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How the capital structure affects the firm's performance: Evidence from Italian companies

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Abstract

The purpose of this study was to find out how changes in capital structure affect Italian enterprises' financial performance. The study makes use of a five-year period of panel data on 139 companies that are listed on the "Borsa Italiana" between 2018 and 2022. Return on assets (ROA) and Tobin's Q are the performance variables that are employed. Total debt to total assets (TD), short-term debt to total assets (STD), and long-term debt to total assets (LTD) are used as a proxy for capital structure. The control variable for firm size (SIZE) is the logarithm of total assets; for sales growth (SALESGROWTH), the difference between the year of birth and each analysis year is used; and for age (AGE), the difference between current sales and sales from the previous year is used. The study's findings indicate a significant negative relationship between Italian enterprises' performance and their capital structure. For both ROA and Tobin's Q, there is a negative relationship that is significant when considering the total debt for the former and short-term debt for the latter. According to the estimations, there is a significant positive relationship between the Size of a corporation and its ROA performance in Italy. Additionally, there is a slightly negative relationship between Age and Tobin's Q as well as ROA.

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Introduction

Capital structure decisions are important for the firm not just because they maximize returns on equity, but also because they affect the firm's ability to respond to its competitive environment. Financing decisions can have an impact on a company's behavior, performance, viability, commercial prospects, and market value. As a result, they rank among management's most important decisions.

In essence, a company's capital structure is the mix of debt and equity that it utilizes to fund its operations and investments. Equityholders and debtholders face various levels of risk, benefit, and control. Debtholders incur the default risk, earn a fixed rate of return, and have limited and indirect control over the firm's activities. Differently, equityholders carry the majority of the risk, their gains are unclear and varied depending on the firm's success and self-financing outlook, and they have complete influence over the firm's operations.

The issue of "optimal" capital structure persists even after Modigliani and Miller's 1958 study, over 60 years later, and despite the theoretical frameworks and empirical studies that have been established since then. In an effort to determine whether an "optimal" capital structure exists, what the determinates are, and how they interact, researchers are still analyzing capital structure. Certain parts of the firm's behavior appear to be explained by theories and empirical study. As of right now, no theory is able to adequately describe how a corporation behaves while making a capital structure decision or, moreover, identify the ideal capital structure. The issue remains unresolved.

Two theories that are of greatest importance in the literature on capital structure are the Pecking Order Theory and the Trade-Off Theory. These two theories address the significance of a firm's capital structure and explain how it impacts performance. The trade-off theory highlights how debt is tax deductible, which helps to explain why people use it. According to the hypothesis, using debt up to a specific capital structure limit will maximize its benefits; beyond that, however, it will have a detrimental impact on performance. However, on the basis of pecking order, debt is not prioritized and indicates that debt should only be utilized in situations where the company's internal equity is

insufficient to meet its funding requirements. Later in the third chapter, these notions are covered in further detail.

The motivation for doing this study comes from the significance of capital structure and how it might impact business performance, as demonstrated by theories and earlier research. This study examines the empirical relationship between a company's financing structure and performance using a sample of Italian businesses. Over the years, a lot of studies regarding the relationship between capital structure and performance have been conducted, with varying degrees of success. This research will focus on Italian listed companies and produce empirical findings to examine the impact on performance.

There are four chapters in this thesis. Chapter 1 is the thesis's introduction, and it offers a quick summary of the issue, as well as a classification of the various funding options available to the organization. A thorough review of the literature is provided in Chapter 2. It talks about the theoretical portion, which covers the different theories put out on the capital structure and how it affects business performance. The empirical section, on the other hand, contains the literature on empirical research on capital structure and financial performance. The research design in detail and the methodology employed to answer the research question are highlighted in Chapter 3. Information on the population characteristics and sample utilized in this study is included in this chapter. First, we go over how the variables are measured and used, as well as a thorough explanation of the statistical procedure that was employed to get the desired outcomes. Next, the data analysis and discussion are presented. Analysis of descriptive data is done, and the findings are interpreted. This thesis will be concluded by delivering the ultimate conclusion in Chapter 5.

1. Capital Structure overview

1.1 Capital structure

In the conventional theory, the main objective of a firm is profit maximization, and to achieve it, companies differ with respect to capital structures.

Capital structure refers to the mix of financing resources used by the company to finance its investments (Myers, 2001); more briefly indicates how much equity and debt a company uses to finance its investments. Debt represents funds borrowed by the company, that must be repaid over time, usually with interest payments. Equity, on the other hand, represents ownership in the company, owned by shareholders whit a claim to the company's assets and earnings.

This ratio shows what proportion of a company's assets are funded by debt. The firm's ability to ensure debt repayment is ascertained using this coefficient. In the event of bankruptcy, more debt can be guaranteed the lower the debt ratio. On the other hand, a greater percentage indicates that the business frequently authorizes debt in order to fund its operations, which increases the likelihood that the business is bankrupt.

There are three different viewpoints on how companies select a finance mix. The first is that the decision between debt and equity can be determined by a company's growth stage. High-growth companies will need less debt than older companies. The second is that firms determine their financing mix by examining other companies in their industry. The third viewpoint holds that firms have strong preferences for the types of financing they like to utilize, resulting in a financing hierarchy, and that they only break from these preferences when they have no alternative.

The choice of capital structure is critical for firms as it affects their cost of capital, risk exposure, and financial flexibility. According to Ross, Westerfield, and Jordan (2019), "*The capital structure decision is crucial because it impacts the risk and return of shareholders and the cost of capital to the firm*". A company's capital structure influences its ability to raise funds, undertake new projects, and ultimately create value for its shareholders.

1.2 Debt vs Equity

Most of the companies have two options to finance its activities that are debt and equity (*Damodaran, 2014*). Despite the fact that the distinction between debt and equity is frequently expressed in terms of bonds and stocks, its origins lay in the cash flow claims of each type of financing.

Firstly, an equity claim entitled the holder to any remaining cash flows after all other promised claims have been satisfied, while a debt claim entitles the holder to a contractual set of cash flows (typically interest and principal payments). This is still the basic distinction, but there are more of them as well, some generated by legislative develops and some by the tax law.

The second difference is that debt has a prior claim on both cash flows on a period-to-period basis (for interest and principal payments) and on the firm's assets (in the event of liquidation). This is a natural consequence of the nature of cash flow claims (contractual versus residual).

Third, compared to dividends or other cash flows that accrue to equity, the tax laws have typically viewed interest expenses, which accrue to debt holders, quite differently and frequently far more favorably. In Italy, for example, interest expenses are fully deductible from taxes up to the interest income.

Fourth, while equity often has an unlimited existence, debt typically has an established maturity date.

Lastly, the majority or whole control over the management of the company is typically granted to equity investors due to their claim to the remaining cash flows of the business. Conversely, debt investors take on a far more passive role in management, having the ability to veto important financial choices at most.

In summary (*Figure 1*), debt is any form of financing that has a fixed life, generates tax-deductible payments, is a contractual claim on the company (rather than being determined by its operating performance), and has a priority claim over cash flows during both running and bankruptcy periods. On the other hand, equity is any form of financing that

remains a claim on the business after it is paid off, does not result in a tax benefit, has an indefinite lifespan, does not take precedence in bankruptcy, and gives the owner managerial authority. A hybrid security is any one that possesses traits from both.

Figure 1: Debt vs Equity summary
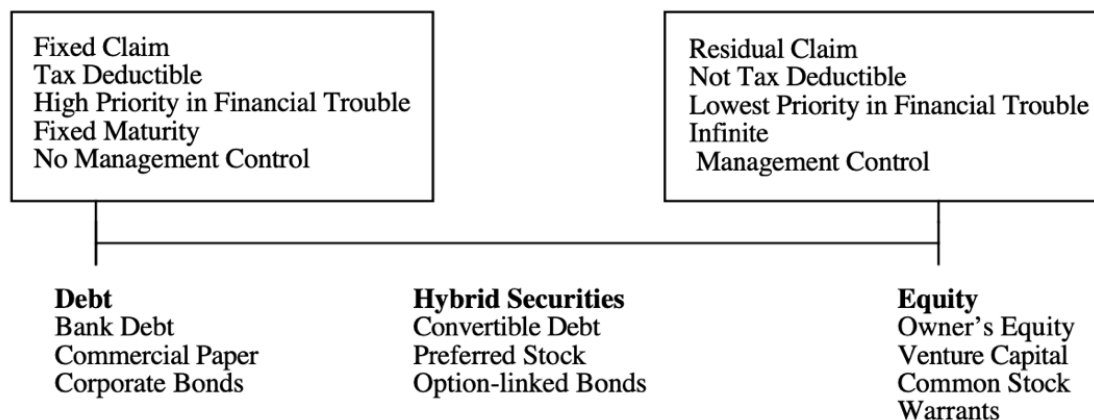
Source: Damodaran (2014)

2.2.1 Equity Financing instruments

Even though common stock is what most people associate with equity, a company's equity claim can take many different forms, based in part on the firm's development and risk characteristics as well as whether it is privately held or publicly traded. Due to their inability to issue securities in order to obtain equity, privately held companies have fewer options than publicly traded companies. As a result, they are dependent on the owner or a third party, typically a venture investor, to provide the equity required to maintain and grow the company. Access to financial markets provides publicly traded companies with more options.

1. *Owner's Equity*

Recognized as the primary funding source for startups. A new business lacks both the track record of performance to qualify for bank loans and the market recognition to approach the public for funding. These businesses rely on retained earnings and owners' equity. Owner's equity refers to the money that owners contribute or that is obtained from other family members or relatives. These monies give the business the early expansion it

needs. Even the biggest companies began with owner stock to fund the business's initial investments and provide company profits to the owners.

2. Venture Capital and Private Equity

Small firms usually encounter financing restrictions as they develop and grow, meaning that the available finances are insufficient to meet their needs for growth and investments. Small and frequently risky enterprises might receive equity financing from venture capitalists or private equity investors in exchange for a stake in the company.

In general, a company's ability to obtain capital from outside investors and/or go public will rise as it gets bigger and fall as its prospects for the future become less solid. Smaller and riskier companies are therefore more likely to look for venture capital and to be required to give up a larger portion of the company's worth in exchange for the funding.

3. Common stock

Issuing common stock at a price the market is willing to pay is the traditional method used by publicly listed companies to raise equity. This amount, known as the offering price for a recently listed business, is determined by the issuing entity (such as an investment banker). The price at which new equity is offered for an established publicly listed firm is often determined by the current market price. A firm may occasionally issue uniform common stock, meaning that each share is entitled to a proportionate share of voting rights as well as financial flows like dividends. In other instances, the voting rights and dividends offered by various classes of common stock will vary.

Common stock is a simple security that is quite simple to value and comprehend. In fact, since a publicly traded company lacking equity is unable to issue debt or hybrid securities, one could argue that common stock renders all other security options possible. Common stock is treated in accounting in accordance with established guidelines and is easily reported in the traditional financial statement format.

4. Warrants

Businesses have begun to consider equity alternatives to common stock in recent years. In the late 1980s, Japanese corporations successfully implemented a different approach called warrants. Companies typically issue warrants to the public in order to persuade

them to purchase new equity shares. The warrant holder has the opportunity to purchase company stock at a predetermined price at a later date. One feature of a call option is that the holder is not required to purchase the shares. Warrants are issued by a firm, as opposed to options. Bodie claims that the sole significant distinction between a warrant and a call option is that a warrant's execution necessitates the issuance of new shares by the company, raising the total number of shares. However, as no new shares are issued when a call option is exercised, the writer of the call option is required to deliver already issued shares of stock.

Using warrants has the following benefits over common stock: first, the implied volatility of the underlying stock is used to determine the warrant price; the higher the volatility, the higher the value. The firm may benefit from the use of warrants and other securities that resemble options to the extent that the market overestimates how risky the firm is. Second, at the moment of issuance, warrants by themselves do not impose any financial responsibilities. As a result, issuing warrants is a smart approach for a fast-growing company to generate capital, particularly if cash flows are currently weak or negative. Third, warrants appear to offer the best of both worlds for financial officers who are mindful of the dilution caused by issuing common stock—they raise equity investment funds for immediate use without producing any new shares.

5. *Contingent value rights*

The value of contingent value rights, which give investors the option to sell equities at a certain price, is derived from market volatility and investors' desire to protect their losses. The holders of put options, which are traded on options exchanges, have a right to sell the underlying stock at a fixed price that is comparable to this. Put options and contingent value rights are different in two main ways. First, the company receives the proceeds from the sales of contingent value rights, while private parties receive the proceeds from the selling of listed put options. Secondly, compared to standard listed put options, contingent value rights typically have far longer terms.

A company may decide to offer contingent value rights for a number of reasons. The most evident is that the company feels the market has greatly undervalued it. To capitalize on its conviction and alert the market to the undervaluation in this case, the company can sell contingent value rights. In addition, contingent value rights might be helpful in situations

where the put price misprices volatility and the market overestimates it. Lastly, the existence of insurance-like contingent value rights can draw in new buyers for the common stock.

1.2.2 Debt Financing instruments

Borrowing money is a glaring substitute for employing equity, which is a residual claim. This option gives the lender earlier claims in the event that the company experiences financial difficulties, in addition to creating a set obligation to make cash flow payments.

1. *Bank Debt*

Historically, banks have been the main source of borrowing funds for all privately held companies as well as a large number of publicly traded companies. The interest rates on loans are determined by the borrower's perceived risk. The borrower has various benefits from bank loan. It is first useful for borrowing very small sums of money; bond issues, on the other hand, benefit from economies of scale, with larger issues having lower costs. Secondly, in cases where the company is not well-known or widely followed, bank debt offers a convenient way for the borrower to provide internal information about projects and the company to the lending bank, which will aid in both pricing and loan evaluation. This is both expensive and impractical if bonds are issued as the main source of debt because bond issues require hundreds of investors. Lastly, in order for a company to issue bonds, it must agree to be rated by rating agencies and supply enough data for this rating to be made. Compared to working with a lending bank, dealing with a rating agency may be far more challenging and expensive, particularly for smaller businesses.

In addition to providing businesses with long-term and short-term loans, banks also frequently give them a flexible way to satisfy sporadic or unexpected funding needs. This is an option that the company can use in the event that it requires funding. A line of credit often establishes a maximum amount that the company may borrow and ties the interest rate to a market rate—such as the prime rate or Treasury rates—in most situations. Having a line of credit has the benefit of giving the company access to money without requiring it to pay interest on any unused balances. As a result, it's a helpful kind of funding for businesses whose needs for operating cash fluctuate. However, the company is frequently

forced to keep a compensatory balance on which it receives interest at rates that are either below market or nonexistent. For example, a company requesting a $20 million line of credit from a bank may be required to keep a $2 million compensating balance, which is interest-free. To fund working capital needs, the increased interest rates associated with taking out a more traditional loan must be evaluated against the opportunity cost of having this compensating balance.

2. *Bonds*

Bonds are an option for bigger, publicly traded companies instead of bank debt. In general, these companies benefit from bond offerings in a number of ways. First, because a greater number of financial market investors share the risk, bonds typically offer better financing terms than comparable bank debt. The second is that the issuer of the bonds may be able to add features to the debt that cannot be introduced to bank debt. Bonds may, for example, be convertible into shares of common stock or correlated with the price of commodities (commodity bonds).

Businesses must decide on a number of factors when borrowing money, such as the loan's maturity (short- or long-term), whether it should have fixed interest rates or one that fluctuates based on the market, the type of security offered to bond buyers (secured versus unsecured), and the debt's repayment schedule.

3. *Leases*

A business frequently takes out loans to pay for the purchase of assets that are essential to its operations. Leasing the asset is another strategy that could achieve the same result. Under a lease, the business agrees to pay the asset's owner a specific amount in exchange for the right to use the asset. The tax deduction for these fixed payments might range from full to partial, based on the accounting classification of the lease. Though the interests of the lessors, or the owners of the leased assets, may occasionally be subordinated to the claims of other lenders to the firm, failure to make lease payments initially leads in the loss of the leased asset and can also result in bankruptcy.

Typically, a lease can be classified as a capital lease or an operating lease. When it comes to operating leases, the lease's duration is usually shorter than the asset's lifespan, and the present value of the lease payments is typically far less than the asset's purchase price.

When the lease expires, the asset returns to the lessor, who may choose to lease it to another party or make an offer to sell it to the lessee. Generally speaking, the lessee has the option to end the lease and give the lessor back the asset. Therefore, in an operating lease, the lessor is clearly the owner of the asset, and the lessee is mostly or completely protected against the asset becoming obsolete.

A capital lease typically has a duration equal to the asset's life, with lease payments covering the asset's purchase price in current value. In general, a capital lease cannot be terminated. However, it may be renewed at the conclusion of the lease term at a discounted rate, or the lessee may purchase the asset at a favorable price. The lessor is frequently exempt from paying taxes and insurance on the asset, thus the lessee is left to handle these responsibilities. As a result, the lessee lowers the lease payments, creating what are known as net leases. If the asset depreciates or becomes obsolete under a capital lease, the lessee has a significant amount of risk. While there are clear distinctions between operating and financial leases, some lease arrangements combine elements of both types of leases and do not cleanly fall into one category or the other. We refer to these leases as combination leases.

1.2.3 Hybrid instruments

To summarize the work we have done so far, equity is a residual claim on the company's assets and cash flows. It is typically linked to management control. In contrast, debt is a fixed claim on the company's assets and cash flows and is typically unrelated to management control. Many securities have features that are more in line with debt than with equity, and they do not cleanly fit into either of these two groups. We refer to these assets as hybrid securities.

1. *Convertible debt*

A convertible bond is one that, at the bondholder's option, can be converted into a fixed number of shares. Conversion is often not a profitable alternative at the time of bond issuance, but when stock prices rise, it becomes more appealing. In order to reduce the interest rate paid on bonds, companies typically include conversion alternatives.

The option to convert a convertible bond into a predetermined number of shares of stock is typically granted to the bondholder. The number of shares of stock that each bond can be exchanged for is indicated by the *conversion ratio*. Put another way, the *market conversion value* is the amount that the bonds may currently be swapped for in shares. The excess of the bond's value over its conversion value is known as the *conversion premium*.

Depending on how well it serves their respective interests, both sides use convertible debt mainly for these two purposes. Businesses utilize it when they wish to reduce the interest rate on the bonds they are selling. These businesses are assured of their profits. On the other hand, lenders utilize it to add certain characteristics to the loans they make to businesses because they are concerned that they won't receive their money back. If they determine that it's in their best interest, they can convert their debts into shares.

2. Preferred Stock

Another instrument that has some traits in common with debt and some in common with equity is preferred stock. Similar to debt, preferred stock has a set dollar dividend that accrues and is paid when there are enough revenues, even if the company does not have the cash on hand to pay it. Similar to debt, preferred stockholders have no influence over the company and can only vote on matters that could impact their rights to the cash flows or assets of the company. Payments to preferred stockholders are made from after-tax cash and are not tax-deductible, similar to equity. Also, it does not have a maturity date when the face value is payable, much like equity. Priority-wise, preferred stockholders in a bankruptcy situation cannot obtain any assets of the company before the claims of the debt holders have been satisfied.

It can be claimed that the fixed commitments that preferred stock creates are similar to debt obligations and should be handled similarly, even if accountants and rating agencies still treat preferred stock as equity. However, because preferred stock liabilities are cumulative, cannot result in default, and do not supersede debt claims in the event of bankruptcy, they are typically less burdensome than debt commitments. Preferred stock cannot really be classed as debt because preferred dividends are not tax-deductible, and it cannot be seen as the same as equity due to the disparities in cash flow claims and control, unlike convertible debt, which can be broken down into equity and debt

components. For the purposes of capital structure research and cost of capital estimation, preferred stock is therefore considered a third component of capital, in addition to debt and equity.

Preferred stock is favored by managers because it allows them to maintain influence over important decisions and management concerns within the company. Common stock does not grant these privileges. Maintaining a low debt-to-equity ratio may also be a factor. When choosing to invest in a firm, investors consider this ratio to be one of the most important observations. Preferred stock is appealing to company management who don't want to cede control of the company to outsiders because it offers the benefits of debt and keeps the debt ratio low.

3. *Option-Linked Bonds*

Straight bonds and options are combined to create option-linked bonds. These bonds are often used by businesses because they can be readily tailored to meet their needs. These bonds are issued by companies and tie the bond interest to asset cash flows. The interest payments rise in tandem with the asset's value. The advantage of this is that it lowers the default risk by adjusting bond cash flows to company cash flows. These bonds are used by insurance firms because they provide them with a safety net in the event of a disaster, as the principal amount offered on the bond decreases.

1.3 Internal Financing

The last part was devoted to examining the various financing options that a company might choose from. All of them stand for external funding or money that has been raised by the company. Many businesses use cash flows from their current assets to cover the majority of their internal funding needs.

Internal financing is the term for cash flows produced by a company's current assets. These cash flows are referred to as internal equity since they are owned by the company's equity shareholders. External financing includes funds raised from sources other than the company, such as financial markets or private sources. Naturally, new debt, new equity, or hybrid forms can all be sources of external funding.

For a variety of reasons, a company may favor internal funding over external funding. External financing is usually difficult to obtain for private companies, and even when it is, it usually comes with a loss of control (a venture capitalist, for example, wants a piece of the action). Even while raising external finance for publicly traded companies may be simpler, the issuance costs are nonetheless high (particularly for fresh equity). On the other hand, using internally produced cash flows to finance operations allows you to maintain control and save significant transaction costs.

The use of internal funding to fund projects has significant limitations, notwithstanding these benefits. First, companies must acknowledge that internal equity carries the same cost as external equity, before accounting for variations in transaction costs, this means that a project funded by internal equity should to satisfy the same requirements as a project funded by external equity. Secondly, it is evident that internal equity is restricted to the cash flows that the company generates for its investors. Even in the event that the company does not pay dividends, these cash flows might not be enough to fund the company's initiatives. Therefore, relying solely on internal equity may cause project delays or even result in these projects being lost to competitors. Third, just because they only utilize internal equity to finance projects does not mean that management should assume that the stock price is irrelevant. In actuality, investors in companies with declining stock prices are far less likely than those in companies with increasing stock prices to trust their managers to reinvest their cash flows.

2. Literature overview

2.1 Capital structure theories

In corporate finance, the topic of capital structure is one that is frequently discussed. The debate is exacerbated by the absence of a single, comprehensive theory about the usage of debt vs equity (*Myers, 2001*). The original capital structure theory, formulated by **Modigliani and Miller** in *1958* and the foundation for numerous subsequent research, determined that the distribution of debt and equity has no bearing on a company's value in a perfect market. A perfect market exists with the following assumptions: free from taxes, bankruptcy costs, transportation costs, and asymmetric information; investors cannot influence stock prices; the same interest rate for both borrower and lender; same business expectations for all investors; managers maximize shareholders value without incurring the agency costs.

Even though the perfect capital market assumptions are unrealistic and do not exist in reality, this model helps identify scenarios when capital structure has no effect on business value. This suggests that this theory should be further developed and explored by future academics.

With the growth of the capital market, Modigliani and Miller (1958) realize that many assumptions do not exist in reality and so expand them taking into account tax purposes. Modigliani and Miller (1963) demonstrate that the enterprise value rises with more leverage for the tax shield of interest benefit. This implies that enterprises will profit from adopting greater leverage.

There are several debates for this interpretation of Modigliani and Miller. In particular, studies conducted by *Stiglitz (1969)* to test the idea of Modigliani and Miller found that certain businesses might pay interest rates greater than others, and that individuals could pay higher interest rates than businesses overall. In addition, the cost of loans differs amongst lenders. Therefore, Modigliani and Miller's assumptions that all loans or loan investors would pay the same interest rate are inconsistent. Conclusions from *Stiglitz's (1974)* subsequent research also refute the premise of no bankruptcy costs and the net expectation of corporate profit. *Wald (1999),* examining the capital structure decisions made by businesses in the USA, France, Germany, Japan, and the UK, discovered that

these nations' capital structure decisions differ, even when taking leverage into account. This gap is caused by the disparity in agency costs and tax policies as well as the asymmetric information that exists between creditors and shareholders. Therefore, even though Modigliani and Miller's views diverge in practice, this theory is crucial since it established the foundation for succeeding academics' contributions to the current financial economy.

Trade-off theory

By including market imperfections, firms seem to get an optimal, value-maximizing debt-equity ratio by trading off the advantages of debt against the disadvantages. So firms will set a target debt ratio and gradually will move towards achieving it (Myers, 1984).

The notion that there are no taxes is one of the fundamental assumptions in Modigliani and Miller's 1958 study. The MM theorem is developed by the trade-off theory, which takes bankruptcy costs and tax implications into account. The theory of Modigliani and Miller (1958) can be used to explain how businesses use taxes to control profitability and determine the ideal amount of debt. Conversely, an increased debt level raises the risk of bankruptcy, or what we call as the costs of bankruptcy, since as the debt-to-equity ratio rises, not only will the debt holders demand higher interest rates, but the shareholders will also expect higher returns on their investments *(Brealey and Myers, 2003*).

The trade-off theory offers a fixed debt ratio where debt's advantages and disadvantages are maximized. According to the notion, there should be a perfect balance between debt and equity for financing in order to maximize benefits and decrease debt costs. This approach should achieve or preserve the optimal capital structure if the company wants to maximize shareholder value (*Brounen et al., 2006*).

The business's cash flow is increased by the tax shield from interest on debt, which lowers taxes and raises the company's valuation. According to the trade-off theory, when a company's debt load rises, so does its financial risk, and as a result, stock investors become less likely to lend further funds or demand larger dividend payments from the company to offset the increased risk (*Myers, 1977*).

The reason for the term "trade-off" is that we are essentially modifying our capital structure to strike a balance between the tax shield and the low-weighted average cost

benefits of debt and the risk of financial instability (Arnold, 2001). Miller (1988) supports this effect as well and contends that the ideal debt-to-equity ratio is the maximum tax shelter available to a business.

In the literature, the trade-off hypothesis has been presented in a number of different ways. The adjustment cost to the ideal funding mix is taken into account by the dynamic trade-off hypothesis. The optimal leverage ratio is constrained, according to Mauer and Triantis (*1994*), by the cost of changing to the optimal debt ratio. The trade-off framework was modified by Brennan and Schwartz (*1984*) to include provisions for investment policy. Businesses need to decide how much of their borrowed capital is invested and how much is kept in cash.

Pecking order theory

According to Myers and Majluf (1984), the theory of pecking order was created by asymmetric information that existed between managers (inside organizations) and investors (outside enterprises). Managers will choose to execute a capital structure likely to meet the objectives of the company since they possess a wealth of internal information and are better informed than investors about the risks, growth potential, and actual state of the business. When deciding whether to issue debt or stock and whether to use internal or external capital, it is the disproportionate information that matters. Retained earnings are the source of internal funding in this case because they have lower issuance and transaction costs than other funding sources (like debt issuance).

According to this theory, a company's preference for financing new projects first with retained earnings, next with debt—which is thought to be more expensive type of financing—and finally with equity as a last option when outside financing is required. Additional research, such as *Al-Tally (2014)*, confirms this funding hierarchy by stating that companies prefer to finance new investments with internally produced cash first, followed by loan capital, and then stock issues. According to this idea, corporations tend to borrow more when their internal finances are insufficient to meet their investment demands (*Sunder & Myers, 1999; Myers, 2001*). The information asymmetries between the company and possible investors are what lead to the funding hierarchy. According to *Myers and Majluf (1984)*, if the company relies on its retained revenues to fund investment opportunities rather than issuing new securities, the information asymmetries

can be addressed. This leads us to the conclusion that information asymmetries only occur when a company receives outside funding, and therefore a company will be more successful if it has more available internal money.

Agency cost theory

The conflict of interest between principals (shareholders) and decision-makers (agents) of firms (managers, board members, etc.) is discussed in agency cost theory, which was developed by *Jensen and Meckling (1976*). They stated that the separation of ownership and control is the cause of agency costs.

Arnold (2008) argues that agency costs are a composite of direct and indirect expenses that arise from principals and agents operating in their own self-interest. While creditors are worried about receiving their money back, managers desire flexibility in decision-making, and shareholders want to see a rise in the firm's worth.

In their work "*Agency theory and optimal capital structure*," Grigore and Stefan-Duice (2013) contend that managers' limited ownership of the company's shares is the reason behind agency costs. Since most of the owners split the costs, this partial ownership will make the managers work less hard and spend more on amenities like company cars and fancy hotels. Various contracts that pay managers based on the value of the company's shares can incentivize them to operate in the best interests of the firm, or shareholders.

According to *Harris and Raviv (1990),* a company's debt serves as a monitor that reveals information about the agency's behavior. Supervisors are reluctant to divulge additional information that would jeopardize the company's viability and result in their termination. *Jensen (1986)* noted that as debt requires the company to make payments, it lowers the quantity of "free" cash available for managers to act in their own best interests. Shareholders may utilize this to exert control over managers and improve the company's efficiency. Debtors can safeguard themselves by requesting convertible bonds, which grant them voting rights and shares in the company, in the event that they are dissatisfied with the terms of their bond arrangement.

There are two categories into which agency costs might be categorized:

Costs associated with monitoring: The price associated with keeping an eye on agents' actions to ensure that they are carrying out business policies and interests. Consider auditing expenses.

Bonding costs: are the expenses that the managers, acting as agents, bear to align their interests with those of the principals (the owners). For instance, the manager's financial reports come at a time and effort cost to the manager.

To calculate agency expenses, add the residual loss from the two categories. The residual loss is the loss incurred by the "principal" as a result of the agent's decisions that are not in its best interests.

2.2   Capital structure and the economic performance

Analyzing a company's financial structure is important because of the impact it has on risk, cost of capital, cash flow dynamics, and the firm's overall value. Numerous research have been conducted to comprehend the capital structure of the businesses and examine how it affects performance.

Many factors influence the significance of the relationship between capital structure and performance, but the business type and geographic origin have the biggest effects (Krishnan & Moyer, 1997). According to Kochhar's explanation of asset specificity in his article "*Strategic Assets, Capital Structure, and Firm Performance*," debt holders typically do not favor firms with firm-specific assets and, in the event that they do, they will charge a high interest rate. Equity holders, however, will act in the reverse way. Kochhar goes on to say that a persistent source of competitive advantage is not sufficient to increase value; rather, the firm's financial policies should be in line with its economic rents, and its strategy should align with its policies. Consequently, we must take into account additional factors that may have a direct or indirect impact on the performance of the company. These factors may include the company's size, whether it is listed or not, age growth, industry, asset structure, managerial attributes, ownership, institutional and macroeconomic environment, and, lastly, the performance metrics we intend to employ.

In their 2009 study, "*Does Corporate Performance Determine Capital Structure and Dividend Policy?*" Faulkender, Milbourn, and Thakor observed that conflicts between managers and investors affect the capital structure and the performance of the company. They contended that improved company success breeds investor trust in managers and future decision-making flexibility, both of which boost performance.

In the case of Italy, *Intrisano (2012)* contends in his study on Italian corporations that Italian businesses are typically undercapitalized, heavily leveraged, and heavily reliant on loans for capital as opposed to equity. They also have a substantial exposure to short-term debt. He goes on to say that the high rate of leverage and short-term debt contributes to the fragility of the financial system, which is exemplified by the funding sources' volatility, rigidity, and exposure to financial risk. It is challenging to propose a single hypothesis that adequately describes the debt structure of Italian enterprises due to the linkages between various debt ratios and its drivers and performance ratios.

As we go through the corporate finance literature, we encounter several research with contradictory findings. These findings reveal a range of relationships between changes in capital structure and the firm's performance, including positive, negative, and mixed relationships. Below, each of these several research is examined in isolation.

2.2.1 Negative effects on performance

Numerous research have demonstrated a negative correlation between leverage and profitability or financial success. This negative association between leverage and company performance lends credence to the pecking order theory.

The theoretical outcomes of trade-off theory and pecking order theory were used by *Fama and French (2002)* in their investigation. They claimed that there is an inverse relationship between leverage and corporate profitability after using empirical study. Additionally, the study's findings indicated that a larger corporation will have less leverage and that there is typically a negative correlation between size and dividend distribution. The same relationship could be shown in *Kochhar's (1997)* study, "*Strategic Assets, Capital Structure, and Firm Performance*."

Khan (2012) uses ROA, GM, and Tobin's Q as performance measures and STDTA (short-term debt to total assets) and TDTA (total debt to total assets) as leverage measures in his study on 36 engineering firms in Pakistan that are listed on the stock exchange for the years 2003–2009. He finds a negative relationship between leverage and performance. He went on to say that the majority of engineering firms rely on short-term finance with strict covenants, which has an impact on performance.

An empirical study on the Indonesia Stock market was carried out by *Sudiyatno, Puspitasari, and Kartika (2012)* utilizing a sample of industrial companies that were registered at the stock market between 2008 and 2010. They substituted debt to total assets (DTA) for leverage and return on assets (ROA), respectively. The results of ANOVA testing and regression analysis indicate that financial leverage significantly and negatively affects company performance. They contend further that the low rate of return (ROR) resulting from the increased usage of debt is the cause of this unfavorable relationship. As a result, they claim, Indonesian businesses are unable to use their debt income to pay off new debt.

Shen (2012) used precise accounting data from 2007 from nations like Germany, France, Italy, and the UK in his report on European companies. To get to the final conclusions, the study uses OLS, correlation metrics, and descriptive statistics. Shen's empirical research reveals a negative correlation between leverage and firm performance in the UK, Germany, France, and Italy. These results are fairly comparable to those of *Rajan and Zingales (1995)*, who found no change in the link between capital structure and business performance over the previous ten years in their analysis of the G7. Shen offered three reasons for his poor performance: the franchise value, which is connected to high efficiency from liquidation; the Pecking order theory; and the company being overly leveraged by the manager, which lowers performance. This implies that the firm's performance will be replaced by equity.

Domenichelli (2012) conducted an empirical study on Marche region-based small Italian businesses. The businesses were chosen from the Bureau Van Dijk database spanning the years 1999–2008. 310 firms were analyzed using the Ordinary Least Square (OLS) approach. The study's conclusion that leverage (debt to assets) and performance (ROE)

have a negative and substantial relationship provides support for the pecking order theory's explanation of the capital structure of small Italian businesses.

Al-Tally (2014) conducted a study covering 57 Saudi Arabian publicly traded companies between 2002 and 2010. utilizing ROE and ROA as indicators of business performance and the ratio of total debt to assets as a measure of leverage. Upon completing the statistical processes and performing an ANOVA, he discovered that, generally speaking, a decline in leverage level was associated with an improvement in firm performance. A lower debt-to-asset ratio was associated with higher gross profit margins, such as ROE and ROA.

"*The Determinants of Capital Structure of Non-Financial Firms Before and Post Crisis of 2007*" was the topic of *Taylor's (2015)* research. She substituted TDTA for leverage and other independent variables like as growth, size, profitability, tangibility, and liquidity. She discovered a negative association between profitability and growth with leverage after performing a correlation analysis. This inverse relationship was consistent with the study's hypothesis.

Another study *by Nagambi and Wase (2015)* on non-financial enterprises in Cameroon found a negative link between leverage and performance. The data set used encompassed primarily manufacturing enterprises and was sourced from 2009 to 2011. While total debt to assets indicates leverage, return on equity (ROE) was utilized as a performance metric. Additional factors such as development, tangibility, and size were utilized as control variables.

2.2.2 Positive effects on performance

Because profit efficiency is a measure of how well revenues are generated and costs are managed, *Berger and Di Patti (2003)* utilized it to evaluate performance in their research on the banking sector rather than cost efficiency and other accounting measures. They demonstrated that a bank's profit efficiency increases with debt or decreases with equity; this relationship was statistically and economically significant. Additionally, they discovered that, in line with agency theory, profit efficiency is sensitive to the ownership structure of the company. In addition, this work was noteworthy because it examined the

reverse causal relationship between performance and capital structure—a concept not found in previous studies in this field.

In their research on Sri Lankan manufacturing companies, *Nimalathasan and Valeriu (2010)* discovered a strong and positive correlation between capital structure and performance. They employed data spanning five years, from 2003 to 2007, for their investigation. The results were obtained using a correlation matrix and multiple regression analysis. The capital structure was indicated by DTE, DTA, CG (capital gearing), and IC (interest coverage); the performance was measured by GPR (gross profit ratio), OPR (operation profit ratio), NPR (net profit ratio), ROCE (return on capital employed), and ROI (return on investment). The researcher goes on to say that, with the exception of two profitability indexes, capital structure greatly influences all of the others.

Majumdar and Sen's (2010) analysis of 1026 Indian companies that were listed on the Bombay stock market between 1988 and 1993 provided encouraging evidence on the correlation between debt and performance. With the exception of fixed deposits, which appear to have a positive relationship with performance, the majority of the variables that reflect capital structure are unimportant, according to the results of the quantile regression and OLS methods. Additionally, they contend that arm's length financing appears to have a greater impact on a firm's profitability in the instance of India. Their findings also demonstrate that higher bank borrowing has a detrimental influence on performance for more lucrative businesses.

Iranian companies listed from 2006 to 2011 on the Tehran Stock Exchange were the subject of a study by *Ebrati, Emadi, Balasang, and Safari (2013)*. The findings indicate a positive correlation between capital structure and performance. SDTA, LDTA, TDTA, and TDTQ were used to measure the capital structure, and ROE, ROA, EPS, and MBVR (market value of equity to the book value of equity) were used to measure performance. Regression study demonstrates a favorable relationship between capital structure and performance as determined by ROE and MBVR.

According to *Adesina, Nwidobie, and Adesina's (2015)* analysis of the banking industry, capital structure and financial performance are significantly positively correlated. A sample of ten banks that were quoted on the Nigerian Stock Exchange (NSE) for eight years, from 2005 to 2012, was included in their analysis. The ordinary least squares

approach was utilized to generate the results. Bank debt and equity financing were utilized as independent factors, and bank performance served as the dependent variable. The Arthurs contend that improved financial performance can be achieved by raising debt while maintaining equity levels unchanged.

2.2.3 Mixed effects on performance

As an extension of *Jensen and Meckling's (1976)* interest in the effects of capital structure on business performance, this research conducted a variety of experiments to examine the relationship between financial leverage and firm performance. Nevertheless, the outcomes showed conflicting and inconsistent findings. Many investigations were carried out to determine the true relationship in light of this study. Numerous research produce contradicting results, even though some do have favorable or negative findings.

81 firms from the major economies of Asia were studied by *Krishnan and Moyer (1997)*. As stand-ins for company performance, they employed market return on stock, pre-tax operating margin, return on invested capital, and ROE and ROIC. They selected five-year averages, ending in 1992, to prevent measurement instability and bias over the near period. The ratio of market debt to equity market value and long-term debt to debt market value is used to calculate leverage. Since equity makes up the majority of the company's funding, their findings indicate a high return on equity in the case of Hong Kong, which demonstrates a negative relationship between leverage and performance.

In his study of every Ghanaian company registered for five years (1998–2002), *Abor (2005)* discovered that applying various measures of leverage produced inconsistent results. The researcher measured leverage using the ratio of short-, long-, and total debt to total capital, and he measured performance using ROE. The results of the regression study show a strong positive correlation between profitability and (DA) total debt to total capital and (SDA) short-term to total capital. However, it was discovered that there was a negative correlation between profitability and (LDA) long-term debts to total capital. According to the researcher, the majority of Ghanaian businesses rely on short-term debt financing while, because long-term debt is typically more expensive and using it excessively might result in low profitability, it is rarely used.

Salim and Yadav (2012) looked into a sample of 237 companies that were listed between 1995 and 2011 on the Bursa Malaysia stock exchange. They used a number of variables, including LTD, STD, and TD, as proxies for capital structure in their analysis. Tobin's Q, ROA, ROE, and EPS served as the performance proxies. The performance variable revealed outcomes that were at odds with the company's capital structure. Performance as assessed by ROA, ROE, and EPS has a negative association with LTD, STD, and TD, whereas performance as measured by Tobin's Q has a strong positive link with both STD and LTD.

Al-Taani (2013) conducted research on Jordanian manufacturing companies listed between 2005 and 2009 that were registered with the Amman Stock Exchange. The researcher used five years of data, performance metrics ROA and PM (profit margin), and capital structure measurements STDTA, LTDTA, and TDE. The results of these variables were distorted and inconsistent. The relationship between LTDTA and STDTA was shown to be unfavorable. and PM, while TDE and ROA have a favorable relationship. A negative relationship between TDE and PM is revealed by the other regression model. Based on the findings, the researcher draws the conclusion that a firm's performance is not significantly influenced by its capital structure.

In his study "*Capital Structure and Performance of Firms in Italy," De Luca (2014)* used data on 120 Italian-registered enterprises from 2007 to 2011. Based on the many factors used, he discovered inconsistent and inconsistent conclusions. Of the 120 companies, 79 belonged to the manufacturing sector and 41 to the service sector. He measured economic performance using three indicators, and accounted for financial debt using three distinct variables. The findings indicate a positive and substantial relationship between return on investment (ROI) and both short- and long-term financial debt as well as overall long- and short-term debt. There is a negative correlation between short-term financial debt to assets and the ROE and ROA of large industrial enterprises. This article claims that large enterprises perform best in Italy's industrial and service industries, with medium-sized and small firms following suit.

3. Research methodology

3.1 Introduction

The presentation, interpretation, and analysis of the data we collected are covered in this chapter. This chapter is split into several subsections.

The descriptive statistics of all the variables under investigation (described in Section 3.2) will be covered in Section 3.3. These include the independent variables, such as total debt to total assets (TD), short-term debt to total assets (STD), and long-term debt to total assets (LTD), and the dependent variables, return of asset (ROA) and   TOBIN'S Q. Additionally, there are control variables for age, firm size, and sales growth.

It is necessary to confirm that the data is stationary, normally distributed, free of seasonal effects, and devoid of multicolinearity before moving further with the regression analysis. Therefore, a correlation matrix analysis is conducted in Section 3.4.

The regression analysis results for both dependent variables are shown in Section 3.5, along with the check of the influence of the years, ateco code, and region on these results.

The outcomes of the analysis and the study's conclusions will be covered in Section 3.6, which will conclude this chapter by comparing the results to earlier research.

3.2 Data and variables definition

The data collected are taken from AIDA (Italian Digital Database of Companies), which is the Italian source of the Bureau Van Dijk European Database. The AIDA database includes full accounts of all active and insolvent Italian capital firms (apart from banks, insurance companies, and public entities) that are organized according to the 4th EU Directive scheme and span up to ten years. The data includes financial statements, commercial information, and demographics.

The selected companies have the following characteristics: all active companies between 2018 and 2022, in the form of limited liability companies (SRL) and joint-stock companies (SPA), and publicly traded. Additionally, financial firms are excluded to

minimize the impact of financial sector regulations and characteristics on enterprises' financing decisions.

In total 373 firms are isolated, of which, after removing those with missing data, 139 companies remain.

The relationship between capital structure and company economic performance was explored by treating the former as an independent variable and the latter as a dependent variable.

Independent variables

The total debt ratio (TD), long-term debt ratio (LTD), and short-term debt ratio (STD) were employed to assess the capital structure of the companies in the sample. Leverage was divided into proportional components to examine its influence on company performance. Proportional debt analysis enables firms to ascertain the payments owed to debt holders based on their financial performance and the timetable for debt repayments. According to the literature, the proportions of different capital components have diverse implications for firm performance.

This study identified total debt ratio (TD) as the ratio of a company's total debt to its total assets:

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

The long-term debt ratio (LTD) was calculated as long-term debt divided by total assets:

$$Long-term\ debt\ ratio\ (LTD) = \frac{\text{long}-\text{term debt}}{\text{Total assets}}$$

The short-term debt ratio (STD) was calculated by dividing it by the total amount of assets.

$$Short-term\ debt\ ratio\ (STD) = \frac{\text{short}-\text{term debt}}{\text{Total assets}}$$

Dependent variables

Corporate performance measures are the measurements used to assess a company's efficacy and efficiency in achieving its strategic goals and providing value to its stakeholders. Accounting-based measures, like ROA (*Haniffa and Hudaib, 2006; Abdallah and Ismail, 2017; Saidat et al. 2019: 2020; Marashdeh et al. 2021*) and market-based measures, like Tobin's Q (*Christensen et al., 2015; Saidat et al. 2020; Alhaddad et al. 2022*) are the two main categories into which corporate performance can be separated.

ROA looks at how much money the company makes from using its resources. The return on assets (ROA) indicates the profit margin for each asset that a company invests in. The calculation of ROA was:

$$ROA = \frac{\text{Net income}}{\text{Total assets}}$$

Tobin's Q represents the market performance of the firm and is equal to:

$$Tobin's\ Q = \frac{\text{Total Market Value of Firm}}{\text{Total assets Value of Firm}}$$

Control variables

Numerous control variables are included to account for the influence of firm-specific impacts on the estimated outcomes (*Ghardallou, 2022*).

Firstly, as a control variable, firm size (SIZE) is utilized. One approach to approximate the size of a business is by employing the natural logarithm of its total assets.

Secondly, the company's sales growth (SALESGROWTH) is incorporated, calculated by dividing the difference between current sales and sales from the previous year by the latter.

The final variable is age (AGE), determined by subtracting each year considered in the analysis (2018-2022) from the year of birth.

3.3 Descriptive statistics

The outcomes of a descriptive statistics analysis done with Stata are shown in the section that follows.

A brief summary of the dataset is provided by descriptive statistics, which also offer insightful information about its main features and distributions. The central tendency and variability within the data are clearly understood by looking at metrics like means, standard deviations, and quartiles. As a crucial first stage in data analysis, these descriptive statistics allow for a more thorough examination of the dataset and provide guidance for more advanced analytical techniques.

Based on the number of missing data, the sample consists of 695 observations for all variables, except for sales growth, which has 671 observations.

The data are collected from the period of 2018-2022.

Table 1. Descriptive statistics results

Variable	Obs	Mean	Std. dev.	Min	Max
ROA	695	.7373957	8.769294	−58.48	32.21
TOBINSQ	695	.7572201	.8405624	0	6.303
STD	695	.0881749	.1251528	0	1.666302
LTD	695	.1292275	.1118827	0	.625062
TD	695	.2174024	.1709958	0	1.667613
SIZE	695	12.51538	1.969092	7.176686	18.63842
SALESGROWTH	671	1.185466	16.3234	−1	374
AGE	695	32.79856	25.68238	1	145

Table 1. presents the statistics derived from these observations.

The avarage value of ROA and Tobin's Q are very similar, at 0.737 and 0.757 rispectively. The avarage value of TD is 0.217 meaning that these companies finance their assets with almost 22% of debt and 78% of shares. The avarage value of size is 12.515; the avarage value of sales growth is 1.185, and the avarage value of age is 32.798.

Compared to Tobin's Q, ROA has the highest maximum value of 32.21; however, ROA has the lowest minimum value of -58.48.

The volatility in ROA is estimated to be 8.769, while the volatility in Tobin's Q is 0.84, indicating that the return on assets fluctuates significantly relative to the market value of the firm's assets.

3.4 Correlation matrix

The degree of relationship between the variables under investigation can be determined by examining their correlation matrix. Although the absence of multicollinearity between the variables is assumed, correlations between them cannot always be entirely eliminated. The coefficient values in the multicollinearity test range from -1 to 1, representing a perfectly negative to a perfectly positive correlation.

According to *Pallant (2005)*, multicollinearity occurs between two variables if their correlation exceeds 0.9.

Table 2. Correlation matrix results

	ROA	TOBINSQ	STD	LTD	TD	SIZE	SALESG~H	AGE
ROA	1.0000							
TOBINSQ	0.3664	1.0000						
STD	−0.1463	−0.0862	1.0000					
LTD	−0.0340	0.0379	0.0298	1.0000				
TD	−0.1298	−0.0385	0.7543	0.6787	1.0000			
SIZE	0.2254	−0.0647	−0.0737	0.1436	0.0402	1.0000		
SALESGROWTH	−0.0127	−0.0094	−0.0222	−0.0784	−0.0678	−0.0235	1.0000	
AGE	−0.0019	−0.1542	0.0039	−0.0351	−0.0202	0.2525	−0.0036	1.0000

The results from the *Table 2.* suggest that there is a positive correlation of 0.3664 between the dependent variables ROA and Tobin's Q.

Additionally, there is a negative correlation between all independent and control variables and ROA, except for size, which has a positive correlation of 0.2254.

Similarly, there is a negative correlation between all independent and control variables and Tobin's Q, except for long-term debt, which exhibits a weak positive correlation of 0.0379.

Moreover there is a positive correlation of 0.7543 and 0.6787 between short-term debt and long-term debt, rispectively, with respect to total debt.

Finally, control variables show a negative correlation with total debt, and there is a weak positive correlation of 0.2525 between size and age.

Since none of the correlation values are more than 0.90, there may not be perfect collinearity between the variables.

3.5 Regression analysis

Linear regression analysis is a statistical method for determining the relationship between one or more independent variables and a dependent variable.

In this study, linear regression is used to assess the impact of several factors on financial performance metrics including Return on Assets (ROA) and Tobin's Q. A two-step regression analysis was performed to investigate the relationship between independent and dependent variables.

Initially, the regression analysis was conducted using independent variables such us short-term debt ratio (STD), total debt ratio (TD), firm size (SIZE), sales growth (SALESGROWTH), and firm age (AGE). NOTE: LTD are omitted because of collinearity.

The regression model was then updated to include the impacts of categorical parameters such as year, region, and ATECO code.

This approach allowed for a comprehensive examination of both quantitative and categorical factors in relation to ROA and Tobin's Q, providing insights into the combined impact of various factors on financial performance and market valuation.

The sequential regression study allowed for a better understanding of how different factors influence the variability in ROA and Tobin's Q across years, regions, and economic sectors.

The results are statistically significant at the 1%, 5%, and 10% levels.

Table 3. Linear Regression Analysis Results

Variables	ROA	TOBIN'S Q
STD	-3.304	-0.926**
	(3.819)	(0.402)
TD	-5.067*	0.311
	(2.806)	(0.296)
SIZE	1.029***	-0.018
	(0.167)	(0.018)
SALESGROWTH	-0.008	-0.001
	(0.019)	(0.002)
AGE	-0.021*	-0.005***
	(0.012)	(0.001)
Constant	-9.756***	1.158***
	(2.055)	(0.217)
Observation	671	671
R-squared	0.076	0.034

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3. shows the first step linear regression results.

Short-term debt (STD) demonstrates a negative relationship with both ROA and Tobin's Q which is only statistically significant at 5% for the latter, implying that increasing short-term debt leads to a reduction in both performance measures. Holding other variables equal, each unit increase in short-term debt reduces ROA by approximately 3.304 units and Tobin's Q by approximately 0.926 units.

Similarly, total debt (TD) exhibits a significant negative impact on ROA at 10%, suggesting that higher levels of total debt are associated with lower returns on assets. However, the impact of total debt on Tobin's Q is not statistically significant. ROA reduces by around 5.067 units for every unit rise in total debt, whereas Tobin's Q remains same while other factors are held constant.

Firm size (SIZE) demonstrates a significant positive relationship with ROA at 1%, indicating that larger firms tend to have better returns on assets. In contrast, the effect of firm size on Tobin's Q is not statistically significant. ROA improves by about 1.029 units for every unit increase in firm size, while Tobin's Q does not vary appreciably when all other variables are held constant.

Sales growth (SALESGROWTH) does not show a significant impact on either ROA or Tobin's Q.

Firm age (AGE) displays a significant negative relationship with both ROA and Tobin's Q at 10% and 1% rispectively, suggesting that older firms may experience lower returns and market valuations. Holding other variables constant, each unit increase in firm age reduces ROA by approximately 0.021 units and Tobin's Q by approximately 0.005 units.

Furthermore, R-squared values represent the proportion of variation explained by the model for each dependent variable. In this scenario, the model accounts for roughly 7.6% of the variance in ROA and 3.4% of the variance in Tobin's Q.

Table 4. Linear Regression Analysis Results with i.year

VARIABLES	ROA	TOBIN'S Q
STD	-4.942	**-0.959****
	(3.851)	(0.407)
TD	-3.699	0.334
	(2.842)	(0.300)
SIZE	**1.027***	-0.018
	(0.166)	(0.018)
SALESGROWTH	-0.010	-0.000
	(0.019)	(0.002)
AGE	-0.019	**-0.005***
	(0.012)	(0.001)
2019.year	-0.455	0.029
	(0.975)	(0.103)
2020.year	**-2.697***	-0.069
	(0.985)	(0.104)
2021.year	-1.484	0.101
	(0.981)	(0.104)
2022.year	-1.003	-0.110
	(0.977)	(0.103)
Constant	**-8.790***	**1.166***
	(2.119)	(0.224)
Observations	671	671
R-squared	**0.088**	**0.042**

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4. shows the results of linear regression using years as a categorical variables. Each year from 2019 to 2022 is represented as a categorical variable. The coefficient for each year represent the change in ROA and Tobin's Q compared to the reference year.

The results suggest that only the coefficient for the year 2020 is statistically significant at 1% for ROA, indicating a significant change in ROA compared to the reference year. For Tobins' Q, none of the year coefficient are statistically significant.

There are also little changes in other results. As in the previous results, there is a negative reletionship between short-term debt ratio (STD) and both ROA and Tobin's Q, which is only statistically significant at 5% for the latter. For ROA the coefficient is -4.942, meaning that for every unit increase in short-term debt, ROA decreases approximately 4.942 units. For Tobin's Q the coefficiet is -0,959, indicating that for every unit increase in short-term debt, Tobin's Q decreases by approximately 0.959 units.

Similarly to above, total debt (TD) shows a negative association with ROA, indicating that for every unit increase in total debt, ROA decreases by approximately 3.699 units. However, total debt does not significantly affect Tobin's Q.

Firm size (SIZE) exhibits a significant positive relationship with ROA at 1%, implying that for every unit increase in firm size, ROA increases by approximately 1.027 units. Conversely, firm size does not significantly influence Tobin's Q.

Sales growth (SALESGROWTH) has no significant effect on either ROA or Tobin's Q, as the coefficients are close to zero and not statistically significant.

Regarding firm age (AGE), a negative relationship is observed with both ROA and Tobin's Q, but differently from the previous results, is only statistically significant for the latter.

Overall, the regression model explains approximately 8.8% of the variance in ROA and 4.2% of the variance in Tobin's Q.

Table 5. Linear Regression Analysis Results with i.atecocode

VARIABLES	ROA	TOBIN'S Q
STD	-0.552	**-0.916****
	(3.578)	(0.366)
TD	**-9.935*****	0.367
	(2.879)	(0.295)
SIZE	**1.405*****	-0.003
	(0.174)	(0.018)
SALESGROWTH	-0.007	0.000
	(0.017)	(0.002)
AGE	**-0.031****	**-0.005*****
	(0.012)	(0.001)
13.ateco_group_numeric	4.597	0.090
	(3.867)	(0.396)
14.ateco_group_numeric	-0.982	**0.759****
	(3.617)	(0.371)
15.ateco_group_numeric	-1.749	**0.802****
	(3.622)	(0.371)
19.ateco_group_numeric	4.594	-0.029
	(4.464)	(0.457)
20.ateco_group_numeric	-2.170	0.200
	(4.463)	(0.457)
21.ateco_group_numeric	4.084	**2.723*****
	(4.522)	(0.463)
23.ateco_group_numeric	1.945	0.029
	(3.863)	(0.396)
25.ateco_group_numeric	0.350	-0.175
	(3.524)	(0.361)
26.ateco_group_numeric	3.126	**0.935*****
	(3.297)	(0.338)
27.ateco_group_numeric	1.466	0.357
	(3.389)	(0.347)
28.ateco_group_numeric	-1.123	0.364
	(3.396)	(0.348)
29.ateco_group_numeric	-2.283	0.367
	(3.661)	(0.375)

30.ateco_group_numeric	**-7.174****	-0.175
	(3.454)	(0.354)
31.ateco_group_numeric	-1.987	-0.496
	(4.443)	(0.455)
35.ateco_group_numeric	**-10.043*****	-0.074
	(3.441)	(0.352)
36.ateco_group_numeric	-7.129	-0.247
	(4.457)	(0.457)
38.ateco_group_numeric	-0.545	-0.157
	(4.416)	(0.452)
43.ateco_group_numeric	**16.858*****	**1.980*****
	(3.823)	(0.392)
46.ateco_group_numeric	-5.871	0.486
	(3.640)	(0.373)
47.ateco_group_numeric	-2.049	0.180
	(3.466)	(0.355)
49.ateco_group_numeric	-3.285	0.051
	(3.937)	(0.403)
52.ateco_group_numeric	-0.045	0.409
	(3.616)	(0.370)
58.ateco_group_numeric	-4.321	-0.074
	(3.837)	(0.393)
59.ateco_group_numeric	1.702	-0.248
	(4.457)	(0.457)
61.ateco_group_numeric	-0.916	**0.729****
	(3.604)	(0.369)
62.ateco_group_numeric	-3.339	0.412
	(3.330)	(0.341)
63.ateco_group_numeric	-1.652	0.524
	(4.422)	(0.453)
64.ateco_group_numeric	-3.517	0.060
	(3.275)	(0.336)
68.ateco_group_numeric	**-9.949*****	-0.039
	(3.610)	(0.370)
70.ateco_group_numeric	-4.357	0.062
	(3.199)	(0.328)

71.ateco_group_numeric	0.317	0.322
	(3.900)	(0.399)
73.ateco_group_numeric	-3.105	-0.196
	(3.640)	(0.373)
77.ateco_group_numeric	**7.210***	**1.486***
	(3.828)	(0.392)
79.ateco_group_numeric	-3.003	-0.012
	(4.425)	(0.453)
82.ateco_group_numeric	1.377	-0.273
	(3.861)	(0.396)
96.ateco_group_numeric	-0.605	-0.242
	(4.438)	(0.455)
Constant	**-11.301***	**0.697***
	(3.725)	(0.382)
Observations	671	671
R-squared	**0.328**	**0.336**

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5. presents the results of linear regression utilizing Ateco codes as a categorical variables. ATECO (Ateco Italia) codes constitute a classification system widely adopted in Italy to categorize economic activities, enabling researchers to investigate how different sectors and industries impact financial outcomes and market dynamics. Incorporating ATECO codes as a categorical variables in regression models allows researchers to investigate how variations across economic sectors affect dependent variables of interest, such as financial performance measurements or market valuation indicators. Each ATECO group represents a specific economic sector, and the coefficients for each ATECO group indicate how belonging to that sector affects ROA and Tobin's Q compared to the reference category.

The results indicate that certain ATECO groups exhibit statistically significant effects on ROA or Tobin's Q, while others do not.

For instance, a significant negative relationship is observed between ROA and the sectors involved in "Manufacture of other transport equipment" at 5%; "Electricity, gas, steam, and air conditioning supply" at 1% and "Real estate activities" at 1%. This suggests that companies operating in these sectors tend to yield lower returns on assets compared to others.

Additionally, there exists a significant positive relationship between ROA and both "Specialized construction activities" and "Rental and operational leasing activities" sectors at 1% and 10%, rispectively, indicating that companies within these sectors tend to generate higher returns on their assets.

Regarding Tobin's Q, a significat positive relatioship is observed with the sectors involved in "Manufacture of wearing apparel", "Manufacture of leather and similar products" and "Telecommunications" at 5% for each. Similarly, significant positive relationship are observed at 1% with the sectors involved in "Manufacture of basic pharmaceutical products and pharmaceutical preparations", "Manufacture of computers and electronic and optical products; electromedical and measuring devices, watches", "Specialized construction activities" and "Rental and operational leasing activities".

Tobin's Q serves as a metric that compares the market worth of a company's assets to their replacement cost. A positive relationship with Tobin's Q suggests that the market values companies in certain industries higher than their asset replacement costs.This positive link could indicate that certain industries are perceived to have attractive development prospects, profitability, or other factors that contribute to increased market valuation. It could also suggest that investors are confident in the long-term prospects and performance of companies within these industries.

Regarding other findings, they closely resemble the results from the previous analysis with the main difference being a reduced negative relationship between ROA and short-term debt ratio (STD), resulting in a lower R-squared value for ROA. Overall, the regression models explain a significant portion of the variance in both ROA (32.8%) and Tobin's Q (33.6%). However, there is a lower variance in ROA compared to Tobin's Q, differing from the previous analysis.

Table 6. Linear Regression Analysis Results with i.region

VARIABLES	ROA	TOBIN'S Q
STD	-3.791	**-0.807****
	(3.837)	(0.405)
TD	-4.373	0.328
	(2.865)	(0.303)
SIZE	**1.072***	0.002
	(0.174)	(0.018)
SALESGROWTH	-0.006	-0.000
	(0.019)	(0.002)
AGE	**-0.028****	**-0.005***
	(0.013)	(0.001)
2. Emilia Romagna	2.444	0.035
	(2.639)	(0.279)
3. Friuli-Venezia Giulia	1.166	0.095
	(3.537)	(0.374)
4. Lazio	2.683	0.104
	(2.633)	(0.278)
5. Liguria	-1.683	0.102
	(4.337)	(0.458)
6. Lombardia	2.636	0.271
	(2.533)	(0.268)
7. Marche	2.258	-0.146
	(3.217)	(0.340)
8. Piemonte	1.991	0.156
	(2.950)	(0.312)
9. Puglia	**8.689****	-0.404
	(4.298)	(0.454)
10. Sardegna	**10.388****	-0.115
	(4.345)	(0.459)
11. Toscana	**9.125***	**0.662****
	(2.875)	(0.304)
12. Trentino-Alto Adige	4.150	-0.328
	(4.320)	(0.456)
13. Umbria	1.110	**0.684****
	(3.204)	(0.338)

14. Veneto	1.403	0.095
	(2.691)	(0.284)
Constant	**-12.913*****	**0.720****
	(3.138)	(0.332)
Observations	671	671
R-squared	**0.121**	**0.076**

Standard errors in parentheses
*** p<0.01, **p<0.05,*p<0.1

Table 6. presents the results of linear regression utilizing Regions as categorical variables. Employing region as a categorical variable in regression analysis provides a more detailed understanding of how geographical location affects financial indicators and market dynamics in a specific setting, like Italy. This approach allows for a thorough examination of how regional characteristics interact with other variables to influence interest rate outcomes such as return on assets (ROA) and market valuation indicators such as Tobin's Q. Each region has unique economic, social, and infrastructure aspects, making them critical in identifying specific trends and patterns. As a result, examining the impact of regional variables enables a more detailed understanding of the intricate interplay between geographic location and financial results, giving useful insights for policymakers, investors, and enterprises operating in specific regions.

The coefficients for all the regions are either positive or close to zero, but only a few are statistically significant.

For instance, regions such as Puglia, Sardegna and Toscana exhibit a significant positive relationship with ROA at 5% for the former two and at 1% for the latter, indicating that companies located in these regions tend to yield higher returns on assets.

Similarly, for Tobin's Q, a significant positive relationship are observed in regions such as Toscana and Umbria at 5%, suggesting that companies located in these regions tend to have higher market valuations.

Overall, the regression model explains a substantial portion of the variance in ROA (12.1%) and Tobin's Q (7.6%).

3.6 Results discussion

The objective of this study is to investigate how changes in a company's capital structure (the proportion of debt to total assets) impact its financial performance (ROA and Tobin's Q) over a period of 2018 to 2022 for 139 publicly listed companies in Italy. One of the dependent variables, return on asset (ROA), is also utilized as an indicator for the financial performance of the companies in research by Pouraghajan (2012), Ebaid (2009), and Hammes & Chen (2004). A ratio of short-term debt (STD), long-term debt (LTD) and total debt (TD) used as a proxy for capital structure, is also used by Al-Haddad L.M., Saidat Z., Seaman C. (2023).

According to the static trade-off hypothesis, a company's capital structure should include debt in order to discipline its self-interested managers and benefit from a tax shield. Pecking order theory, on the other hand, contends that businesses should rely more on internal resources rather than loans from outside sources as their main source of funding and opposes the use of further debt.

The study's findings are consistent with the pecking order theory, which supports using internally generated funds rather than debt and suggests that debt has a detrimental effect on a company's performance. These findings contradict both the second statement of Modigliani and Miller (1963) and the trade-off theory.

Table 3. exhibits the linear regression results, Tables 4, 5 and 6 exhibits the linear regression results utilizing several categorical variables. In all tables a negative relationship between ROA and total debt ratio (TD) is observed. This negative relationship is reflected in the coefficients assigned to the total debt ratio, which are all negative: -5.067, -3.699, -9.935, and -4.373, respectively, in Tables 3, 4, 5, and 6. The return on assets tends to decline as the overall debt ratio rises, according to the negative coefficients. Moreover, these coefficients' significance thresholds differ according on the particular investigation. The negative association between ROA and TD for the base scenario (Table 3) is significant at the 10% level, meaning that there is a 10% probability that the observed relationship is the result of random variation. Nevertheless, the negative link becomes statistically significant at the 1% level when the Ateco code is utilized as a categorical variable (Table 5), indicating a higher level of confidence in the observed relationship. Overall, these results point to the possibility that higher total debt levels may

negatively impact Italian enterprises' return on assets; this effect is especially evident when specific category characteristics are taken into account.

Tobin's Q is a market value measurment used as second dependent variable in this study. Across all the analysis conducted, a significant negative relationship between Tobin's Q and short term debt ratio (STD) is observed. The coefficients are at a value -0.926, -0.959, -0.916, -0.807, rispectively. Furthermore, all of these negative relationships are statistically significant at the 5% level, indicating a high degree of confidence in the observed relationships. All things considered, these results suggest the possibility that increased short-term debt may negatively impact Tobin's Q, a market value indicator, in all of the study's assessments.

Regarding control variables (Firm size, Sales growth and age), it is evident that firm size has a significant positive effects on company's performance measured by ROA but not by Tobin's Q. The natural logarithm of total assets is used to account for firm size. In Tables 3, 4, 5, and 6, the coefficients values when ROA is used as the performance proxy are 1.029, 1.027, 1.405, 1.072, rispectively, all statistically significant at 1%. These findings support the trade-off theory's claims that larger businesses benefit from economies of scale, access to cutting-edge technology, and affordable finance sources made possible by diversification. However, Tobin's Q, which measures a company's market value in relation to its asset value, does not account for this beneficial effect of firm size. The absence of a statistically significant positive relation between firm size and Tobin's Q implies that other factors may have a greater impact on market valuation than just firm size.

There is also a weak negative relatioship between Age and both ROA and Tobin's Q. This relationship is statistically significant in all analysis conducted, except for the regression analysis measured by ROA with year as categorical variable. The coefficients with ROA as the variable range from -0.019 to -0.028 significant at 5%. The coefficients with Tobin's Q are at value -0,005, significant at 1% level in all analysis. These results suggest that as the age of the company increases, its Return on assets and market value decrease. This implies that older companies may be less efficient or less valued in the market compared with younger companies.

Regarding the categorical variables, three types of analyses were conducted: the first one with years, the second with sectors, and the third with regions, to assess their effects on

the variables ROA and Tobin's Q. From the results, it emerges that concerning the years, except for 2020 influenced by the COVID-19 pandemic, no year has a significant effect on the two variables. For the sectors, there are mixed results: Tobin's Q shows a positive relationships with some sectors at a significance level ranging from 1% to 5%; while ROA exhibits both negative and positive impacts across sector significant at 1%, 5%, and 10% level.

Finally, regarding the analysis conducted with regions as categorical variables, it emerges that some regions positively impact performance; specifically, Puglia, Sardegna, and Toscana for ROA, and Toscana and Umbria for Tobin's Q. This suggests that companies located in these regions tend to have superior performance and market value compared to others.

Overall, the regression models exhibit a variance that ranges from 7% to 12% for ROA, and from 3% to 7% for Tobin's Q; except for the model in which the Ateco code is used as a categorical variable, where higher values of 32.8% and 33.6% are observed, respectively. This suggests that including the Ateco code as a categorical variable improves the model's ability to explain the variation in the values of these financial performance measures.

Research on the impact of capital structure on a company's financial performance in the Italian context was conducted by (*Domenichelli, 2012; & De Luca, 2014*). Domenichelli (2012) discovered a statistically significant inverse relationship between the firm's performance and its debt levels. Their findings also demonstrate a significant relationship between business size and performance, which may be explained by the longer duration of establishment, experience, and diversification of large companies, as well as their easier access to capital. The present study's outcomes are consistent with their research, suggesting a negative correlation between debt and the firm's performance. The financial performance is significantly influenced by the size of the firm, according to research done in Italy.

The theoretical claim made by Modigliani and Miller in 1958 that, under certain assumptions, changes in debt and equity have no impact on the firm value. We cannot expect a relationship between capital structure and financial performance under these implausible assumptions. Following up on these theories, several empirical investigations have been conducted that offer unquestionable proof that this kind of link is real.

Numerous scholars have carried out investigations to determine whether this relationship exists in response to the claims made by other theories, such as the trade-off theory and the Pecking order theory, which contend that capital structure does affect. These investigations certainly represent different markets, economies, and firm kinds, despite the fact that several of these research were carried out in various nations. In the case of Italy, a firm's financial performance is negatively impacted by the high prevalence of debt and strong reliance on debt.

4. Conclusions

Improving company performance over the short and long terms is vital for investors, shareholders, and the economy at large in order to maximize shareholder wealth and boost business value. One of the main elements influencing corporate stability is capital structure (Gill et al., 2009; Hamid et al., 2015).

This thesis explored the complex relationship between capital structure and business performance in Italian listed enterprises for a period of 2018 to 2022. The notion of capital structure is introduced in the first chapter, providing a comprehensive backdrop. The capital structure is formed by combining various funding resources, including both debt and equity. A thorough literature review was conducted in the second chapter to gain a better understanding of the context and direction of the research. Based on earlier research, sufficient knowledge was acquired to conduct the investigation. The analysis begins in the third chapter by identifying the study's variables and methodology.

This study aimed to uncover significant insights into how different types of debt impact firm performance through a comprehensive analysis involving various capital structure variables such as total debt (TD), short-term debt (STD), and long-term debt (LTD), as well as performance indicators such as Return on Assets (ROA) and Tobin's Q. Control variables including business size, sales growth, and age, and categorical variables such as years, Regions and sectors are also considered.

 The data are taken from AIDA -Bureau Van Dijk database; and using statistical software Stata, an ordinary least squares (OLS) regression model was created.

The empirical results highlight a number of important conclusions:

1. The results of the linear regression analysis show that there is a signifacnt negative relationship between the total debt ratio (TD) and return on assets (ROA). The negative coefficients show that ROA decreases as the debt ratio rises, though the significance levels vary depending on the model; in the case of the Ateco code as a categorical variable, this relationship specifically decreases;

2. Higher levels of short-term debt appear to have a detrimental impact on market value, as evidenced by the statistically significant negative relationship between Tobin's Q and the short-term debt ratio (STD) at 5%;

3. Firm size is one of the control factors that has a positive impact on ROA but not Tobin's Q. This supports the idea that larger firms have access to greater resources and economies of scale, but that these advantages do not convert into market value as determined by Tobin's Q;

4. Firm age has a slight negative relationship with Tobin's Q and ROA, suggesting that older businesses may be less valuable or efficient;

5. The lack of significant relationship between sales growth and each performance indicator serves as a reminder that higher sales do not always translate into better financial performance;

6. The results of the analysis of categorical variables show that Tobin's Q and ROA are not considerably impacted by particular years, with the exception of 2020, which was affected by COVID-19. Sectoral research reveals contradictory findings, with some sectors having both positive and negative effects on ROA and positively impacting Tobin's Q. Firms in Puglia, Sardegna, and Toscana outperform in terms of ROA, according to regional study, and Toscana and Umbria exhibit greater Tobin's Q.

7. The Ateco code greatly increased the models' explanatory power. The regression models' variance explained varies from 7% to 12% for ROA and from 3% to 7% for Tobin's Q.

After conducting a thorough investigation, we conclude that Italian businesses heavily rely on debt as a source of funding, as evidenced by a study conducted by (Intrisano, 2012). These findings align with the pecking order theory, which argues that high debt levels have a negative impact on a company's ability to perform financially and that leverage and performance are inversely correlated. Furthermore, this adds validity to the trade-off theory, which holds that although debt has tax benefits, excessive leverage raises the expenses associated with financial crisis and eventually reduces corporate performance.

In addition to the impact of debt on performance, our findings demonstrate that business size has a significant positive influence on performance. This leads us to conclude that

large Italian enterprises outperform small ones on average. Larger companies may perform better because they have more experience, can take advantage of economies of scale, are more diversified, and have access to more affordable funding sources. Small businesses typically lack economies of scale, are relatively young, have less experience, and typically have expensive access to new funding due to their lack of prior experience.

These findings have a wide range of implications. Understanding the negative implications of excessive debt levels is essential for managers and policymakers to make well-informed financing decisions that strike a balance between financial stability and growth goals. The information on firm age and size can help investors develop investment plans that take into account the complex effects of these variables on business performance.

In summary, this research adds to the existing literature by presenting actual data on the relationship between capital structure and performance in the context of Italian listed companies. The detrimental effects of debt on performance emphasize the necessity of prudent debt management, whilst the advantages of scale are highlighted by the beneficial function of business size. To further understand the relationships between capital structure and business performance, future research could build on this work by examining different markets and adding more variables.

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