{I,t} = \beta_0 + \beta_1 STD_{I,t} + \beta_2 SIZE_{I,t} + \beta_3 GROTWH_{I,t} + \varepsilon_{I,t} \quad (2)$$

$$ROA_{I,t} = \beta_0 + \beta_1 LTD_{I,t} + \beta_2 SIZE_{I,t} + \beta_3 GROTWH_{I,t} + \varepsilon_{I,t} \quad (3)$$

$$ROE_{I,t} = \beta_0 + \beta_1 LTD_{I,t} + \beta_2 SIZE_{I,t} + \beta_3 GROTWH_{I,t} + \varepsilon_{I,t} \quad (4)$$

$$ROA_{I,t} = \beta_0 + \beta_1 TD_{I,t} + \beta_2 SIZE_{I,t} + \beta_3 GROTWH_{I,t} + \varepsilon_{I,t} \quad (5)$$

$$ROE_{I,t} = \beta_0 + \beta_1 TD_{I,t} + \beta_2 SIZE_{I,t} + \beta_3 GROTWH_{I,t} + \varepsilon_{I,t} \quad (6)$$

In which:

$STD_{I,t}$: Short-term debt over total assets for firm I in year t

$LTD_{I,t}$: Long-term debt over total assets for firm I in year t

$TD_{I,t}$: Total debt over total assets for firm I in year t

$SIZE_{I,t}$: Natural logarithm of total assets for firm I in year t

$GROWTH_{I,t}$: Change in total assets for firm I in year t

$\varepsilon_{I,t}$: The error terms

Figure 1: Conceptual Framework

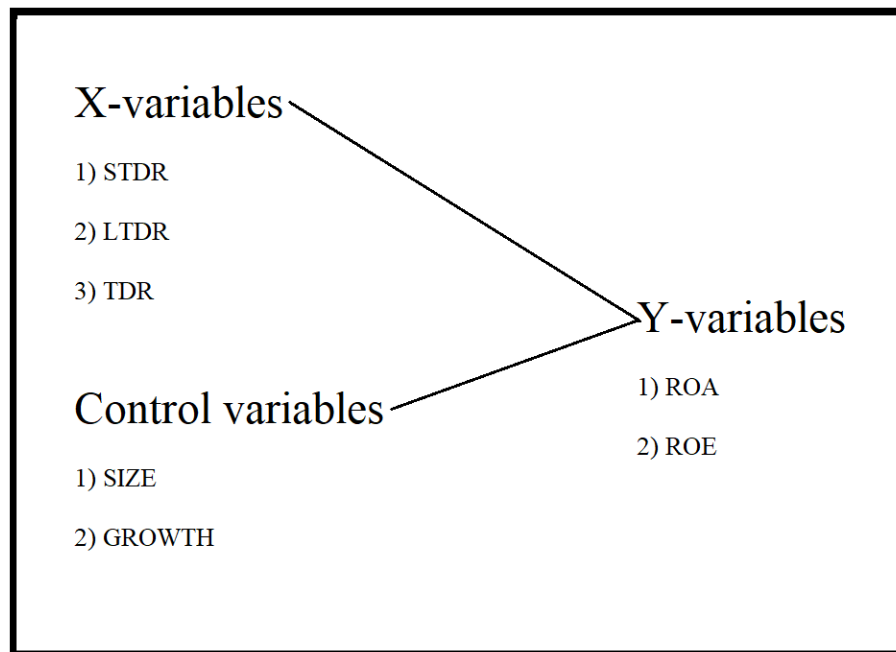


Figure 1 summarises the conceptual framework of the study. Leverage measures (STDR, LTDR, and TDR), represent the X-variables and ROA and ROE represent the Y-variables. Size and Growth represent the control variables of the study. Figure 1 produces the six regression equations.

Chapter four: Empirical results and discussion of the results

4.1 Introduction

This chapter of the dissertation is as follows. The first section will present the descriptive statistics. It will also investigate if there is the multicollinearity problem through the correlation matrix and Variance Inflation Factor (VIF) test. If so, leverage measures will be implemented in the regression model separately. The following section will show the results. Results will be also compared to the theoretical framework as well as previous studies detailed reviewed in Chapter 2.

4.2 Descriptive statistics

Table 2: Descriptive Statistics

	ROA	ROE	STDR	LTDR	TDR	SIZE	GROWTH
<i>Mean</i>	0.071	0.156	0.346	0.344	0.691	12.129	0.173
<i>Standard Error</i>	0.008	0.014	0.022	0.028	0.036	0.248	0.093
<i>Median</i>	0.057	0.157	0.244	0.244	0.654	11.5	0.029
<i>Standard Dev.</i>	0.096	0.162	0.256	0.327	0.422	2.909	1.096
<i>Kurtosis</i>	1.948	0.922	6.142	40.52	20.006	0.553	64.139
<i>Skewness</i>	-0.076	-0.128	2.215	5.436	3.56	0.917	7.987
<i>Minimum</i>	-0.293	-0.356	0.046	0	0.053	8.102	-0.634
<i>Maximum</i>	0.324	0.548	1.607	3.112	3.694	20.557	9.421

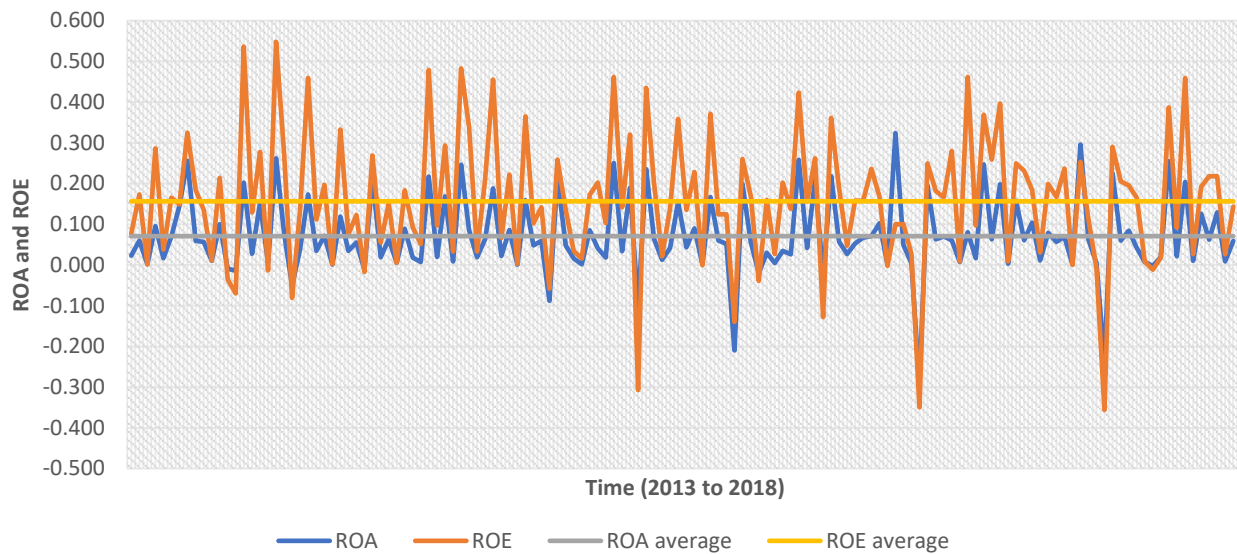
Source: Author's calculation. This table describes some summary statistics on the variables implemented to investigate the relationship between leverage and profitability. The data refers to twenty-three Italian non-financial companies listed on the FTSE MIB. The data is annual during the period from 2013 to 2018.

Table 2 suggests that the dependent variables that measure the firm's profitability (ROA and ROE) have a positive mean, median as well as kurtosis; but a negative skewness. The ROA's mean is lower than the ROE's one. The numerator of the profitability ratios is the same (net income), whereas the denominator is different. ROA's denominator is total asset and ROE's denominator is total equity. Total equity has been calculated as the difference between total assets and total liabilities. Therefore,

if liabilities equal zero, then total asset equals total equity, and reasonably, ROA and ROE would also be the same. In this analysis, the ROE's mean (15.60%) is more than double compared to the ROA's one (7.60%). This means that the value of liabilities (of 23 non-financial companies listed on the FTSE MIB, during the period from 2013 to 2018), has been more than half of the total value of assets. When the level of debt increases, the level of equity shrinks and since equity is the ROE's denominator, its ROE, in turn, gets a boost. So, based on these results, it can be said that Italian non-financial companies have been high levered during the period studied in the analysis.

Figure 2 represents the trend in ROA and ROE for the 23 non-financial corporation selected in the sample of the study. Having a look at Table 1 and Figure 2, it can be observed that ROE has a higher volatility than ROA (15.7% and 5.7%, respectively). Therefore, it can be said that Italian companies are reasonably sensitive to interest rate on debt as they do not issue a constant quantity of debt in their capital structure.

Figure 2: Trend in ROA and ROE of 23 non-financial firms listed on the FTSE MIB – 2013-2018.



Author's calculation. This figure shows the trend in ROA and ROE of twenty-three non-financial companies listed on the FTSE MIB during the period from 2013 to 2018.

ROA and ROE both have the negative skewness which are -7.6% and -12.8%, respectively. This suggests that the dataset is not uniformly distributed around the data average in a normal distribution curve.

Regarding the three debt-equity ratios, STDR and LTDR similar mean values, 34.6% and 34.4%, respectively, and the same can be said for their medians. Logically, TDR's mean is higher than the STDR and LTDR ones since its numerator is the sum of the STDR and LTDR. Kurtosis and skewness are both positive among all the debt-equity ratios. Size has the lowest kurtosis while Growth has the highest one among the independent variables as well as in all variables included in the study.

4.3 Multicollinearity

Multicollinearity is one of the difficulties related to fitting the explanatory variable(s) against the dependent variable(s) in multiple linear regression. This problem arises when there is any departure from orthogonality in the set of regressors and becomes a serious problem when the correlation among explanatory variables increases” (Curto and Pinto, 2011 p. 1499). There exist two different types of multicollinearity: “perfect” multicollinearity, and “less than perfect” multicollinearity. “Perfect” multicollinearity implies that there is a linear relationship among some or all X-variables of a regression model. In case of “perfect” multicollinearity, the regression coefficients of the explanatory are indeterminate, and their standard errors are infinite. “Less than perfect” multicollinearity occurs when the X-variables are intercorrelated but not perfectly. In this case, the regression coefficients, although determinate, present large standard errors and therefore the coefficients cannot be estimated with great precision (Gujarati, 2003 p. 342).

The multicollinearity problem is substantially a sample phenomenon which arises generally from the non-experimental data collected in most of the social sciences (Gujarati, 2003 pp. 342). According to Gujarati (2003 pp.342), there is no unique method of detecting and calculating the multicollinearity problem. In the study of the dissertation, to investigate if the regression model has the multicollinear problem, correlation matrix and the Variance Inflation Factor (VIF) test have been carried out.

4.3.1 Correlation matrix

Since it is necessary to consider the possible existence of multicollinearity, a correlation matrix has will be presented (Table 3). The correlation matrix reveals if the X-variables are too highly correlated. If two or more variables are highly correlated, it indicates that these variables explain largely the same thing and these variables should not be included together in the same model. Again, since the regression model include three debt-to-equity ratios (short-term debt ratio, long-term debt ratio and total debt ratio), it is expected that the multicollinearity problem does exist in the model.

Below the result of the correlation matrix are presented.

Table 3 Correlation Matrix

	ROA	ROE	STDR	LTDR	TDR	SIZE	GROWTH
ROA	1.000						
ROE	0.864	1.000					
STDR	-0.372	-0.370	1.000				
LTDR	-0.237	-0.200	0.033	1.000			
TDR	-0.410	-0.380	0.633	0.800	1.000		
SIZE	0.223	0.194	-0.058	0.160	0.089	1.000	
GROWTH	-0.059	-0.067	0.032	-0.129	-0.081	-0.037	1.000

Source: *Author's calculation*

Having a look at table 3, it can be said that both the two dependent variables, ROA and ROE, have negative relationship with almost all the dependent variables, except the firm's size. According to Studenmund (2014, p. 379), the correlation between two variables should be lower than 0.8 to avoid a high level of multicollinearity. As can be seen from Table 2, the correlation between TDR and STDR is 0.633 which is acceptable. But, the correlation between TDR and LTDR is 0.8. Therefore, it seems that the multicollinearity problem does exist in the regression model.

4.3.2 VIF test

According to Curto and Pinto (2011), one of the most important diagnostic techniques to do so is based on the coefficient of determination, R^2 , deriving from regressing each independent variable on the remaining predictors, also known as the Variance Inflation Factor (VIF). High VIF means high multicollinearity. If the VIF of a variable exceeds 10 (that happens when $R^2 > 0.90$ or $R > 0.95$), that those variables are highly collinear. By including two (or more) highly correlated variables in a regression model means that two (or more) variables in the model explain the variability in the dependent variable in the same way. Since in the analysis there are three debt-equity ratios (short-term debt ratio, long-term debt ratio and total debt ratio), their VIF would be high.

To further investigate the intensity of the multicollinearity the VIF test will be carried out. The VIF test will be conducted on each X-variables separately and the results are presented below (Table 3).

VIF has been calculated as follows:

$$VIF = \frac{1}{1 - R^2}$$

Table 4: VIF test

Variables	VIF test
<i>STDR</i>	10
<i>LTDR</i>	10
<i>TDR</i>	10
<i>SIZE</i>	1.0
<i>GROWTH</i>	1.0

Source: Author's calculation

From Table 4, it can be said that if the regression model includes the three debt-to-equity ratios together, the multicollinearity problem would be present and therefore is more difficult to discuss the results. Finally, to avoid the multicollinearity problem, then, the three debt-to-equity ratios will be included in the regression model separately.

4.4 Empirical results

The Ordinary Least Square (OLS) regression has been carried out in order to describe the result of the regression of this analysis. Although the OLS regression is sometimes referred to as the simple model, it is often used in previous researches. To avoid the multicollinearity problem, leverage measures have been implemented in the regression model separately. In total six regression have been investigated.

4.4.1 Short-term debt

Table 5: OLS results – ROA and ROE – STDR, Size and Growth

ROA	<i>Coefficient</i>	<i>Standard Error</i>	<i>P-value</i>	ROE	<i>Coefficient</i>	<i>Standard Error</i>	<i>P-value</i>
<i>STDR</i>	-0.134	0.029	0.000	<i>STRD</i>	-0.226	0.050	0.000
<i>Size</i>	0.007	0.003	0.012	<i>Size</i>	0.010	0.004	0.031
<i>Growth</i>	-0.004	0.007	0.605	<i>Growth</i>	-0.007	0.012	0.529
<i>R²</i>	0.181			<i>R²</i>	0.169		
<i>F-test</i>	0.000			<i>F-test</i>	0.000		

Source: Author's calculation

$$ROA = 0.038 + (-0.134) STDR + 0.007 SIZE + (-0.004) GROWTH$$

$$ROE = 0.120 + (-0.226) STDR + 0.010 SIZE + (-0.007) GROWTH$$

Having a look at table 5, it can be observed that although this regression includes just one of the three debt-equity ratios (STDR), the 18% and 16.9% of the variation in ROA and ROE, respectively, is explained by the variation in STDR, SIZE, and GROWTH. In addition, looking at the F-test values (0 and 0), it can be said that the R² is significant and the equation overall fits.

Looking at Table 5, in addition, it can be said that among three independent variables, two of them, STRD and rate growth rate of assets have a negative effect on ROA and ROE, whereas firm's size has a positive effect on the profitability ratios analysed. STDR has a bigger impact on profitability

than growth. When Italian (non-financial) companies use 1% more of short-term debt in their capital structure, holding the other X-variables constant, their ROA and ROE will fall of 13.4% and 26.6% respectively. STDR, in addition, is significant.

Regarding growth rate of asset, an increase (decrease) of 1% in rate growth of assets results in the decrease (increase) in ROA and ROE with lower coefficients, 4% and 7%, respectively. Growth, however, is not significant. That is, the p-values of 0.605 and 0.529 are not acceptable to reject the null hypothesis. This could be a sign that the other X-variables in the model describe the same phenomena (multicollinearity). But, as previously studied, both the correlation matrix and VIF test showed that growth variable does not suffer of multicollinearity. Thus, it can be concluded that growth rate of asset and firm's profitability, measured by ROA and ROE, is independent. Size is the only variable that has a positive relationship with ROA and ROE. An increase (decrease) of 1% in firm's size results in the increase (decrease) in ROA and ROA with 7% and 10%, respectively. Firm variable is significant.

4.4.2 Long-term debt

Table 6: OLS results – ROA and ROE – LTDR, Size and Growth

ROA	<i>Coefficient</i>	<i>Standard Error</i>	<i>P-value</i>	ROE	<i>Coefficient</i>	<i>Standard Error</i>	<i>P-value</i>
<i>LTRD</i>	-0.085	0.024	0.001	<i>LTRD</i>	-0.123	0.041	0.003
<i>Size</i>	0.009	0.003	0.001	<i>Size</i>	0.013	0.005	0.006
<i>Growth</i>	-0.008	0.007	0.285	<i>Growth</i>	-0.013	0.012	0.273
<i>R²</i>	0.133			<i>R²</i>	0.101		
<i>F-test</i>	0.000			<i>F-test</i>	0.003		

Source: Author's calculation

$$ROA = -0.005 + (-0.085) LTD + 0.009 SIZE + (-0.008) GROWTH$$

$$ROE = 0.0045 + (-0.123) LTD + 0.013 SIZE + (-0.013) GROWTH$$

This regression (Table 6) incorporates long-term debt ratio (LTDR) and it shows analogous results as the one including short-term debt ratio (Table 5). Table 6 shows that 13% and 10% of the variation in ROA and ROE, respectively, is explained by the variation in LTDR, SIZE, and GROWTH. The F-test values indicate that R^2 is significant, then it can be said that the R^2 is significant and the equation overall fits. Table 5, in addition, shows that LTRD has a negative impact on profitability ratio, ROA and ROE. Therefore, an increase (decrease) of 1% in LTDR results in the decrease (increase) of 8.5% and 12.3% in ROA and ROE, respectively. As STDR, LTDR is significant.

Size and growth variables have similar results as the regression including short-term debt ratio.

4.4.3 Total debt

Table 7: OLS results – ROA and ROE – TDR, Size and Growth

ROA	<i>Coefficient</i>	<i>Standard Error</i>	<i>P-value</i>	ROE	<i>Coefficient</i>	<i>Standard Error</i>	<i>P-value</i>
<i>TRD</i>	-0.100	0.017	0.000	<i>TRD</i>	-0.156	0.030	0.000
<i>Size</i>	0.009	0.002	0.001	<i>Size</i>	0.013	0.004	0.004
<i>Growth</i>	-0.007	0.007	0.260	<i>Growth</i>	-0.014	0.011	0.236
<i>R²</i>	0.243			<i>R²</i>	0.205		
<i>F-test</i>	0.000			<i>F-test</i>	0.000		

Source: *Author's calculation*

$$ROA = 0.038 + (-0.100) TDR + 0.009 SIZE + (-0.007) GROWTH$$

$$ROE = 0.113 + (-0.156) TDR + 0.013 SIZE + (-0.014) GROWTH$$

This regression incorporates total debt ratio (TDR) and it shows similar results as the one including short and long-term debt ratio (Tables 5 and 6). Table 7 shows that 24% and 20% of the variation in ROA and ROE, respectively, is explained by the variation in LTDR, SIZE, and GROWTH. The F-test values indicate that R^2 is significant, then it can be said that the R^2 is significant and the equation overall fits. Table 7, in addition, shows that TDR has a negative impact on profitability ratio, ROA and ROE. Therefore, an increase (decrease) of 1% in TDR results in the decrease (increase) of 10% and 15.6% in ROA and ROE, respectively. As STDR and LTDR, TDR is significant.

Size and growth variables have similar results as the regressions studied above.

4.5 Discussion

4.5.1 Does capital structure affect firm's profitability?

Based on the OLS results, studied in the previous section of this chapter, there are no doubts that leverage does have an influence on firm's profitability. Clearly, the results from Tables 5, 6 and 7, indicate that all the leverage measures (STDR, LTDR and TDR), affect firm's profitability, measured by ROA and ROE. The general research question of the study of the dissertation was to verify if there is any relationship between leverage and profitability. Then, as expected, these findings lead to the overall conclusion that there is a strong relationship between leverage and profitability. The null hypothesis (leverage does not affect profitability) can therefore reasonably be rejected. Theoretically, these findings are in line with M&M theory (1963), the Trade-Off theory, the Pecking Order theory, and the Agency Cost theory. These findings are against M&M theory (1958) and it is reasonable because a firm that has a high debt level in its capital structure, will increase its interest and this leads to the contraction in net income. In addition, these findings are completely in line with Ohman and Azfanfar (2015); Nguyen and Nguyen (2015); Zeitun & Tian (2007); Gill, Biger and Mathur (2011); Abor (2005) and Vuong, Vu and Mitra (2017), as these previous empirical analyses found out that capital structure affects firm's profitability.

4.5.2 Does short-term debt affect firm's profitability?

Based on Table 5, short-term debt affects negatively the firm's profitability, measured by ROA and ROE. Thus, the null hypotheses (short-term debt does not affect ROA and short-term debt does not affect ROE) can be reasonably rejected with a 5% significance level. It can therefore be confirmed that a higher (lower) level of short-term debt is associated with a lower (higher) firm's profitability.

The negative relationship between short-term debt ratio and profitability analysed in the study of the dissertation is in line with the results point out by Nguyen and Nguyen (2015), Ohman and Yazfanfar (2015) and Zeitun and Tian (2007). In contrast, Gill, Biger and Mathur (2011) and Abor (2005), found out a positive association between short-term debt and profitability. Vuong, Vu and Mitra (2017), found an insignificant positive relationship between short-term debt and profitability (ROA and ROE).

Based on the OLS result, STDR affect negatively firm's profitability. It can be said therefore that STDR affects negatively firm's profitability, measured by ROA and ROE, because it needs to be renewed periodically. Besides, the capability to issue short-term debt also depends on the depth and maturity of the market (Rai and Danilevskaia, 2005). Then, In Italy, the market for short-term financing might be unwell developed.

4.5.3 Does long-term debt affect firm's profitability?

Based on Table 6, long-term debt affects negatively the firm's profitability, measured by ROA and ROE. Thus, the null hypotheses (long-term debt does not affect ROA and long-term debt does not

affect ROE) can be reasonably rejected with a 5% significance level. It can therefore be confirmed that a higher (lower) level of long-term debt is associated with a lower (higher) firm's profitability.

The negative relationship between long-term debt and profitability found in this study is in line with the findings point out by Vuong, Vu and Mitra (2017), Nguyen and Nguyen (2015), Ohman and Yazfanfar (2015), Zeitun and Tian (2007) and Abor (2005). Gill, Biger and Mathur (2011), found out that long-term debt affects positively firm's profitability (in the manufacturing industry). The same relationship in the service industry has been insignificant.

4.5.4 Does total debt affect firm's profitability?

Based on table 7, total debt affects negatively the firm's profitability, measured by ROA and ROE. Thus, the null hypotheses (total debt does not affect ROA and total debt does not affect ROE) can be reasonably rejected with a 5% significance level. It can therefore be confirmed that a higher (lower) level of total debt is associated with a lower (higher) firm's profitability.

The negative relationship between total-term debt and profitability found in this study is in line with the findings found out by Nguyen and Nguyen. However, Nguyen and Nguyen (2015) found out a negative relationship between long-term debt ratio and ROA, and a negative but insignificant relationship between total debt ratio and profitability. Contrarily, Gill, Biger and Mathur (2011), and Abor (2005) found a positive relationship between long-term debt and profitability in the United States and in Ghana, respectively.

4.5.5 Does firm's size affect firm's profitability?

Based on Tables 5, 6 and 7 firm's size does affect positively the firm's profitability, measured by ROA and ROE. Thus, the null hypotheses (firm's size does not affect ROA and firm's size does not affect ROE) can be reasonably rejected with a 5% significance level. This result indicates that an improvement in firm's profitability with the increase in Size.

The positive relationship between size and profitability found in this study is in line with findings found out by Voung, Vu and Mitra (2017) and in contrast with Tailab (2014).

4.5.6 Does growth rate of asset affect firm's profitability?

Based on Tables 5, 6 and 7 the growth rate of assets does not affect firm's profitability, measured by ROA and ROE. Thus, the null hypotheses (growth does not affect ROA and growth does not affect ROE) can be reasonably accepted with a 5% significance level. This result indicates that growth and profitability are independent.

The results of the study are in line with Vuong, Vu and Mitra (2017).

4.6 Summary hypotheses

Table 8: Summary hypotheses

Hypotheses	Result OLS	Significance Level
- H ₀ (1): Short-term debt does not affect ROA	Rejected	5%
- H ₁ (1): Short-term debt does affect ROE	Accepted	5%
- H ₀ (2): Short-term debt does not affect ROA	Rejected	5%
- H ₁ (2): Short-term debt does affect ROE	Accepted	5%
- H ₀ (3): Long-term debt does not affect ROA	Rejected	5%
- H ₁ (3): Long-term debt does affect ROE	Accepted	5%
- H ₀ (4): Long-term debt does not affect ROA	Rejected	5%
- H ₁ (4): Long-term debt does affect ROE	Accepted	5%
- H ₀ (5): Total debt does not affect ROA	Rejected	5%
- H ₁ (5): Total debt does affect ROE	Accepted	5%
- H ₀ (6): Total debt does not affect ROA	Rejected	5%
- H ₁ (6): Total debt does affect ROE	Accepted	5%

4.7 Short or long-term debt?

According to Rai and Danilevskaia (2005) another field of interest in capital structure is the alternative between short-term and long-term debt. Based on the OLS results, it can also be said that

short-term debt has a worst impact on profitability. Specifically, an increase of 1% in short-term debt, holding the other X-variables constant, results in a decrease of 13.4% and 26.26% in ROA and ROE respectively. On the other side, an increase of 1% of long-term debt results in a decrease of 8.5% and 12.3% in ROA and ROE, respectively. Short-term financing is generally less expensive than long-term but is riskier because companies need to renew periodically. Between short and long-term financing, Italian companies should issue more long-term debt.

Chapter five: Conclusions, limitations and recommendations

5.1 Introduction

This last chapter of the dissertation will summarise the conclusions and recommendations based on the results analysed in the previous chapter. In the last section, limitations and suggestions for future studies will be presented.

5.2 Conclusions

The study of the dissertation aimed to empirically establish the relationship between capital structure and firm's profitability. The investigation has been carried out using a sample of 23 non-financial corporations listed on the FTSE MIB during the period from 2013 to 2018. Capital structure measures (STDR, LTDR and TDR) have been implemented as independent variables. Firm's profitability measures (Return on Asset and Return on equity) have been implemented as dependent variables. Size and growth rate of assets have been implemented as control variables. Since it was been found a high correlation (multicollinearity) among independent variables, capital structure measures have been implemented in the regression model separately. In total six regression models have been analysed.

The F-statistics proves the validity of the estimated model. All regressions studied were robust and, the corresponding p-values were low enough to conclude that capital structure measures affect

negatively firm's leverage. All the coefficients are statistically significant in level of confidence of 95%. Then, these findings lead to the overall conclusion that a high debt level is associated with a downturn in the firm's profitability. It can be noticed that as Italian companies increase debt beyond the optimal level, their profitability declines and the possibility of bankruptcy increase likewise. These results might be explained by the agency conflict. As mentioned in chapter two, the agency cost theory assumes that the managers' interests are not always aligned to the shareholder's one (Jensen and Meckling, 1976). Managers are engaged to run the business on behalf of the shareholders. In other words, managers have considerable powers in deciding what firms should do as well as how firms should invest. Unless managers' remuneration is linked to profit or share value, their main interests are more likely to increase the size of a firm. By doing so, managers are able to increase their incentives, powers as well as their status as a company manager. With the aim of increasing the size of the firm, managers also tend to invest new capital in projects that have a negative present value (NPV) (Jensen, 1986). On the other side, shareholders are interested in the increase of their wealth and income. Their interest is linked to the returns that a firm will provide in the form of dividend and in the value of their stock. Shareholders, however, prefer to receive dividend rather than agree with managers to waste their money. Then, a large debt level in the capital structure of a company can be a reasonable approach to balance this problem. According to (OECD, 2018) and Table 2, the Italian companies have been high leveraged during the period analysed. Thus, it can be concluded that Italian companies had over-leveraged themselves, and as a consequence performance was being negatively affected.

In addition, another reason might be high the non-performing loan. According to (OECD, 2018) the European corporate sector from 2008, has experienced a considerable decline in ROE due to the global financial crisis also known as the subprime mortgage crisis occurred between 2007 and 2010. Nowadays, there is still a persistent gap with respect to ROE between Italian and European business.

This disparity in performance is partly responsible for the low level of capitalisation in Italy. Thus, the deterioration in profitability during the subprime mortgage crisis combined with the high level of under-capitalisation exacerbated the debt repayment problem. As a consequence, Italy has seen an increment in the share of non-performing loan. In other words, the negative relationship between leverage and profitability might be also explained by the poor judgment of creditors (mostly banks), when Italian companies asking loans, since the non-performing loans in the Italian banking system were quite high during the period studied in this study.

Regarding the sub-purposes of the study, it has been found that Italian (non-financial) corporations can increase their profitability by increasing their size. It can be concluded that larger companies benefit from economies of scale. Then, the results are in line with Penrose (1958), who stated that economies of scale can have a positive impact on a firm's profitability. On the other hand, an increase (decrease) in the rate growth of assets does not improve the firm's profitability. That is, the rate growth and firm's profitability, measured by ROA and ROE, are independent. The last sub-purpose of the dissertation was to clarify if short-term debt is more convenient than long-term debt and vice-versa. Based on the results, Italian companies should issue a higher portion of long-term debt in their capital structure to improve their financial performance. That is, although interest rate on short-term debt is less expensive than interest rate on long-term debt, short-debt financing is riskier because it needs to be renewed periodically.

Italian managers, in order to improve a firm's profitability, should raise a firm's capital by using internal funds (e.g., retained earnings) or/and issue new shares. It is hard to believe, however, that they should not issue debt. By increasing the debt level, in fact, firms will end up paying less tax (due to the tax shield effect). The results are in line with the Pecking Order theory of capital structure which suggests that profitable firms use less debt. Between short and long-term debt, managers should issue

a higher portion of long-term debt. Finally, managers should increase the firm's size since the results of this study suggest that larger companies benefit from economies of scale.

5.3 Limitations of the study and Recommendations for Future research

The study of the dissertation is not exempt from limitations that likewise pave the way for eventual research directions. This study has focused on Italian companies. Future studies should therefore further validate the findings of this study in other countries. The variables implemented have already been validated by researchers to proxy the relationship between capital structure and firm's profitability. However, the regression model has implemented just book values (no market values). Then, future research should employ some measurement of market value such as Tobin's Q or earnings per share (EPS) In addition, it is hard to believe that the variation in the firm's profitability depends only by the variation of debt-equity ratios; as previously mentioned, firm's profitability could be affected by the reputation, economic growth, exchange rate, cost of production and so on. This can imply that there are further relevant variables to include for determining the variation in a firm's profitability. Tax and the role of ownership structure, for instance, could be a pertinent aspect to consider for future research. In the study, tax the effect of ownership structure has not been included due to the difficulty collecting data.

References

- Abeywardhana, D.K.Y., 2017. Capital Structure Theory: An Overview. *Accounting and Finance Research*, 6(1), pp. 133-138.
- Abor, J., 2005. The effect of capital structure on profitability: empirical analysis of listed firms in Ghana. *Journal of Risk Finance*, 6(5), pp. 438-45.
- Adair, P. and Adaskou, M., 2015. Trade-off-theory vs. pecking order theory and the determinants of corporate leverage: Evidence from a panel data analysis upon French SMEs (2002-2010). *Cogent Economics & Finance*, 3(1), pp. 1-11.
- Baker, M. and Wurgler, J., 2002. Market Timing and Capital Structure. *The Journal of Finance*, 57(1), pp. 1-32.
- Bhaduri, S.N., 2002. Determinants of capital structure choice: a study of the Indian corporate sector". *Applied financial economics*, 12(9), pp. 655-665.
- Booth, L., Aivazian, V., Demircug-Kunt, A., Maksimovic, V., 2001. Capital structures in developing countries. *The Journal of Finance* LVI (February (1)), pp.87–130.
- Botta, M., 2019. Financing Decisions and Performance of Italian SMEs in the Hotel Industry. *Cornell Hospitality Quarterly*, 60(4), pp. 335-354.
- Brigham, E.F. and Daves, P.R., 2007. Intermediate financial management. (Ninth Edition) Mason, Oh: Thomson/South-Western.
- Chakraborty, I., 2010. Capital structure in an emerging stock market: The case of India. *Research in International Business and Finance*, 24(3), pp. 295-314.
- Curto, J.D. and Pinto, J.C., 2011. The corrected VIF (CVIF). *Journal of Applied Statistics*, 38(7), pp. 1499-1507.

- Dupont-Kieffer, A. and Pirotte, A., 2011. The early years of panel data econometrics. *Histories on econometrics*, pp. 258-282.
- Fama E.F., French, K.R., 2002. Testing trade-off and pecking order predictions about dividends and debt. *Review of Financial Studies*, 15 (1), 1-33.
- Fama, E.F. and French, K., 1992. The cross-section in expected stock returns. *Journal of Finance*, 47 pp.427-466.
- Flannery, M., 1994. Debt maturity and the deadweight cost of leverage: Optimally financing banking firms. *American Economic Review* 84(1), pp. 320-331.
- Frank, M., Goyal, V.K., 2003. Testing the pecking order theory of capital structure. *Journal of Finance Econ.* 67, pp. 217–248.
- Gill A., Biger N., and Mathur N., 2011. The Effect of Capital Structure on Profitability: Evidence from the United States. *International Journal of Management*, 28(4), pp. 3-15.
- Gujarati, D.N., 2003. Basic Econometrics. Fourth Edition. New York u.a: McGraw-Hill.
- Hadlock, C. and James, C., 2002. Do banks provide financial slack?. *Journal of Finance*, Vol. 57, pp. 1383-420.
- Harris, M., & Raviv, A., 1990. Capital Structure and the Informational Role of Debt. *Journal of Finance*, 45, pp. 321-349.
- Holz, C.A., 2002. The impact of the liability–asset ratio on profitability in China's industrial state-owned enterprises. *China Economic Review*, 13(1), pp. 1-26.
- Jahanzeb, A., Bajuri, N. H., Karami, M., and Ahmadimousaabad, A., 2014. Trade-Off Theory, Pecking Order Theory and Market Timing Theory: A Comprehensive Review of Capital

Structure Theories. *International Journal of Management and Commerce Innovations*, 1(1), pp.11–18.

Jalilavand, A., Harris, R.S., 1984. Corporate behavior in adjusting to capital structure and dividend targets: an econometric study. *The Journal of finance*, 39, pp.127–145.

James, C.M. and Hadlock, C.J., 2002. Do Banks Provide Financial Slack? *Journal of Finance*, 57(3), pp. 1383-1419.

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

Jensen, M.C., 1986. Agency costs of free cash flow, corporate finance, and takeovers. *The American economic review*, 76(2), pp. 323-329.

Marsh, P., 1982. The choice between equity and debt: an empirical study. *The Journal of finance*, 37(1), pp. 121–144.

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

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

Modugu, Kennedy Prince, 2013. Capital Structure Decision: An Overview. *Journal of Finance and Bank Management*. 1(1); June 2013 pp. 14-27.

Mostafa, H. T., and Boregowda, S., 2014. A Brief Review of Capital Structure Theories. *Research Journal of Recent Sciences*, 3(10), pp.113–118.

Myers, S.C. and Majluf N.S., 1984. “Corporate financing and investment decisions when firms have information that investors do not have”. *Journal of Financial Economics*, 13(2), pp. 187-22.

Myers, S.C., 1984. The Capital Structure Puzzle. *The Journal of Finance*, 39 (3), pp.575-592.

- Myers, S.C., 2001. Capital Structure. *Journal of Economics prospective*, 15(2), pp.81-102.
- Nguyen, T., & Nguyen, H., 2015. Capital structure and firms' performance: Evidence from Vietnam's stock exchange. *International Journal of Economics and Finance*, 7(12), pp. 1-10.
- OECD (2018), OECD Capital Market Review of Italy 2018: Mapping Report
www.oecd.org/corporate/OECD-Capital-Market-Review-Italy-Mapping-Report-2018.pdf.
- Ohman, P. and Yazfanfar, D., 2015. Debt financing and firm performance: an empirical study based on Swedish data. *The Journal of Risk Finance*, 16(1), pp. 102-118.
- Oino, I. and Ukaegbu, B., 2015. The impact of profitability on capital structure and speed of adjustment: An empirical examination of selected firms in Nigerian Stock Exchange. *Research in International Business and Finance*, 35, pp. 111-121.
- Omondi, M. M. and Muturi, W., 2013. Factors affecting the financial performance of listed companies at the Nairobi Securities Exchange in Kenya. *Research Journal of Finance and Accounting*, 4 (15), pp. 99-104.
- Panno, A., 2003. An empirical investigation on the determinants of capital structure: the UK and Italian experience. *Applied Financial Economics*, 13(2), pp. 97-112.
- Penrose, E. T., 1959. The theory of the growth of the firm. New York: Sharpe.
- Rai, A. and Danilevskaia, V., 2005. Choice of Short-Term and Long-Term Debt in Five Eastern European Countries. *The Journal of International Business & Law*, 4, pp. 34-170.
- Rajan, R.G., Zingales, L., 1995. What do we know about capital structure? Some evidence from international data. *The Journal of Finance*, 50, pp. 1421–1460.

- Ramaswamy, K. (2001). Organizational ownership, competitive intensity, and firm performance: An empirical study of the Indian manufacturing sector. *Strategic Management Journal*, 22 (10), pp. 989-998.
- Robertson, D. and Dessì, R., 2003. Debt, Incentives and Performance: Evidence from UK Panel Data. *Economic Journal*, 113(490), pp. 903-919.
- Roden, D.M. & Lewellen, W.G., 1995. Corporate capital structure decisions: Evidence from leveraged buyouts. *Financial Management*, 24, pp. 76-87.
- Rosikah, Prananingrum, D.K., Muthalib, D.A, Azis, M.I., Rohansyah M., 2018. Effects of Return on Asset, Return on Equity, Earning Per Share on Corporate Value. *The International Journal of Engineering and Science (IJES)*, 7(3), PP 04-14, doi:10.9790/1813-0703010614.
- Saragih, J. L., 2018. The Effects of Return on Assets (ROA), Return on Equity (ROE), and Debt to Equity Ratio (DER) on Stock Returns in Wholesale and Retail Trade Companies Listed in Indonesia Stock Exchange. *International Journal of science and research methodology*, 8(3), pp. 348-367.
- Tailab M. M. K., 2014. The Effect of Capital Structure on Profitability of Energy American Firms. *International Journal of Business and Management Invention*, 3(12), pp. 54 – 61.
- Titman, S. and Wessels, R., 1988. The determinants of capital structure choice. *The Journal of Finance* 43, pp.1–19.
- Vuong, N.B., Vu, T.T.Q. and Mitra, P., 2017. Impact of Capital Structure on Firm's Financial Performance: Evidence from United Kingdom. *Journal of Finance & Economics Research*, 2(1), pp. 16-29.
- Wiwattanakantang, Y., 1999. An empirical study on the determinants of capital structure of Thai firm. *Pacific-Basin Finance Journal*, 7, pp. 371–403.

Zeitun, R. & Tian, G.G., 2007. Capital structure and corporate performance: Evidence from Jordan.
Australasian Accounting Business & Finance Journal, 1 (4), pp. 40-61.