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Linking Capital structure to corporate strategy

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Introduction

Nowadays companies are growing in more and more innovative ways. Because of the impact of new technologies and the shift of needs in old grown up markets, while demand of new services and products is emerging in new countries, there are far more markets and businesses around the world respect to only fifteen years ago. Every business has its peculiarities and it needs a particular management style or organization to work properly and successfully survive and grow. Even old well established companies had to keep this new and quick pace in order to survive. For example, Blockbuster was leading the world market of video rental for years until in late years of 2000 and the first 10's there was the exponential success of Netflix video streaming services. Blockbuster was simply not needed anymore, and in few years a multibillions company disappeared. They were not ready to react to a new competitive environment and they had not adapted their financial structure in order to become more flexible and ready to invest in new activity promptly. Basically, there were two main pillars upon which a company is able to survive: strategy and financial management. Strategy allows you to compete in markets and to structure yourself in order to react to changes in the environment around you. If your strategy is wrong you'll probably end up wasting resources and loosing opportunities. Fueling strategies and consequent activities may require a lot of resources. Providing those resources in an efficient and long term looking way is a matter of financial management. The gathering and investment of financial resources shapes the financial structure of the company that is observable by financial statements. The aim of the following work will be to assess the relationship between strategic choices and financial structure in companies. To be more specific, we will start by reviewing financial literature and theories about financial structure choices in companies. This implies understanding how these choices are made in different in different phases of a company life, in which way they decide to get financing, for how long and by mean of which instruments. The discussion will threat the major theories that have been around and represent the pillars of financial theory. Topics will include discussions and interpretations about information asymmetries, governance and relevance of debt related issues and benefits. We will then have to understand how strategic choices are made. First there is the need to specify differences among corporate and business strategy. The focus will be on corporate strategy. The first point of attention will be to correctly define strategy in order to avoid errors and misunderstanding. Once we've done

that, it is important to understand what the four major strategic decisions are and why firms decide for one instead of the other. The preliminary identification of the forces defining the environment where firms life cycle is developed is fundamental in order to understand the meaning of choosing one strategy instead of another. There are two main strategy category we will go in deeper, which are diversification and vertical integration. Inside these two main categories we will see more in detail how they are branched out. Once the theoretical part will be concluded, the conclusion will be to set up a model in order to define what kind of relationship exists (if it actually exists at all) between the choice of a strategy and some particular characteristics in the capital structure and performance of firms. A regression approach will be used. There have been done several studies on the topic and they will be taken into consideration in order to move the current analysis on an already experimented path trying to add some new and solid conclusions to what have been done in the past.

Chapter 1

Literature review

1.0 Scope of the Chapter

The aim of this chapter is to go through the pillars of the theory about capital structure decisions by reviewing the most significative literature, and to put the basis for the further analysis that is going to be part of this work. In order to do so, we need to understand how those theories are structured by examining the assumption they are built on. Theories evolve due to variables that are or are not taken into account. It is also important how these variables are considered. Due to these facts, in this chapter we are also going to deeply examine all the variables that have been taken into account and the effects they could have on the financial structure. Starting from the Modigliani and Miller theorem we will move through the analysis of impacting factors related to debt, arriving to discuss the output of taking its into consideration which is the tradeoff theory. The successive step will be to understand how other factors, mainly information asymmetries, impact financial decisions. The arriving point will be the pecking order theory. The understanding of all of these topics will be the first step to build the final analysis of the work.

1.1 Introduction to capital structure related studies

Despite in the Modigliani and Miller theorem (M&M from now on), one of the most important theories about the understanding of the cost of capital, it is stated that in a perfect market the capital structure does not have an impact on the firm value, this topic has always been a major area of studies since corporate finance exists. However, in real world perfect markets as described by M&M don't exist. A lot of frictions happen to influence capital structure choices in all companies. Taxes, debt side effects, growth opportunities, managers incentives, signaling to markets, arbitrage opportunities, information transmission inefficiencies and investor behavior are some of them. In this chapter we are going to further discuss these topics and we will try to give an overview of what are the main theories in literature about the choices made day by day by firms all around the world and in which measure they are validated by the reality of firms' financial management. After having valued several points of view in order to understand what is driving these choices, it has been noticed that there are different reasons and objectives to drive a firm toward one direction or another. We can find internal drivers and externals drivers. There are two main objectives driving financing decisions. The most immediate one is the cost of choosing debt against the cost of choosing equity as a way of financing when needed. In the next paragraphs, we are going to take a closer look at all the topics introduced so far, but for now we will focus on only introduce these topics.

Equity is a way of financing with no obligation of paying anything , but firstly, you need a market who is willing to buy stocks and believes that it's a worthy investment and this is only possible if you are listed on it, otherwise you need to sell shares privately. Information availability is fundamental to allow investors to perform correct valuations. Secondly, if the separation of property and management can create agency problems and lastly, it is very difficult to estimate the true cost of equity. The Capital Asset Pricing Model, firstly proposed by Sharpe in 1964, have been for decades, and still is, one of the pillars for estimating the cost of equity using a measure of exposure to market risk (the beta). Even if the CAPM provides a good method, and it's nowadays still used by more than 60% of the managers around the world to estimate the cost of equity, it has some important restrictions and even if there has been different version of it to try to get a better measure, there is still not a definitive formula for the overall cost of equity.

Debt instead, whether is a bank loan or a bond emission, means you are obliged to pay interests and at a certain point the borrowed capital, but on the other hand, for these reasons, it has a lower cost itself. What actually rises the total cost of debt financing really are several other factors. Firstly, raising debt has a cost. If you are not a financial services firm you have to pay one for the placement

of your bonds or you have to take out a loan from a bank. If you are a small firm with limited access to the market, then you are the weak side of the negotiation, and possibly having less assets as a warranty, it means a higher interest rate. Secondly, if you default on the payment of your obligations you are in bankruptcy with all the related costs. It follows that an excessive use of debt as a source of financing not only could by itself dry the firm cash flows and put it on distress, but it would also expose a firm to all the bankruptcy linked costs. On the other hand, debt provides also a tax shield. One of the theories we will further discuss in this chapter is the trade-off theory, which argues that the debt will be used as the present value of the tax shield is higher of financial distress costs. From another point of view, when there is a split between ownership and management, debt is also a way to keep the management focused on the firm interests under the menace of a failure which would cost to managers to lose their jobs, so they should be more motived to act for the firm and note for a personal advantage.

Looking to the external drivers in the capital structure choices, we have three main areas of interest: legal, tax and large markets availability. Different countries have different legal systems, and this leads to a different number of creditors or shareholder protection. For what regards creditors, it is basically about their degree of liberty in acting against the company in case of distress and bankrupt and reorganization, and their privileges when to get back their capital in case of bankrupt and liquidation. On the side of shareholders, the aim is to ensure that minorities have the right to "raise their voice" about firm activity and management. This includes the possibility of mailing proxy votes, proportional representation in the board and higher or lower barriers to call an extraordinary shareholder meeting. As came out from a Frank Bancel and Usha R. Mitto (2004) study on cross-country determinants of the capital structure in European firms, while there is a certain consistency in creditor rights there are still differences for what regards shareholders.

Taxes have also a big impact on structure choices. Every firm has to distribute its output to all investors in the most efficient way. So, the first problem here is to understand if investors will get more from the debt tax shield or from personal taxes tax shields coming from deferring gains on equity, since their purpose is to pay the lowest possible tax rate on capital gain. The second problem to face is strictly related to the nature of the debt tax shield itself. The tax shield is worth something only if the firm has some profit to shield and nobody up today is able to precisely forecast if there will actually be profits in the future. Linked to that, as it was said before, an excessive debt could lower the firm possibility to grow and make it unprofitable.

The last topic to be discussed in this introductive paragraph is the market availability and robustness. Not every nation has enough developed markets both for debt and equity, and not every firm is

capable nor has the possibility of going on international capital to raise funds. This goes to the country of origin. There are some countries where the system is bank based (Germany and Scandinavian countries for example) and other where is market based (such as USA and UK). This changes the availability of resources on those markets and the difficulties to access them. A bank centric system may facilitate the access to debt and lower borrower lender information asymmetry degree, but a developed market makes it easier to raise equity capital and to go public which could mean a higher amount of resources available. On the other side a listed firm could also be more exposed to take overs, which can be a good thing for badly managed firms, but also an incentive for managers to do a good work. If the market is weak it could also mean that a firm will find more difficulties to find equity investors or bond acquirers.

As we concluded this overview about main determinants in capital structure choices, we now go deeper in analyzing them.

1.2 The theory of capital structure: Modigliani and Miller

In order to understand how capital structure related studies evolved over time we need to start from the more significative modern view of capital structure elaborated by Modigliani and Miller. Their work was published in their 1958 "The cost of capital, corporation finance and the theory of investment". It aimed to define the needed framework which is necessary to understand the more basics capital structure decisions and it is the starting point for following theories. As we are going to see, their evaluation implied as first the valuation of the firm with very restrictive assumption about market structure and market variables.

1.2.1 Perfect markets

Their theoretical framework is sustained by two main assumptions: 1) the market value of the firm depends on value of the cash flows generated by its assets and they don't depend on the leverage choice and 2) the firms levered equity costs of capital increases with the firm's market value debt equity ratio. Before we go deeper in these two propositions we need to define a fundamental premise that makes the former propositions valid, and by so we intend the perfect capital markets assumption. With perfect capital markets we intend a situation where all agents in the market have access and capabilities to trade the same securities and the market prices of these securities must be the present value of their cash flows. This first assumption allows any investor or firm to have equal access to any source of financing, arbitrage opportunities free as securities are fairly and uniquely priced, and by this giving them the possibility to freely choose their capital structure with no restriction. The

second characteristic of perfect markets is the absence of any friction. By friction we intend the absence of taxation, transaction or issuance costs, bankruptcy costs and other debt related costs and externalities. The absence of such factors is quite important, as we know that in reality they represent an important part of the evaluation process for both firms and investors. Tax shield generated by debt, as we are going to see later, represents one of the principal topics to considerate when debt is issued, and it needs to be considered by investors that are investing in equity for capital incomes related taxes. Bankruptcy and more in general financial distress related costs represent some of the most important drawbacks of debt issuing. Companies need to carefully evaluate how much they want to be exposed when they work on their capital structure. Thirdly, in perfect markets, information is available equally to everybody. This is fundamental for a correct valuation of securities. With the same information set available, all agents derive the same price for each security and there are no arbitrage opportunities as prices are always aligned with the available information. Declined in financial decisions by firms, it means that every action taken by a firm that modifies its capital structure won't reveal any new information that is going to change the valuation that market has of it. The value of the firms is only dependent on its cash flows which are equally assessed by everybody. Now that a background is defined it is possible to analyze Modigliani and Miller's work.

1.2.2 The two Propositions

The first proposition says that the value of the firm only depends on the firms cash flow and it's completely independent from capital structure choices. The only thing that is affected by the capital structure is the allocation of the cash flow distributed by firms. The ineffectiveness of leverage is due to the fact that all agents have equal access to financial markets, and they can adjust their own degree of financial leverage (Popescu and Visinescu, 2009) defining by this the possibility for homemade leverage. It is possible to create homemade leverage in perfect markets because the investor can borrow and lend at the same price. The reason is connected to the fact that the value of the asset depends on the cash flow it generates. The investor can do it with no additional cost because even if it leverages over the company level. the value of the loan is covered by the value of the asset the investor invests in, which is the same as the cash flow it generates, and it is available to the investor as a covenant. Summarizing, if the value of the loan is the value of the acquired asset it is perfectly covered by the generated cash flows. The homemade leverage availability is also connected to the explanation why firm value is not affected by capital structure. If firms and investors have the same possibility to modify their financial structure there will be no benefit for one if the other can adjust its structure by itself in terms of value. Each will have the preferred structure with no impact on the other one. Linked to the assumption that there are not frictions in the market (transaction costs, taxes and distress costs) another consequence is that there will be only one price for every security the

company. In absence of frictions the cash flow generated will be completely available for investors, whether they invested in debt or equity security. It follows that if each security brings the same payoff it must have the same price. As investors are all equally informed they will correctly evaluate the fair price and no arbitrage opportunity will be available.

The second proposition states that the equity cost of capital becomes proportionally higher as the leverage raise. To demonstrate this statement, we go back to the homemade leverage topic and we see how the total cost of capital of the firm is calculated. The total cost of capital is defined as:

$$Ru= Re*(E/(E+D))+Rd*(D/(E+D))$$

where Ru is the unlevered cost of capital, Re is the equity cost of capital and Rd the debt cost of capital. As shown by the equation the total cost of capital is basically the weighted average of the two cost components. If we solve the equation for Re the result is:

$$Re= Ru+D/E*(Ru-Rd).$$

The equity cost is a function of the leverage level. As the total return does not change for changes in the structure, it will raise when the leverage raises, and it will go down when the leverage is lower. The portfolio of equity and debt is reflected in the assets of the firm. With prices defined by cash flows (which, as we know, are generated by assets) the return of assets and the cost of capital must be equal. The conclusion is that, given the perfect markets assumptions, the assets risk will match the risk of the capital structure otherwise there would be a price gap between the securities and the assets that generate cash flows upon which they depend, so the cost of capital will follow the return generated by assets. The counterbalancing effect that we can see in the equation is due to the fact that debt has a lower risk premium respect to equity, and it has seniority in repayment. Equity required return will raise when debt weight, and consequently the risk of not being repaid, raises. Even if debt becomes more and more riskier when its weight raises, it will still have a lower cost respect to equity, and it has a lowering effect on the average cost.

1.2.3 Critics and further developments

The assumption behind the two propositions are undoubtably quite restrictive and, at the proof of facts, unrealistic. Real markets are not perfect. Information asymmetries and different capabilities to correctly process the same information, are at the base of mispricing and market bubbles. The financial structure does in reality affect the value of the firm and the cash flow to investors due to the presence of externalities and frictions. The M&M model has been the starting point for further development in the financial theory and it has been recognized as valid, even if only under those restrictive assumptions. One re-examination it is worth mentioning is the one from J. E. Stiglitz

(1969). Rather than criticizing the unrealistic environment in which the Modigliani and Miller theorem is valid, he focused on studying which were the limitation within the assumption themselves. He pointed out five of them. Firstly, it was dependent on the presence of risk classes which defines the different levels of returns that govern the cost of capital balance equation. The problem is also, and this is the second point, that it is not clear how these risk classes are defined. They seemed to be defined on an objective rather than subjective basis, with the risk evaluated on the base of the probability distribution of the outcomes possible. If, then, one of the possible outcome is (as it should) bankruptcy, it is not clear what effect and how it is embedded in the theorem and if it affects the theorem validity given the no frictions assumption of perfect markets that, as we said, includes the absence of distress and bankruptcy costs. The fourth point brought by Stiglitz was about the equilibrium condition. The M&M model was based on partial equilibrium rather than general one. In his work he provided proof that the theorem was valid also for much general conditions rather the restrictive ones that were assumed in the original one, regarding the general equilibrium condition in the market. The last observation is also linked to market conditions. Stiglitz found unclear whether the theorem was valid only in competitive markets or also in other types of markets. One of the main points of its re-examination was the founding that the competitive environment does not matter for the validity of the theory as long as the assumption of free access to borrowing is granted to investors at the same costs and interest rates that are valid for firms. The Other necessary assumption in order to make the theorem hold was the absence of bankruptcy. The latter may seem to be the two more stringent and criticized conditions under which the M & M theorem could hold. Even if the topic is not the core of this work, it is worth mentioning that in his model, Stiglitz showed how the theorem could keep its validity even with restriction to borrowing of individuals and, in a more restricted way, even with the possibility of bankruptcy included. Miller himself went back on the argument and re-examined the theorem under the light of thirty years of critics in a paper for the Journal of economic perspectives (1988). Looking back he recognized how the first proposition of value invariance to changes in capital structure was seen with a “nothing matters” significance and the focus was on the imposed restrictions rather than on a different and more constructive point of view which is “what does matter”, which was partially explained in the second proposition of equity cost dependence on debt quantity. The second strong sustain to the first proposition came from the no arbitrage proof linked to the homemade leverage effect, which as we know provide the individual investor to adjust its leverage independently from the firm.

The M&M theorem has its boundaries of validity within the financial theory and under the former assumption we analyzed. The natural evolution of such work, that put the basis for latter evolution of the theory of financial decisions, was to embed the presence of all those factors that are present in the

real market. In the next paragraphs we are going to examine which are these factors and what theories and models were derived from them. The first step is analyzing debt in order to include the effect of its costs, benefits and distortions, moving then through the nature of all debt typologies, the impact of each of these typologies and the maturity structure of debt in companies. The analysis then, moves through the side effects the debt can give a raise to in companies. The first outcome of this part is the tradeoff theory, which considerate all debt related costs in choosing between the latter and equity when fresh financing is needed. The next step will be to take into account the other relevant factors affecting financial choices, namely information asymmetries within the firm and across the market, and principal-agent problems between managers and investors and among different classes of investors. The informational and principal-agent problems are taken into account and evaluated in the Pecking order Theory.

1.3 Debt and related frictions

The first assumption we will later remove from the M&M theorem is debt impact irrelevance in financial structure choices. We start by discussing this first of the variable of the capital structure. Debt is a very wide concept. Talking of debt, we refer to several kinds of instruments, different typologies, different time spans and it includes from financing the purchase of your personal car to multi-billions bond emissions from global firms and sovereign debt. One main characteristic of any type of debt instrument is that the amount borrowed need to be repaid completely at a certain point in time. So, it is not only the amount of debt that matters but also how this debt is raised ,its maturity and at which conditions. These three factors are influenced by multiple elements. We will try to understand how and why firms raise particular types of debt and for different maturities. Before we move to these more technical aspects we need to discuss qualitative and quantitative effects debt have on the company who issues it.

1.3.1 Financial distress and other debt related distortions

The choice of the amount of debt a firm is willing to bear is not only a mechanical process, it also has side effects on the company. Firstly, when a firm default on its payments, the recovering process for creditors is not simple and cheap: it can take a long time, it depends on types of bankrupt process (liquidation or restructuration) the firm undertakes, and it involves large costs for the management of the process. There are direct costs related to the default process, but there are also indirect costs which are related to the image damage the firm bears, to the creditor free riding and contracts loss. Altman (1984) and Weiss (1990) estimated direct costs in 3% of total assets and 20% of equity. Knowing that

a certain company is exposed to the possibility of defaulting investors should take into account the present value of these costs in the price of the debt they require. Logically if the creditors are not bearing these costs than the equity investors will. This relates to another behavior in case of near default. When a company approaches the default moment shareholders know that they will probably not get anything back. Managers, who can be involved in the ownership of the firm or strictly related to shareholders rather than debt holders, might start to invest in project with a higher risk and lower present expected value rather than in less risky but also less profitable projects. If it goes badly the creditors take the loss and in case it goes well shareholders have a gain. This process of substituting low risk assets with other with a higher risk is known as asset substitution and it's basically a way for shareholders to try to gain some value before the default at the expense of debt holders by raising the risk but also the possible payout. If the value of remaining assets is already under the value needed to pay for the outstanding debt it becomes basically a risk free investment for shareholders. The risk shifting behavior was first identified as an indirect cost and an agency cost of debt by Jensen and Meckling (1976). More simple agency problems that arise in a distress situation are, for example, the possibility of selling an asset and liquidate dividends or it could raise more debt augmenting the leverage without taking any more risk (from a shareholder point of view) and moving part of the risk from older to newer creditors. Another debt related phenomenon could be a tendency to underinvest if there is no additional advantage for shareholders. In this way a firm would lose good investment opportunities and the possibility for future growth. As a matter of fact even if there was a good investment opportunity with an acceptable level of risk, an already distressed firm could find almost impossible to get the needed resources as shareholders would not get any (or very low) advantage, so they wouldn't provide any financial resource, and the cost of new debt would be very high and barely available. Debt overhang problems have been widely studied in past years. Myers (1977) and Miller (1977) stressed the problem and tested the theoretical structure even if in the end the conclusion was that these kinds of costs remain very difficult to be estimated precisely. As Deshpande (1997) proved that debt overhang can have an impact at a country wide level in two ways. Firstly, the country itself may have too much debt to invest slowing down the economy, interest rates would raise, GDP growth could go down making even more difficult to repay the debt. Also, there is the influence of the creditor to be taken into account. If creditors are banks, the risk is to have an external influence over nationwide economic decision under the threat of a cut to financing. A diffused excess of debt among big firms could lead to a high degree of diffused underinvestment that would eventually slow down the economy in general and lowering the country revenue exposing it to a higher credit risk for sovereign debt and higher debt costs. All these distortion to companies' behavior is caused by an excess of debt in relation to firm profitability. But, there are also some positive uses of the pressure

created by the debt or at least the attempt to exploit it. When there is a certain amount of debt to be repaid, managers have to put more effort in order to not lose their job (which would of course happen if the company goes bankrupt) and manage the firm in the most efficient way they can. Secondly, for the same fear of the firm going bankrupt the presence of debt could prevent or at least limit the tendency of big companies managers to build "their own empire" rather than pursuing investors interests or more in general to work for different goals from the ones that are really in the best interest of the company. Lastly, there is also a reputational incentive. A manager with a failed firm on his curriculum is not as attractive as one with a record of successful experiences.

A topic of current interest are import/export excises. Even if they are not purely related to capital structure decisions it is worth mentioning them. They are a major fact to be valued for internationally operating companies. The excise could indeed apply both to the importation of resources necessary for production processes or could lower the margin of internationally sold products. In European Union, with the development of a European economic area and a unique currency for member countries, the impact has in practice disappeared, even though there still isn't a full alignment between nations. On the other hand, around the world, together with sanctions and embargos, they have become a real economic war tool. And the impact is not light on companies' activities around the world. Just think about Trump's excises against China and the impact they have on multiple US companies that produce their product there (Apple is an example) and have to deal with an unexpected drop in profitability. These companies will have to face two facts: they will have to raise their prices in the target countries if they sell there and they will have to decide if to keep a lower margin and keep producing there or to move the activity in another country. The point of interest here is that exposure to stricter margins impact the capacity of the firm to meet its obligations on debt, and by this, it makes the firm riskier. International trade weight and impact is another factor to be taken in account for financing decisions.

1.3.2 The Maturity structure

There are several factors influencing the debt maturity structure. Firstly, we need to define what is the difference between short term and long term debt. From an accounting point of view, it is considered short term debt everything that has to be paid within a year. Even though in different researches it has been defined in different ways, we will stick to the former definition. The maturity of debt is not only important from a financial planning point of view, but also because in an upward sloping interest rate structure scenario short term debt has a lower cost. On the other side, following what Brick and Ravid (1985) argued, and also demonstrated, long term debt allows a better

exploitation of tax advantages as the tax shield is accelerated. By adding the volatility of interest rates, it was demonstrated by Kim et al. (1995) in a multi-period model the optimality of a long term debt structure to maximize the investor tax advantages. Debt maturity structure becomes longer as the volatility increases. A positive correlation between debt maturity length and the level of the tax rate has been found also by Harwood and Manzon (2000). This relationship, first proposed by Scholes and Wolfson (1992), takes the name of "tax clientele" and it was later confirmed by Antoniou, Guney and Paudyal (2002), who found a positive impact of the marginal tax rate on the maturity of the debt, in their comparison of UK, French and German firm maturity structure. But it is very difficult to precisely predict future cash flows, so in presence of a high degree of volatility long term debt can be riskier and correlated with higher agency and bankruptcy cost. In this case the risk is that the benefit associated with the tax shield can be erased. Moreover, issuing long term debt could not be affordable for all firms, even if a continuous roll-over of short term debt can become more expensive with time. However, in companies where the leverage is already high with all associated risks, issuing long term debt seems to be a way to move forward the moment when the liabilities will have to be repaid and in this way the exposure to bankrupt is delayed. This point seems to be quite controversial when it is confronted with the idea that high levered firms should present a bigger portion of short term debt in order to mitigate underinvestment problems. Thus, issuing short term debt to put pressure on managers seems to be a good way to make them operate in a more efficient way and also to lower monitoring costs in presence of this agency problem. Both hypotheses are acceptable from a theoretical point of view, but, following what was found by Antoniou, Guney and Paudyal (2002), only the former has proven to be consistent among both European and Anglo-saxon countries, while the latter seemed not to be taken into consideration in European countries.

From a more operative point of view, debt length is also linked to the maturity of firms' assets. Matching the maturity of cash flows generated from assets with those required by liabilities is a method of controlling financial distress related costs. This brings the attention to the structure of the firm rather than a simple financial valuation. Firms with a longer depreciation process for its assets will have allegedly a longer average maturity for its debt. The maturity and the repayment are scheduled to happen together. This ensures that the cash flows from assets are not exhausted before debt payment is due and if the assets pay on a longer term the firm may not have the cash to pay yet. Also, going back to the underinvestment problem, the matching principle has been viewed by Myers (1997) as a mitigation. By converse Mitchell (1991) found no support to the matching principle and rather reconnected the preference for short term debt to information asymmetries at least for smaller firms. Beside all of these possible reasons explaining why firms prefer or are pushed toward longer or shorter maturity, there is also the possibility that they set a target maturity. The concurrence of all

the factors above said may lead firms to decide a target structure and a certain degree of reactivity to go back to the target when changes occur. The principle behind this theory is the same as it is for leverage. Companies decide if they are targeting a certain amount of debt and how the maturity of this debt should be composed. As we have seen before the maturity structure depends on several aspects. It can be a matter of suiting debt to better exploit tax advantages, it can happen in order to obtain a certain trade of between tax advantages, agency costs and financial distress costs or a target can be chosen to better fit with the asset structure of the firm. Jalilvand and Harris (1984), and more recently Hovakimian (2004), found empirical proof that firms adjust their financing decisions about debt term structure at least partially to their target. The flexibility and reactiveness in adjusting to the target depend mainly from the cost of doing so and the availability of a sufficiently deep debt markets that can allow to do so with a relatively low effort.

1.3.3 Debt Typologies

Weather is long or short term debt, there are different types of debt available for firms financing. We will not focus on daily financing operations that take place regularly between a firm and the bank(s) that provide treasury services, bank overdraft and very short term credit lines, we will rather focus on big financing operations that deeply impact the balance sheet. In this sense we have three main classes of instruments which are loans, bonds emissions and hybrid instruments. Loans imply a bank or a syndicate of banks financing the firm directly based on their needs at a certain price that, based on what the contract specifies, can be renegotiated at a certain point. Typically, the capital borrowed, and the interests are repaid on a regular basis during the life of the loan. Bonds are securities sold also to the public. The capital financed will be repaid at the expiration date in a unique solution, interests are paid usually during the whole duration of the contract by mean of coupons with a variable frequency. Of course, selling bonds needs the presence of a market available, investors willing to buy them and as a consequence a certain degree of information disclosure. The third category are hybrid instruments. Basically, those instruments are made of two or more components, for example a bond and a call option which allows to convert the bond into equity. This particular instrument takes the name of convertible bond. Firms don’t have only to choose the instrument they prefer or that better fits their needs anyway.

Market raised debt

There are a lot of variable that have to be taken into account. The first discriminant is as simple as it is important. Not all firms have access to debt markets. The reasons are various, we will now try to summarize them. The size of the company is the first factor. Small firms have more difficulties or are unable to operate with bonds as this type of instrument presents high floating cost. Follows that they

become a viable way of financing only for large amounts. Another problem is the availability of assets large enough to cover the possibility of default and liquidation and in in a more generic way, a warrant to the debt. All this information then, needs to be disclosed. Unlike banks, private investors and other institutions and firms may not have the capacity to correctly evaluate the health status of the firm. When M&M perfect market assumption about full information availability falls, this asymmetry of information problem brings to the point that even if they accept to buy its bonds, the price asked in terms of interests would be extremely high. Also, firms with high growth opportunities seems to be affected by the limited capacity of evaluating them that public presents. Altunbaş, Kara and Marques-Ibanez (2010) found empirical evidence that companies with high Market-to-book ratio (used as a proxy of high growth opportunity) are less prone to use public market debt. Looking to this fact , as came out from De Fiore and Uhlig (2015) study about corporate debt structure and financial crises, firms with an intermediate risk and good growth opportunities of financial distress are most likely to use bank loans as they are easier to be renegotiated and the relationship and expertise of banks allows a better evaluation of the firm and if for no other reason because renegotiate the loan with a single entity is easier than doing it with a high number of bond subscribers. Firms with low risk will rather choose bond issuance as it is the cheapest form of financing, high risk companies will old back from searching external finance if they can. What influence the choice between private and public debt and it's not under the control of the firm is the country where this debt has to be issued. In countries like Germany and France where the economic system is mostly based on banks, markets could be not developed enough to absorb a high supply of debt by firms. Culturally in countries with a bank-centric systems companies are skewed to get financial resources through banks rather than from the markets. First because banks are part of the daily life of companies and second because, as a consequence of banks having a privileged position in the economic systems, markets can be simply not capable of supporting firms financial needs. In this particular case a firm who goes for bond issuing must be large enough to overcome the issuing costs barrier and, possibly, should be capable of going for international placement of its debt on multiple markets.

Loans

For what regards loans we can do a first distinction based on the number of suppliers. Altunbaş Kara and Marques-Ibanez (2010) work come in help again. They searched for a model explaining what debt pecking order is in firms financial decisions and what determines it. For big companies that need large amounts one bank could not be able to provide this amount all alone or to bear the risk only on itself. Thus, a great weight with respect to the total amount of financing demanded by firms has been acquired by syndicate loans. In a syndicate loan a group of banks provide the amount demanded to the firm. For the firm the advantage is that it has access to a larger pool of resources

without bearing the cost of going to the market (if this cost is higher or it presents more difficulties) while for banks the major advantages are the risk sharing and the multiple assessment of the firm capability to meet its deadlines. Bank loans are a better solution for those companies who suffer of more acute information asymmetry related problems. Banks respect to the public have instruments and the capabilities necessary for a better assessment of the firm financial health status. Follows that the cost of the debt should be better fitted to the specific firm. In addition, there may be firms where intangible assets are the most valuable in the balance sheet. This typology of assets is more difficult to be evaluated. As a consequence, rather than facing the risk of an adverse pricing error on the market these firms tend to go to banks that can more easily assess the asset value. Also as mentioned above bank loans can be the only way for certain firms. Smaller businesses, firms with higher expected growth and those who haven't the possibility to access the market are forced to go through banks if they need a credit line. Two other important factors are renegotiation and extension. In their relationship with banks, firms may have the possibility of renegotiating the debt in order to obtain better terms if their conditions are changed. If the firm need to extend or renew their financing commitment dealing with a single bank, or even with a restricted number of them, rather than with a group of hundreds or thousands single investors is for sure easier and presents lower costs with respect to a new bond issue.

To summarize this part, a firm can issue debt on the market if it has access to one, if it can bear floating costs, if the firm itself is correctly evaluated from the market agents and doesn't risk the durable effect of mis-pricing and if the amount of debt issued is sufficient to scale up the related costs. Big profitable firms may obtain better prices from the market rather than banks. Smalls or low profitable firms will most probably need to contract a loan with a bank. The price will better reflect the risk the bank is bearing, and the firm may save the possibility to renegotiate the terms of the loan in a more favorable situation.

Hybrid Instruments

Debt can be issued in many different shapes in order to better fit companies' necessities for flexibility to the point where some financing instruments share characteristics with both equity and debt. We now go back to hybrid instruments for a deeper analysis. As anticipated, hybrid instruments are a wide category which comprehend those securities who share characteristic with both debt instruments and equity. The ratio behind the spread of this type of securities in last years are an argument of debate. The two basics assumptions behind the utilization of hybrids are the following: one, to keep the tax advantages that came from debt without adding pure debt to the capital structure and two to lower the cost of capital of the firm. The fact is that these instruments have a particular, sometimes

ambiguous, treatment on the balance sheet and the profit and loss. An interesting study has been conducted by Engel, Erickson and Maydew (1999). They analyzed the use of trust preferred stock , a security treated as equity instrument for financial reporting and as debt for tax purposes, on a sample of 158 preferred stocks issues between 1993 and 1998. They found out firms were willing to use this kind of instrument to lower their debt level on the balance sheet, even incurring in direct and indirect costs, without losing the tax advantage. This is just one example of hybrids instruments usage. For example, there are convertibles bonds, the previously cited bonds with an embedded option to convert in equity that can be exercised from the owner at a certain time, specified in the contract. From the firm point of view this could mean to be obliged to sell underpriced equity if the option can be exercised in a moment when the stock price is higher than the strike price of the option. If the opposite is true and investors decide not to convert their securities, the company will have to keep paying coupons and the capital in the end, risking cash drain and financial distress. This was just an example, even if there is one common characteristic, as said before, some hybrid instruments can be very different from classical convertibles. Going through all of them is not the point of this work but, there are other interesting points to examine that can influence capital structure decisions linked to hybrid instruments. In particular is very interesting to look at reset preference shares which are basically the opposite of convertibles. Reset preference shares can be defined as debt, as they pay a coupon, or in other words they provide a fixed determined income, but, the issuer keeps the contractual right to re-contract the terms of the financing at certain predefined moments. If new terms are not accepted the issuer convert the debt into equity. This is a powerful instrument for the management of the financial structure of the firm. Managers here have the power to simply change part of the financial structure in the way they think is more suitable for the firm and this alone can improve the financial flexibility, which has a considerable importance, if used properly. Of course, there are restrictions and regulation and the cost of this kind can be higher than other ways of financing, it is not all in the hands of the firm. In this case the reputation and the credibility of the firm have a huge importance. The process of financing it's based on credibility all along, starting from equity finishing with most secured debt, that's also why external rating agencies exist, but in the particular case we just examined it becomes fundamental. Overall, we can say that hybrid debt instruments are though in order to give more flexibility both to companies who seek financing and investors who are looking for investment opportunities, and if they are managed correctly it is true, but it still remain unproven if they are really capable of lowering the cost of capital, in certain cases, or their counter effects on other investor categories erase the advantage. Carlin and Finch (2006) studied the effect on cost of capital and leverage using a sample of Australian firms. They found a tendency of misclassification of hybrids

instruments and consequently a distortion of leverage and other financial metrics impacting the overall valuation of the company activity.

1.3.4 Debt benefits: Tax and non-tax shields

Debt Tax shield

The tax shield generated from debt is for sure one of the most important things a management team have to keep in mind when deciding future financial sources for the firm. The tax shield generated by interest payments can be a great source of value. Theoretically a firm could shield all the earning before interests taxes, in practice such an amount of debt would very likely put the firm in financial distress. Part of the decision for those firms who set a target is to set it in a way to get the maximum advantage from the tax shield generated. There exist several methods to calculate the value of a project (or a company) in order to take into account for the value of the tax shield with different debt policies. Based on the policy (constant amount of debt, target leverage, predetermined debt) there is one method that better fit the evaluation. When calculating the average cost of capital, the tax incidence has to be taken in account. There is one major hold on the exploitation of tax shield, and it is the fact that to shield some profits you need to have profits first. It seems obvious but, beside the fact that the future is uncertain, and nobody knows if there will be some profits, it is strictly linked to the financial structure. Debt have to be paid first, follows that in presence of a large amount of debt, shareholders will require a higher return on equity as it becomes riskier. Secondly, the interests associated with debt could draw cash flow putting the firm on the edge and incapable of self-financing, profits would plunge, and the tax advantage lost. So even if the tax advantage linked to debt could seem a great opportunity to add value to a company it has its, quite strong, drawbacks. In tax shields evaluation it needs to be considered the country of incorporation and the main country where activities are conducted. In every country both companies and investors have different treatment. First thing is the tax rate. Not only you have different rates between Europe and US, but you will find different rate among American states themselves. The same is true in Europe. Facebook, for example, was founded in Massachusetts, but it has it's legal home in Delaware, as 66% of Fortune 500 companies. That happens because Delaware has a very good tax legislation. There is no profit state tax for companies which operates out of the state, no need for business license if you operate outside the state, no inheritance state tax for non-resident stock owners and no sales tax on intangible personal property. Most of multinational around the world that operate in Europe have their legal entity incorporated in Ireland (Apple), Netherland or Luxembourg. A reason for some nations to prefer having low tax rates is the economical induct they get in terms of jobs and investments they get from having a big company settled on the territory. Beside the absolute level of the tax rate there

are different treatments for what regard the deductibility of interests paid, the evaluation of the non-debt tax shield and the carryback and carryforward of losses that might be deductible from due taxes amounts. Amortizations and depreciation play a role in creating a tax shield. Special regimes, like iper-amortization in Italy, that may regard particular assets, usually highly innovative and with a particular technological content one, allows companies to shorten the amortization period and raise the present value of the shield because of a shorter discounting period. Losses carryforward is a widely spread practice. When a company register a loss in its P&L it can be carried forward for a certain amount of years by generating a tax credit and shield hypothetical future profits. The length of the carryforward period can vary from regulation to regulation. Much less common is losses carryback, which is the possibility to get a tax credit by applying current losses to past years profit. Cheng and Shiu (2007) which conducted a research on investor protection and capital structure analyzed 45 countries in their work and found only 9 of them had losses carryback regulations. Beside corporate taxes there are personal taxes to be taken into account. The incidence varies widely from country to country, but generally direct interests taxes tend to be higher than equity income taxes. In US for example, taxes on interests were historically higher than equity taxes even if during the years the two rates tent to a smaller gap. DeAngelo and Masulis (1979) generalized Miller's (1977) model of personal taxes and optimal capital structure to include other tax shield in order to have a comprehensive model to evaluate financial decisions. For equity income taxes it should be considered that dividends or retained earnings (which can be translated in a capital gain for shareholders) are already taxed at corporate level, the same is not true for interests related incomes. It is a consequence that based on the country and the tax regime to which investors are exposed could interfere with firms' financing decisions. With a lower effective taxation level for one of the two the supply of either of them could be higher than the other. Even if it is not a fundamental discriminant for capital structure choices it is a topic to be accounted for and from an external evaluation point of view it affects the value created from the firm.

The non-debt Tax-shield

There is another aspect that needs to be taken into account though. As we anticipated there is the possibility that the firm has some non-debt related tax shield, in particular Titman and Wessel (1988) identified them in investment tax credit and depreciation on assets. When a company needs to expand renovate assets it means that it will probably face a large capital expenditure. Let's leave out, for now, how it decides to finance it (whether internally or externally) and just focus on tax related implications. This could explain why some firms may seem underleveraged. Graham and Tucker (2006) found evidence of this phenomenon. In their sample of 44 firms, not one turned out to be under levered after other tax-shelters were included. In most countries then, incremental R&D expenses are

recognized as eligible for tax advantages generating tax credit. Of course, different legislations have different variants, but the core stays the same as they are seen as an incentive to expand R&D activity which is of public interest. The rate of shielded expenses is different among countries and among different sectors of research, but we can trace some generals rules. Firstly, as appointed above, the part of expenses that can actually be eligible for the benefit is only the one in excess from previous years expenses. Here we find again differences between countries. The benefit can be carried forward in case of no eligible income for tax benefit in the current year. In some cases, like in US, start-ups can even use the benefit for covering taxes on payrolls. There is, however, one aspect that strongly limits the value of such a tax benefit which is that there is usually a cap to expenses benefitting the credit. For example, in Italy the legislation imposes a 20 million euros limit to the benefit. If you now imagine a multibillion company with billions of R&D expenses 20 million saving is quite marginal respect to other sources. Nonetheless Chen and Gupta (2017) found out a positive relationship between tax benefit for R&D and R&D investment even if it was particularly significant only for high tech companies. This confirmed that firms take into consideration this type of tax benefit in their investing and financing decisions.

Amortization and depreciation are not a real cash outflow that take place every year but they are tax deductible so they provide a tax relief which can be of a significant magnitude. Balakrishnan and Fox (1993) studying how strategic choices in asset management affect capital structure included the tax shield generated in their valuation. Thus, as for debt, monitoring, programming and managing depreciation correctly is fundamental in order to achieve some fiscal benefits. Amortization and depreciation are the result of an investment and this means that the financing choices need to be weighted for the overall effect it will have both from debt and from amortization. An excess of debt on top to amortization and depreciation can leave a firm with no income to shield. The length of the amortization period depends on the nature of the asset, its useful life, the eligibility for accelerated depreciation and the possibility to apply super and iper-amortization, gaining the related deductions, according to the law. Although super and iper-amortization/depreciation are not vastly diffused, Italy has been a pioneer in these, and are strictly related to innovation and 4.0 industry, it is worth mentioning them for the importance of the fiscal advantage they provide to companies. As for tax credit from R&D, unabsorbed depreciation/amortization can be carried forward.

Summarizing in evaluating the correct amount of debt to exploit all possible tax benefits it is important to take into account the availability of other sources of income shields. Debt is not the only way to do that and not taking it in consideration can be dangerous. From the opposite point of view when a firm is investing in new assets that will generate amortizations and depreciations, it needs to

considers the overall effect of the related tax deduction and the debt tax shield in order to prevent the dry out of the cash flow and in thus way voiding, at least in part, the value added by the tax shield.

1.3.5 Including debt in cost of capital calculation

We discussed how firms structure their capital but how do we measure the value and the related costs of this capital? In determining a company cost of capital there are several factors that need to be accounted for, both from an equity point of view and a debt point of view. In the CAPM, most commonly utilized to estimate the cost of equity, the only measure of risk included is the beta which is a measure of a company volatility with the market. The beta doesn't account for any specific factor of the firm as the CAPM theory assumes any risk other than market risk can be diversified by the investors, so it doesn't bring any additional risk premium. There are, though, different approaches that tried to incorporate factors not included in the beta. The Extended CAPM includes a size premium and a specific premium for the firm or the industry. Size premium is added based on the assumption that small firms are more exposed to external stress and less capable to react in an effective way. They will probably have more difficulties in collecting resources (limited access to markets and less assets to cover debt financing), less retained profits and generally a higher profits volatility. Two approaches to estimate a more comprehensive measure of risk are the "total beta" method and an estimation of a specific risk by mean of an RR&C model. The total beta approach uses a measure of correlation of a companies' profits with the market multiplied by a ratio of specific standard deviation over market standard deviation. The risk captured in this way is the one that can be captured from public market information, so only in perfect markets it will work. In the RR&C model tries to estimate a measure of idiosyncratic risk by adjusting the excess risk premium over risk free. With this second approach a variable (idiosyncratic risk) is added to the CAPM classic regression equation. Brown and Kapadia (2006) shown how idiosyncratic risk increased ever since second world war. These two methods both uses an additional measure of risk linked to the beta. The first calculates a beta that includes also diversifiable risk, the second adjusts the cost of equity by an idiosyncratic risk calculated using total beta. A different approach is the built up approach. In built up approach beta is excluded. It calculates the cost of equity by adding to risk free rate the equity risk premium, a size premium and a specific risk premium. The size premium is based upon the assumption we talked about before, the specific risk premium in calculation is based on company specific characteristics of three types: quantitative, like degree of financial leverage, qualitative ones, like management expertise, and strategic degree of diversification, geographical distribution, demographic characteristic of the pool of customers and labor cost and availability. A last methodology, more useful for investing activity and portfolio construction, is the Fama-French multi factor model (1993). The theory behind the model is based on three assumption which give three factors that are

determinants of size and specific risks beside the common market risk premium. Firstly, small firms will perform better than market on average, follows the strategy of investing in long positions on small cap firms and short positions on big cap positions, secondly, high market-to-book value firms will overperform respect to firms with a small ratio, so the strategy will be to go short on the latter and long on the former. The reason why is linked to the higher volatility of small firms and young and/or with high growth possibilities firms, which means higher uncertainty end exposure to risk. These factors lead to a higher expected return.

Moving on debt related aspects, we can link to previously discussed topic to explain why companies who operate in the same market or industry can have very different costs for debt. An already very leveraged firm will have to bear high costs for interests decreasing the safety buffer that separates it from shielding its profits and being exposed to default in case of a negative variation of the EBIT margin. It follows that new creditors will ask for a higher premium as the probability of default raises and they will have also to discount bankruptcy costs that have also become more probable. A bank will perform a specific credit assessment before granting a loan, if bonds are issued in debt markets, investors will have to estimate if the proposed interest rate is correct. In order to do so, information need to be available and correctly processed which doesn't always happen. Another factor are assets which can be used to back up debt issue. As pointed out by Myers and Majluf (1984) companies with high tangible asset will have the opportunity to finance at a lower cost as tangible assets are more easily transformed in liquidity so they can issue secured debt which is linked to a tangible with a known value, lowering information asymmetry costs. That is also a possible explanation why firms who are young and firms with high but still unexploited potential firms are most often financing through equity rather than debt. Excessive debt could push the company into a spiral of inefficiencies. In facts, firms in distress due to debt excess could start to not invest anymore even in profitable projects as the investment should be bore by shareholders (nobody would buy debt from an almost bankrupted company) and most of the profit, if not all, would go to debt holders. In a situation like this a still savable company could push itself into a one way path to failure where everybody is only looking to recover as much as they can before the end. Linked to this there is another effect a firm could face from high leverage. If a company is on its way to a difficult situation and well over the bearable level of leverage, issuing more debt would generate costs that will fall on holder creditors and not on shareholders. Follows that, shareholders could use this system to cash out as much as they can before the firm financial situation become unrecoverable. So, companies already over levered tend to further increase their debt levels even of this causes a decrease in their overall value, as shareholders have no incentive to buy back debt, but contrary, they could recover some value from their investment. This phenomenon takes the name of debt ratchet effect. One last topic to discuss is

the effect of debt on equity price. A higher debt level in capital structure means higher exposure. Given the fact that debt is secured, or it has at least precedence in reimburse in case of bankruptcy, shareholders are the ones who are risking more in case of higher leverage. If we follow the weighted average cost of capital approach to calculate overall cost of capital of a firm, and assume Modigliani and Miller theory holds[1], if debt raises in quantity equity will raise in required return as it becomes more unlikely, in case of volatility of profits, that shareholders will get any dividend payment or capital gain. In reality the M&M theory is not comprehensive of the whole effect. Once the leverage is high enough the raise in cost will not be limited only to equity. As firm risk rises with any increase in leverage, new investors will ask for higher returns as they perceive the default more probable. Follows that the raise will boost capital costs for the company, and it will risk seeing its cash flows dried out to face debt obligations with more difficulties in financing through equity.

To summarize, equity cost main determinants are the beta and the equity risk premium which are two market related measures. It remains true that other factors, like maturity state of the firm and size, affect investors choices as they will perceive some firms riskier and they will ask for an additional premium. Several theories tried to include a measure of those risks. Excessive quantity of debt has both an effect on operational and financial management mainly driven by agency problems, and it affects the total capital cost as it raises uncertainty for shareholders and dilutes debt holders recovery rate. As a side effect there is also the risk of strangling growth opportunities.

1.4 Theory evolution with debt assumption: The tradeoff theory

The capital structure of a company is the result of multiple subjective situation and decisions. Law, environment, sector, markets, the orientation of the current management and the involvement of shareholders are some of those. Given this, there exist more general theories that try to justify and explain how and why companies take decisions about the source of financing and the strategical capital structure they decide to have. We are going to cover the most significative of those theories by removing the main assumptions behind the Modigliani and Miller theorem.

[1] In their theory, Modigliani and Miller assume, as one of the pillars, that the firm return is independent from the capital structure, so any change in weight of debt or equity is counterbalanced by the other to keep the cost constant.

1.4.1 Defining debt costs and benefits

A theoretical framework that better considerate agency costs of debt is the tradeoff theory. In trade off theory two main aspects are taken into account in defining a firm strategy for what regards debt and equity mix. First the tradeoff theory states that a company will have a target debt to equity ratio and will adjust its structure in order to meet the target. A second aspect is strictly linked to the first one and explains part of the choice of the target, which is the agency cost of debt connected to the increased risk of financial distress. When an organization decides about the debt they are willing to bear, it needs to organize the structure in a way in which the benefit from the tax shield is not overcompensated by the present value of all bankruptcy associated costs. A higher exposure also leads to an increase in the market beta and consequently to a raise in the cost of capital as the firm will be more sensible to bad periods. Estimating distress costs is also quite difficult. It is needed to take in account liquidation costs, estimate the liquidation value of an asset, fees for professionals who collaborate in the liquidation or reorganization process and all associated indirect costs if, after the bankrupt, it is decided to go for a reorganization rather than liquidation. The present value of these costs is affected by two dimensions. The probability of the default happening and of course the entity of all previously indicated distress costs. The final objective of a firm will be to choose the target leverage in order to maximize the present value of debt benefits less associated financial distress costs. In this way the value of the firm will be maximized too for all stakeholders.

1.4.2 Researches on the targeted leverage behavior

We first go through Shyam-Sunder and Myers (1999) for a deeper understanding of the related researches context. Every company will have a trade-off curve, which represents the relation between the leverage and cost/benefit associated. Firms, to be at their optimum should operate and try to keep the leverage at the top of the curve. It is a natural consequence that for safe and profitable firms, with plenty of profits to shield from taxes and assets that would still have their value in case of financial distress. Empirically these assumptions are translated into two main predictions. Debt level will move toward the predicted target, and there will be a relation between profitability, asset risk and type together with the tax status, which in the pecking order theory are second order variables. Their analysis moved through singular and a join test of the tradeoff and the pecking order[2] (which we are going to analyze deeper later in the 1.5 paragraph) theories. The results indicated that the pecking order better described the financial behavior at least for large and mature corporations, even if the

[2] The Pecking order theory assumes the company has a preferred order of financial sources based on the cost and the side effects they have. According to the theory, internal resources will be used first, followed by debt and finally equity.

simple testing based on the only targeting of a debt level didn't perform bad either. In the joint test the pecking order theory performed better respect to the degradation of trade-off indicators significance. In the end their model better performs in discerning when the pecking order is valid and leave the significance of the trade-off not well defined. In this particular study the trade-off theory has been found to be scarcely explicative for real world, while pecking order theory has been found to have some evidence in reality. The two theories have in common the fact that if a firm is under its debt level target or it has still room for safe debt before going for equity, it will issue debt. Another example of study about this fact can be traced in a research made by De Jong, Verbeek and Verwijmeren (2011). The framework of the test was constructed in order to test the situation where the two theories disagree. It was done in two different situations: one, when the debt is over the target but under the max capacity, and the two theories disagree as the pecking order would predict a debt increase and the trade-off would predict a decrease in case of issuance, and two, for repurchasing decisions, when the debt is below the target debt ratio, pecking order theory predicts debt repurchase, causing a further decrease in leverage while trade-off push toward the target. Given these hypotheses, they tested which theory better described firms behavior. They used a sample of 2259 firms monitored from 1985-2005 which had an investment grade in order to limit, at least in the first part of the analysis, debt capacity constraints. In 3/4 of them they found evidence against trade off theory by analyzing how over levered firms still issued debt in moments of need for new resources. The group of companies with above the target debt levels still increased the leverage making the assumption behind the trade-off theory inconsistent. This happened for both slightly over levered firms, but it was confirmed also in those companies where the debt level was already 10% the target. One motivation for this fact may be traced back in conflicts of interests between various stakeholders. Debt may not be issued for the benefit of all investors. In facts it is possible that managers act in favor of shareholders given the fact that they could have stakes in the company, and they are appointed and removed by shareholders themselves and the board of directors (which are appointed by shareholders too). Shareholders could not be prone to new investments if there is a major risk that the profits would go to debt holders and the outcome could be a risk shifting and asset substitution behaviors leading to an increase in debt. Equity also imply the larger disclosure of information by management which as we saw before can have a cost. Equity also have the larger cost among financing resources as it is the last to be reimbursed in case of bankruptcy. In facts, if the information available is correctly processed debt holders will have discounted the amount of expected loss in case of default and the lesser resources available for the firm will have to be provided by equity holders. The cost of equity would than sharply rise pushing more to seek for debt financing. The previous statements are true especially when default become a concreate and near possibility. Following this reasoning, the

pecking order theory suits better for financing sources order decisions when issuing when the firm is already above the target leverage and a high level of asymmetric information. When the starting point is under the estimated target both theories provide explanation with similar results. They found that a small group of firms violated the pecking order once the target was exceeded, which is an indication that whether on average the pecking order theory better explain financial decisions patterns still remain a small group of firms which target a leverage level. With regards to repurchasing decisions, de Joong, Verbeek and Verwijmeren focused on a group of firms with under the target debt level. In this case the pecking order theory predicts that they will buy back debt, the static trade-off predicts equity repurchase to raise the leverage toward the target.

The choice of debt buyback in the pecking order theory is derived from Shyam-Sunder Myers (1999). According to them, given the presence of asymmetric information, only optimistic managers will buy back equity, but this would raise stock prices. As the stock price raise, the number of managers optimistic enough about the future to face this cost, shrink and the price impact increase. The consequence should be an absolute push toward debt repurchasing. The trade-off theory instead tells us that, if companies are targeting a leverage ratio, they will rather buy equity as they are starting from an "under the target" situation. Here the pecking order theory has been proved not to be efficient in explicating repurchasing decisions by correctly classifying firms behavior in only about 30% of all cases in the sample, so the trade-off theory better describe companies behavior. When the firms are over the target both theories predict a debt repurchase. Even if in this case the two theories managed to explain 70% of repurchasing choices they are not completely explicative. In the second part of the analysis the possibility for debt constrains was taken into account for investment grade companies. This was done by constructing a model that would estimate the debt capacity from the credit rating of the firm. Debt capacity was calculated based on the assumption that over a certain debt ratio the firm would lose its investment grade. In a sample of firms above the debt target ratio but under the debt capacity, the pecking order theory was able to correctly classify over 70% of issuing decisions. It is important to explain how they calculated leverage targets. Targets were defined across firms and over time. The characteristics used to explain firms targets were profitability, market to book ratio, depreciation, firm size, percentage of tangibles assets, industry leverage and R&D expenses together with a macroeconomic factor used to relate decisions to the economic environment. These characteristics were chosen to explain firms cost/benefit trade-off from operating with certain leverage degrees at each point in time and to understand how often they adjust to the target given the costs of doing so. The outcome was that highly levered firms are usually big firms, scarcely profitable but with a strong presence of tangibles. This outcome is in line with the pecking order theory and what was discussed in previous paragraphs. To explain these results is quite easy. Large firms usually

have a more diversified business and are less likely to go bankrupt. Even in case of bankruptcy, related costs are usually low respect to total assets. The presence of tangibles assets also facilitate debt raising, as they act as collaterals and consequently lower the cost. Debt capacity definition, on the other hand, has been defined, in general, as a measure linked to the idea of issuing debt to a normal cost. In other words, beside the acceptance of Shyam-Sunder and Myers (1999) interpretation of the pecking order theory where the cost of using one or another source of financing is defined by the amount of managers private information disclosure that is needed, there was assumed that the firm limit to debt issuance is where the firm is not able anymore to issue more debt without losing the investment grade rating. It may seem a remote possibility for large investment grade firms, but it is also true that the bigger they are the more prone to large financing activities they will be. Even if this work was set to test specific situations the main outcome is that when evaluating financial behaviors of firms, a differentiation should be done for issuing and repurchasing decisions, which is something that was not properly considered in previous researches conducted on the topic.

To conclude, the tradeoff theory is the necessary next step when other factors beside the mere costs of debt is considered. Tax benefits play a fundamental role in leverage decisions. It remains very important to correctly estimates in what you incur when debt presence becomes overwhelming and drains firms resources. Firms need to have a clear idea of what are their costs in case of financial distress and how probable it is that financial distress situation and possibly bankruptcy are going to happen. The tradeoff theory and related studies scope is basically to assess the importance that managers and entrepreneurs give to these aspects in reality.

1.5 Agency problems and asymmetry of information

We removed debt insensitivity and examined how the theory evolved consequently and the outcome of researches on tradeoff theory. We also took a first look to the comparison that has been made between the tradeoff and the pecking order theory. In order to understand more precisely the pecking order theory, we now need to see which are the implications from the falling of the other fundamental assumption behind the M&M model, and by this we intend the assumption that all agents have the same access to information and the same capability to process them. Here we review effects and consequences of information asymmetries and agency problems.

Information asymmetries are a well-known problem. It rises from differences in available information for any agent and from different interests and objectives that each has. As pointed out by Akerlof (1970) it could lead to a potential break down of capital markets, and at a corporate managing level

it can cause distorted behaviors and internal competition. A classical situation is the asymmetry of information between managers and investors. Managers have usually a deeper knowledge of the business and the company situation and they could take advantage by acting in their interest rather than investors interest. This is an example of agency problem coming from information asymmetry. Different solutions are nowadays put in action to try to mitigate this problem. For what regards managers, contracts should be as comprehensive as possible in terms of obligations and information disclosure (Kreps, 1990). Of course, this is limited by the cost of developing such a contract as come out from Hart (1995) analysis, which carried out a research on the importance of corporate governance in case of conflicts of interest principal agents problems, both linked to the presence of information asymmetries. From an external point of view Healy, Krishna and Palepu (2001), remarks how a regulation for disclosure to markets of superior information become fundamental to fil the gap and avoid wrong evaluations. Rating agencies, intermediaries and analysts are agents who typically search for this kind of information to give the most reliable valuation possible. There are various elements influencing the possibility to eliminate information asymmetries: writing complete contracts, the capacity to monitor if they are respected and enforce them if they are not, the cost of information disclosure for investors and imperfect regulations. Follows that understanding how to improve the correct information flow implies a cross-sectional analysis.

1.5.1 Regulatory disclosure

It is worth to further examine regulatory information disclosure as it is fundamental for bigger firms that are usually publicly traded. Going public on the market imply disclosure of both financial and qualitative information, and there are some imperfections in the markets that can act as disincentives. On the other hand, uninformed actions could lead to market failure. As it has been noted by Beaver (1998) accounting information represent a cost for current investors (producing them has a cost) but they can't get anything back from new investors that are actually using that information. This could represent a disincentive to disclosure. New investors will use the additional information without paying any price for its availability. Looking at the role of regulatory disclosure from a different point of view, Watts and Zimmerman (1986) proposed that disclosure regulation was necessary in order to fill the informative gap between agents and create a favorable environment for wealth redistribution. Weather regulators act in order to improve market efficiency or to redistribute wealth there is one major drawback that needs to be considered and Posner (1974) pointed it out. During time regulators tended to become "captured" by those entities and markets they regulate, so the outcome could be biased, and informative gap remains.

It is quite important the kind of information and the reliability of them. Financial reporting information proved to be very important to investors. Kothari (2001) who reviewed past years researches about accounting information disclosure, in his research confirmed the relevance of regulated financial reporting information to investors. Price reactions are strongly correlated with earnings announcements even if the correlation weakened during last twenty years. Kothari also pointed out how in different countries, which generally have different regulatory disclosure duties, financial reporting has different weights for investors. Alternative financial reporting standards could then bring give relevance to different measures. Studying this alternative approach presents some difficulties like a limited access to particular information which are inside information and then they are not available. Barth (1991) for example tried to include a different treatment of pension liabilities using public disclosure, Healy (1999) developed a model to estimate the value relevance of different R&D performance for pharmaceutical firms. For what regards information transmission and processing the presence of intermediaries is important. Barth and Hutton (2000) find that for firms with more analysts following, the incorporation of new financial information is more rapid and prompt. This can be connected to one main reason. The financial education necessary in order to correctly process information represent an investment for possible investors and new entrants. Financial analysts work as information collectors and catalysts making easier to everyone to process and incorporate latest news in their valuations.

1.5.2 Managerial disclosure

Beside regulatory disclosure there is managers disclosure. Managers have supposedly more information that allow them to have a more precise valuation of what will be firm future performance then outside investors. If the financial and accounting reporting disclosure regulations were perfect the problem wouldn't exist. There are some theories about which the consequences to such information asymmetries could be. For example, Myers and Majluf (1984) hypothesized that if the information gap cannot be resolved market will misprice equity and debt transaction leading to higher costs. Barry and Brown (1986) and Merton (1987) linked this concept to the information risk premium investors require. So, managers, by improving the information flow could lower their costs of capital. Another behavior is strictly related with this kind of asymmetry is linked to the insider participation to firms capital and stock compensation for managers. By deciding the timing of information release managers try to lower the stock value of the company before the stock compensation is released by disclosing bad news before this moment and delaying the release of positive information after the compensation period. Abody and Kasznik (2000) and Miller and Piotroski (2000) find that the information release will happen most likely if there are stock option at risk. This is strictly related to principal agents problems. Managers will try to maximize their outcome rather than investors ones.

Some studies focused on understanding if managers voluntary disclosure is credible or not based on the effect on stock prices. If the direct relation between positive earnings forecasts disclosure and negative forecasts is logic and proved it is interesting what came out of Pownall and Waymire (1989) analysis. They demonstrated how managers forecast credibility doesn't significantly differ from audited financial reporting forecasts. In other words, market processes and evaluates information from different sources in a similar way. The fact that regulatory disclosed information is certified seems to be sufficient to fill the gap that should come from management superior information. Certification of information is also important for firms with low disclosure requirements.

1.5.3 The relationship between debt, information asymmetries and agency problems

In order to mitigate the asymmetry of information financial structure is both a tool and a consequence. It's a toll of mitigation mostly for the advantages that come for manager from having a superior information. Oliver Hart (1995) argued how debt could be used to discipline mangers. The main point it's in the need to repay debt and the menace of bankruptcy. For example, managers will not pursue "empire building" strategies if such a strategy will eventually lead to the end of the firm and for them to the loss of their job. So, debt can be a method to lower management inefficiencies. In this case debt is raised by shareholders. In an opposite case debt could be raised by managers as a toll of defense from hostile takeovers. In order for this kind of strategy to be effective, debt raising must be backed up by a proper bankruptcy process with an appropriate penalty in case the event takes place. If the effect on management is weak or delayed for the longer time needed for the procedure it will loss effectiveness. To discipline management and to push its performance financial incentives and rewards are the usual toll employed. Debt may have a stronger effect in order to undermine selfish and un efficient actions and to persuade management to give up on empire building and self-pleasing behaviors. This is how debt is utilized to manage internal agency problems due to information asymmetry. The financial structure may, on the other hand, be a consequence of external information flow imperfection. For instance, debt maturity structure has been related to the degree of asymmetry of information and firm quality. Following this idea, undervalued firms will tend to issue more mis-priced short term debt, with the ratio of re-contracting new debt at a better price once the information and the evaluation are aligned. To find proof of this correlation, Datta and Iskandar-Datta (2000) linked the maturity of the debt to abnormal profits shown by firms during the years, confirming the relationship. If the information is not correctly processed or entirely available to the public debt could assume the role of a signaling toll. Firstly, firms with higher potential than perceived are aware of their undervaluation and will choose short term debt or different types of debt rather than go to the market. Having a close relationship with a bank with higher valuation capabilities and possibly, a deeper information availability due to a private relationship with the firm could mitigate the "price

gap" that would take place in the market. Long term debt on the other side could mean a tentative to fix the cost of capital because of an expectance of wort times in the future. Diamond (1993) developed a model to evaluate the signaling hypothesis. The outcome was that short term debt is in general senior to long term debt. This allows borrowers to refinance the more often that is possible and keeping control of the financial structure and cost. This also mean a greater flexibility and constantly up to date values. This topic is largely important for small and/or rapidly growing companies which in general have less disclosure duties and less credibility in the market together with the disadvantage of the greater weight that the cost of market debt financing may have for them. A particular case in this area are those companies in which there are conspicuous growth-options that can suffer more intensively the asymmetry of information. They are in between the necessary disclosure of information in order to get credibility and the necessity to control information flow in order not to lose the growth opportunity in favor of competitors. Consistently with what Myers (1977) predicted, these firms should have a lower presence of long term debt in their structure. This fact was later confirmed by Ozkan (2008), who proxied the growth option presence from the market to book ratio high value and found a strong positive correlation of short term debt incidence and a high ratio of this indicator in his empirical analysis of corporate debt maturity structure. More in general small firms will rather use leasing and bank loans as they have less assets to secure the debt and they are considered to have lesser of agency problems in general as noted by Lasfer (1999). Agency problems presence in bigger firms are a driver for longer term debt for the reasons we previously viewed linked with management discipline.

1.5.4 Information asymmetries in the market

Now that we discussed internal factors relating to information asymmetries and how debt presence and structure is both a cause and a consequence of information asymmetries generating agency problems it is worth mentioning how a market is affected by the presence of information asymmetries. First they are a market imperfection, follows that one of the pillars of the capital asset pricing theory by Modigliani and Miller falls immediately. To generalize the problem, we mention again Akerlof theory of the "market of lemons". The main assumption is that in presence of asymmetric information there will be a risk of moral hazard. Lower quality agents will try to sell on the market at a price in line with the high quality agents levering on the fact that a misinformed investor will not be capable of discerning which are good opportunities, and which are the worst. The consequence is an undervaluation of good opportunities and an overvaluation of bad ones because investors will have an average valuation which is not correct for both sides. When investors begin to understand the major risk they are incurring, average prices will raise to re-establish equilibrium. In this situation non cheating agents will not stay on the market anymore as they are not at a fair price stage. The

market is thought disrupted and the optimality is not respected anymore. In order to try to solve the problem, as previously said, one solution is to regulate market disclosure and managers contracts in order to get the best trade-off between cost of regulating and writing the contract and the benefit of avoiding mispricing behaviors in the market. Information efficiency in the markets has also been categorized in three stages. This view of market efficiency forms started with Roberts (1967). To further discuss this topic, we will refer to Malkiel's work (1989). In this view market prices depends on the information available to investors. We have three forms: strong, semi strong and weak. In the strong form any information is available to any market participant. Prices of securities entirely reflect this information. No information is held private, follows that there is no possibility for abnormal profits. In this case the assumption that causes the raise of agency problems, which is the presence of privileged information in the hands of managers, falls. Consequently, agency problems do not subsist anymore, and the capital structure is not biased by this type of friction. In the semi-strong market form private information are not available. The analysis and investment decisions are based on historical values and publicly traded information. Publicly traded information are the ones that come from the balance sheet, income statements, dividends announcements and changes in equity organization. In this case there is no possibility to gain abnormal profits only by this set of information. Private information will allow some agents to gain higher profits. In reality markets are proved to be in this situation. Agency problem will subsist, and market is not operating optimally. If only the commonly information available are taken into account for investing decisions there is no possibility to gain any advantage and profits will be normal according to market behavior. The last form is the weak form, where only historical information is available. Here there is no possibility of abnormal profit coming from the analysis of past prices. If the available information is processed efficiently current prices will already be embedded those information and agents will not be able to predict future prices based on them. Linked to this form there is the random walk hypothesis where the price of a security today depends only on the new information available today. Samuelson (1965) and Mandelbrot (1966) proved this fact demonstrating that, in absence of transaction costs, the price change of a certain day will not depend on the price change of the previous day. The connection to the random walk comes from a simple fact. News that causes the price to change are not predictable and time dependent. The price will behave consequently following a random walk.

To summarize, information asymmetries are directed both internally in companies and externally to new investors. Internally the main problem is to avoid managers hegemony on information and avoiding empire building behaviors and loss of focus on organization targets in favor of personal objectives. The external flow of information is fundamental for the correct functioning of the market system. Investors will base their expectations and investments based on information they have. In

perfect markets in a strong form, arbitrages will not be possible, and no agents will be capable of abnormal profits as that would mean they have privileged information. Market are not currently in a strong form, but they are nearer to a semi-strong form with the existence of agents with privileged information, usually company managers, or more in general insiders. Given this form investors usually rely on analysts who are supposed to have a higher amount of information and a better capacity to correctly process them. For what regards regulatory disclosures, the information is as trusted as the entity emitting them is. Presence of certified audit has been proven to have weak effect.

1.6 Capital structure within the framework of information asymmetries and agency problems: Pecking order theory related studies

We saw the evolution of financial structure theory when debt is taken into consideration. The output we examined was the tradeoff theory. Now we move on by embedding what we analyzed in the previous paragraph in the theoretical framework of the M&M model. The theory we discuss in this part is the pecking order theory. According to this theory firms will choose how to finance following a scale of preferences among sources. Precisely they will first use internal finance, then debt and finally equity issues. As argued by Myers and Majluf (1984) one reason for this to happen is linked to an information asymmetry problem. We saw that the presence of asymmetric information limits the access to external financing (and causes costs to grow) and it is at the root of adverse selection problem in firms. Debt and equity have a higher hurdle rate for costs respect to internal funds. The following are some examples of reasons explaining those costs.

1.6.1 Agency problems and pecking order theory

Firstly, managers have more information than investors and will tend to act in favor of older shareholders (which prefer to not dilute their share of control) and in favor of themselves. Going back to the agency problems we analyzed in previous paragraphs managers could pursuit personal goals by using in their advantage internal information which neither shareholders nor debt holders know. This leads to the attempt of shareholders to monitor management, which will cause to incur in costs, both for monitoring and the definition of complete contracts. These costs are called agency costs related to equity. This is an explanation why equity is viewed as the last source of financing in the pecking order theory. Another agency problem raises between shareholders and debt holders. By having more information and, possibly, influence on the management, it could happen that the raised debt is used to create value for equity investors rather than for the whole group of investors. Beside

this, price and value of debt are linked to the risk of the firm. Managers, again, have more information and because of that, lenders will try to have as much control as possible over them in order to correctly evaluate the risk they are exposed to and the possible expropriation of value in favor of shareholders, They will incur in monitoring costs. These costs are debt agency costs related to information asymmetry. Based on Myers Majluf theory, Chirinko and Shinga (2000) have ran testes in order to better define empirically in which form the pecking order theory better suits corporation behaviors. The outcome was that a strong form of pecking order theory where the equity financing is strongly restricted, is not quite explicative. On the other hand, recasting the model in a semi- strong form, where the financing path is more flexible proved to be more efficient even respect to other models like the trade-off model, about which we are going to talk later. Reassuming, firms will first finance new investments with internal resources, as the only cost they face here is the opportunity cost of different investment. They will then move to debt financing.

1.6.2 Debt structure in the framework of the pecking order theory

As we have seen inside the factors of determining the capital structure there may be space for further preferences in how to use them. Firstly, when debt is chosen there is to determine the length of the obligation. We refer to Diamond (1993) research to better understand maturity preferences in the debt choice. In this context, according to him, when they use debt, it will be preferably short term debt, which costs less and could lead to less monitoring than long term as it presents less uncertainty and necessity of information disclosure, then long term debt and eventually equity. Short term debt also provides a higher degree of flexibility in terms of refinancing and price adaptation to the quality of the borrower. It still needs to be balanced as an overweighed share of short term debt could lead to distress and the loss of refinancing possibilities.

From a wider angle, several studies have been conducted in order to understand whether the pecking order theory is valid or not. Shyam-Sunders and Myers (1999) concluded that the pecking order theory is a good descriptor of capital structure choices in general, Frank and Goyal (2003) arrived at a different conclusion instead, affirming that this particular theoretical framework better fits to large companies rather than small ones, so it's not comprehensive. Considering the fact that small firms are usually constrained about accessing the whole line-up of external financing sources this is an agreeable conclusion. They also related the results to a temporal factor. Respect to older researches in 70s and 80s, starting in 90s, the number of small unprofitable firms raised, and this kind of firm usually do not behave according to the pecking order theory. Another time related effect is the decline of the role of the financing deficit, which he added as an explanatory variable, in the analysis for firms of all sizes which was an explanation for asserting the small size firm predilection for pecking

order. Their findings were not interesting only for this particular reason. The results, based on a sample of US publicly traded companies from 1971 to 1998, showed that internal funding, on average is not sufficient to cover investments needs and most importantly that debt does not dominate equity issues when external funding is needed as you should expect from the pecking order theory. While equity issues are proved to have a relationship with financing deficit, debt related decisions, in general, does not. There are signs that for debt related decisions also different patterns which are not independent from the conventional leverage regression approach. Except for the tentative by Lemmon and Zender (2010) which developed a modified version of the pecking order theory, in mainstream models agency costs directly related to financial distress that may be caused by debt are not directly taken into consideration. Lemon and Zender's model was an expanded version of the Shyam-Sunders and Myers one, where heterogeneity among firms' debt capacity was taken into account. The objective was to considerate and discriminate between possible alternatives companies have. The results were in line with the pecking order theory showing, when external financing was needed, how debt constrain actually pushed firms affected by the same, toward seeking equity financing. When debt constrain was weak the tendency was to fill the deficit with debt. According to previous literature their finding were consistent with the hypothesis of small firms not following the classical pecking order. These results have been considered in line with the pecking order theory anyway considering the possibility of high growth opportunities, but with a lack of tangibles assets to backup debt, and the constrains they have in debt issuing, as anticipated in previous studies. They backed up this reasoning analyzing equity issuer and non-issuer differences and the costs associated with equity issues announcements, comparing constrained and non-constrained firms. The findings were that among the groups of potentially constrained firms, the average issuer was growing very fast, generally not profitable and with an already low leverage ratio. This is consistent with the ratio of a limited debt capacity in case of low profitability. Firms with less debt issue related concerns have different reasons to limit debt amount, like being unable to bear more debt. This thesis was empirically supported, and this group of firms showed higher growth rate. The leverage was found to be high before the issuance. For what regards the second part of the analysis, related to equity announcement costs, the constrained group showed on average less market reaction (in terms of price drop) despite the fact that the firms in this group are typically small and fast growing with a high degree of asymmetric information which should naturally lower the equity financing capacity of a firm. This is consistent with the pecking order theory idea that there is a limit to debt issuance. The preference is linked to natural debt capacity constrains in these companies. According to Leary and Roberts (2010) then, divergence in conclusion is led firstly by the testing strategy, with particular concerns about statistical power of tests, and secondly by the strict interpretation in literature of the pecking order

theory of resources exhaustion and no equity issuance which eventually lead to embracing the modified version of the theory which was harshly criticized by Myers. Leary and Roberts conducted their tests trying to develop a version clean of those problems. They moved from a strict interpretation to a wider one giving flexibility to the model they developed. For instance, two assumptions where modified and included. Firstly, they had a less rigid approach about the fact that firms try to keep a constant reservoir of cash and stick to their debt capacity, which they proved to have great prediction power for choosing between cash and debt, but a very low one for what regards the trade-off between debt and equity. Secondly, they embraced Myers' notion that companies are not just targeting their debt capacity, but they also choose their debt amount in order to be in line with the industry average for the investment grade they are considered to be. These assumptions still didn't have a high explanatory power for debt-equity issuance choices. In order to obtain a more significant output there was the need for including more variables such as Altman Z-Scores, market to book ratio and industry specific variables. In this framework the pecking order theory seemed to be able to correctly classify the majority of financial choices. It is difficult to determine whether the results were attributable to the particular theory as the empirical variables do not allow a clean definition, but it remains sure that capital structure choices can be mostly reconducted to such variables and the inclusion of a "safe debt issue buffer" is significant in determining financing decisions. In the second part of their analysis the pecking order theory was tested for the qualitative background of the firm, specifically the correlation between degrees of information asymmetries and a pecking order behavior. The conclusion was in contrast with the general hypothesis brought up since Myers and Majluf (1984) of a strong correlation. Indeed, the results indicated that the pecking order was mostly followed by firms with low information asymmetries. More significant was the result from the analysis of the relationship between incentive conflicts, implying high agency costs, and a pecking order behavior. The increase in the explanatory power they found in companies with high agency costs was about 20%.

To conclude, there haven't been a definitive proof that one theory is absolutely valid while the other is not. A lot depends on the situation upon which the analysis is conducted and the framework that built around it. Every work we mentioned, and we went through, had its valid points and less reliable ones. We can say that the overall results show that corporations on average don't have strict debt target but would rather adjust their leverage based on the activity they need to carry on and on qualitative considerations, like the convenience of further disclose information when it is still possible to issue safe debt.

Chapter 2

Strategy models

2.0 Scope of the chapter

In this chapter we go through the analysis of corporate strategy topics in order to be able to build a bridge with the financial structures we have seen in the previous chapter. Here, we will try to understand which factors affect strategic decisions. Different levels of strategies will be analyzed from an operative and structural point of view in order to understand where and how, there are factors that may be important and impactful respect to financial structure. The understanding and the recognition of these factors for each strategic choice we examine will allow us to reconcile, in the next chapter, the notions we collected in these first two chapters and set the framework for the empirical test on the financial structure.

2.1 Corporate level strategy: overview

We start by borrowing the definition of strategy from Porter (2008) in order to clarify immediately what are we going to talk about in this chapter. Strategy defines how a company organize itself in order to better respond to changes in the market, the industry and the whole economic environment. The aim is to gain a competitive advantage versus present and future competitors, it should not be easily replicable, and it has to be sustainable. In the meantime, the chosen strategy should allow the organization capable of keeping a structure and a business organization that can survive for a prolonged time span. So, when a company defines its strategy it's defining what the company is going to be. Strategy defines companies objectives in terms of efficiency, structure, production, presence in the market, possible expansion and management style. Such a decision has a strong impact on multiple dimensions. We will go deeper in the topic later.

It is important to clearly state why strategy has been considered something so important in literature. Firstly, we need to distinguish between corporate and business strategy. Corporate strategy sets where the firm is competing and operating, so in which industry and market it is going to compete, and how it is going to operate, in other terms, operative structure (diversification and integration) and organizational structure. Business strategy defines how a firm is going to be present within a particular market, so how does it want to gain a competitive advantage from its operative model. To

be more specific it is a competitive strategy that is translated in two main families of decisions: try to reach cost leadership or product differentiation. We are going to focus on corporate strategy as it is the one that most impacts the financial structure of a firm. As we are going to see in next paragraphs, where the company operates and how it structures the business in terms of diversification and production strategies, imply determinate choices that lead to certain types of investments rather than other. To define what are the forces that steer companies decisions we refer again to Porter 's (2008) work. A company that is deciding for a new strategy needs to understand the industrial environment around it. Porter suggests the five forces approach. The five forces are dimensions that a company needs to evaluate before it decides where to move. These five forces are: threat of new entrance, rivalry among the existing competitors in the industry, threat of substitutes products to present ones, bargaining power of suppliers and bargaining power of customers.

Threat of new entrants can be a menace because of the possible aggressive behavior of new players that want to gain market share. First there is the danger of a downward pressure on prices. New entrance can force prices down in order to gain a demand side cost advantage and quickly capture market share. This could pressure down market overall profitability forcing less competitive player out. There are basically two types of new entrants. Firstly, there are companies that simply diversify from other markets. This kind of company can lever on already present resources and capabilities and enter the market with a lower effort both financially and operatively. Secondly, there are completely new players. Here the threat could come from possible innovation they bring into the market and/or competitiveness on prices and quality. Imagine a new company entering a market with a new technology capable of lowering costs and improving quality. No matter what the size of the company is, the effect would be highly disruptive for the market. There are some barriers to entry, though. An industry or a market could present big economies of scale that would require a huge financial effort to enter the market, which implies higher risks for the newly entrant firm. Imagine you enter in the tech sector which is dominated by huge player like Samsung, Apple, Asus and their suppliers Intel and Qualcomm. It is quite unlikely that a newly born company can obtain the same contracts with suppliers like Apple can, or that it has the necessary resources to establish a mass production implant.

Also relating to suppliers, in consolidated markets, it is probable that main players have well established networks with suppliers. This could lead suppliers to evolve their systems and products to better fit the need of a specific firm. The consequence could be that the product or service supplied could not be ideal for the new entrant product and the outcome would be either a realignment of the new entrant to the old market or higher costs for the supply chain. This could be a great disadvantage if the strategy pursued is a cost or a quality strategy. There are, then, some industries where the regulation is restrictive and so, for their own nature, difficult to enter.

Finally, there is the customer side to be evaluated. Firstly, old players may have an established network also between customers. This mean that there may be a trust relationship between the firm and its customer, which for a new entrant may be difficult to overcome even with price competitiveness. Secondly, in industries where the product sold is personalized or presents some restriction in compatibility, software products are an example, customers could have to bear an additional cost for switching to a different one.

The competition doesn't only come from external players. The competition within an industry or market may have similar effects. Aggressive competition may lead to price war and erode industry margins. Technological advance, protected with patents and low replicability, may drive one agent to get a competitive advantage that may capture the larger part of the industry profits. An interesting example can be found in smartphone market. Apple has been, for the past ten years, the profit leader in the market with an average market share of 15-16%. This is led by high margins, product differentiation, and the creation of an image of premiumness which is still available to mass consumers. All of these together with, in-house design and engineering processes protected by patents, bargaining power in defining supply, outsourced production contracts and highly controlled supply chain allowed to minimize inefficiencies and capture most of the profits in the industry with high competition and a saturated and limited market. A situation like this is most likely to occur when the market has reached its maturity and the growth has stopped, or it has particularly slowed down. In this case competition happens in two ways, which are enlargement of market share and costs lowering. If there is no cost/profit industry leader, gaining a larger market share implies the collection of more of the industry profits. The other way to compete is on costs, both from an internal side, so lowering production and marketing costs, and from a final cost to customer side. In the first case, it's a matter of setting a new way of operating in order to lower costs, whether it is reaching a scale economy or a technological advance which allows for a process optimization and a lower cost of production or an increase in quality at the same cost level. In the second case if there is no room for market expansion the lower price, if other conditions are stationary, a lower price to customer will mean lower industry margin. This high internal competitiveness may be born from an excess of agents in the market. Usually, less performing agents should simply leave the market, but in case there are exit barriers this process could be stopped and there would be an exacerbation of internal conflicts.

Competition is also important from a supplier side. It happens in two ways. Firstly, when the market is very fragmentated and there is a large number of companies which don't have the necessary strength to put pressure on a big supplier. Secondly, if companies are strictly bounded to a single supplier or a small group of them, with no or restricted alternatives, this could create a "hostage" situation for such companies. If there is a supply leader in an industry, companies would see their

bargaining power near to zero and the value would be almost completely captured by the supplier. This means losing direct control over certain costs and supply capacity. For example, Monsanto was the main supplier of wheat seeds in India with a limited capacity for the plants to reproduce independently. When Monsanto raised the price of its seeds, farmers were forced to increase the price of wheat and consequently flour price increased. Flour is the base for making bread which was the most consumed food in India. At a certain point the price pressure was so high that the population, followed by farmers insurrected and Monsanto was in the end forced to go back on its steps. This is an example of how, if a supplier establishes an exceptional pressure in a market can basically change markets equilibria with heavy consequences. Another example is Microsoft in the computer industry. Microsoft was (and still is) by far the bigger and most resourceful software provider in the industry, while computer producers were highly fragmentated and with limited resources and skills to develop their own software. As the user experience was nearly the same among all computers sold in the market, the competitiveness shifted completely on machines prices, eroding profit margins, while Microsoft kept its leadership as sole operative system supplier.

When, then, the product is highly standardized there can be a problem of switching costs for companies if they change supplier for a new one with a product slightly different. Change of products characteristics could mean a change in processes and necessary tangible assets, which can imply the necessity for high investments and reorganization. It can also happen that a company is highly dependent upon a restricted number of customers. If the number of customers is restricted, the relative weight of each can be very important and it could put pressure on the company in order to get the best price under the threat of going in competition, if the product is substitutable with similar ones. If, instead, the number of companies in the market is high, customers could easily contract the best price given the high competition level. A customer could simply threat to go to another seller. This is particularly true in industries where the product is standardized and there is a large number of substitute products with a low switching cost. There is then the possibility that on the market there are substitute products as we mentioned before. It does not mean that another company produce something directly relatable to what we sell. A substitute can be a different product, but still capable of fulfilling the scope. Every company should monitor the market and the industry to identify such threats. In order to avoid the profit margin erosion and volume cap that substitute can create, every player in a particular industry should differentiate its product from the substitute in order to create a preference gap, whether it is trough performance, cost or functionality. For instance, let’s take domestic transport market in Italy. Trains have been available for almost a century, but with the advent of lower fares on flights there was an historical moment when train transportation suffered it. Now that trains are much faster than they were and are still cheap, airlines are suffering. Nowadays,

if you have to go from Rome to Milan you can choose between a three hours trip by train or a three hours flight (if we include the time needed in the airport to check-in, embark and disembark). In order to compete, airlines had to lower their fares and consequently the profit margin. How did Airlines react? They focused the majority of their resources on long haul flights, almost leaving domestic markets to low cost carriers and ground mobility.

Companies don't only have to look at the surrounding environment when they are deciding their strategy. A good shaped strategy has to be defined by assessing what needs to be changed in the current organization and operative model. The first thing to be assessed is what a company have in terms of resources, and what a company is capable of doing with these resources. So, the first question should be "what do we have?".

We borrow the definition of resources from Gruber, Heinemann, Brettel and Hungeling (2010) who used the classification for their studies and test about the tech industry. Resourches can be classified in tangible, intangible and human resources. Tangible resources are basically physical and financial resources. They most easily classifiable as they can be found mainly in the balance sheet. They give an idea of what a firm actually has in terms of production capacity (implants and machinery) and how much a firm is capable if investing or surviving in troubled times. The estimation of intangibles on the other hand, is a highly debated topic. There are different methodologies to estimate the value of intangibles assets. Market methods use the value of similar assets recently sold in the market. Income methods calculate the value of the asset from the present value of estimated incomes from the same. Cost methods take into account the price the firm should have to pay to replace the assets in case it did not have them. Royalty method is often used for patented technology, intellectual property and brands. It estimates the value of the asset from the cost the company had to pay if it had to license it from others. Intangible are often more valuable than tangible. In intangible assets all patents and trademark are contained. It means among intangibles there may be the real source of success for a company if it is efficiently deployed. In a fast changing and highly competitive world a breakthrough technological advance could be fundamental. Having a strong recognizable brand make expansions in new market easier. These are just two examples of the wide category intangibles asset is. Lastly, there are human resources which comprehend the skills and the know-how the company has available from its employees. These are fundamental resources, which are also costly and hard to replicate. Transferring know-how is not as simple as reading a manual and skills development need time and most importantly the right person. It is not a case that companies search employees with a certain personality and attitude and then train them for skills. As stated by Kaleka (2002) resources are fundamental and are the base for establishing a competitive advantage but, they need to be supported by proper capabilities which have the same importance and they need to be correctly and efficiently

deployed too. Every firm necessitate a set of capabilities which allow the deployment of all resources. Every activity, whether it is a core activity or a distinctive one, needs for specific capabilities. Without that there would not be efficiency or resources exploitation and the firm would not be able to compete in the market resulting in great losses. Kaleka (2002) in her research founded significant relationships between the presence of resources and capabilities and service and product advantage. The understanding of competences in the company is a basic necessity, otherwise the strategy could not be properly assessed, and it would lead to errors. From all capabilities we can distinguish dynamic ones, which in literature have been considered high level capabilities. They are basically those competences that allow to change dynamically and adapt with the evolving situation. These capabilities should be able to influence the operative and functional capabilities when it is needed in order to maintain flexibility and adjust the strategy dynamically. Once an assessment of all resources and capabilities has been done, a firm should try to understand how the present relation between the two and the external environment, so the forces that are shaping the industry, determines the performance. All this information should be used to set a reachable target and a strategy that exploits in the best possible way all resources and capabilities and at the same time allows the firm for the necessary flexibility respect to the external environment often changing situation. In the next paragraphs we are going to perform a deeper analysis of how all that we have said here is declined in reality. There are two dimensions where a company can move: horizontal, an expansion by diversification for instance, and vertical, which is the inclusion in the firm value chain of previous of later parts of the product cycle respect to the old core business.

2.2 Accessing new financial and non-financial markets through internationalization

One important variable in defining not only the operative strategy, but also the financial structure, is the country where a company is incorporated or where it wants to expand its operations. The nation where it mainly operates affects financial and strategic decisions from multiple perspectives. The first thing that comes in mind is the tax regime. Different countries have different tax rates, different treatments for different types of income, different depreciation methods and reporting standard which can cause a different calculation of taxable income. For example, while in Europe reporting standards follow IAS/IFRS in U.S. they follow GAAP. If a company has an international expansion strategy and wants to establish production sites in different countries, it will need to assess in which countries the depreciation system better suits the company necessity, where there is the desirable mix of

competences in the work force and how the taxation impacts import and export of inputs and finished products. Other effects come from the development state of national economy, regulation about financial and market disclosure, currency, labor regulation, investor protection, degree of internationalization, available resources in the country and the possibility of being affected by exportation excises.

2.2.1 Size and internationalization

When a firm is little and young it usually operates in domestic market. It is then obvious the importance of having a developed market capable of absorbing the new supply and that offers growth opportunities. As founded in Park and Jang's (2010) research, internationalization may become a need at a certain point in order to prosecute a growth pattern, but it is quite important the timing of doing so within the company life cycle otherwise the impact is often negative on firms' performances. There are different situations and combinations of conditions we can recognize. A particular market can be already saturated and technologically developed in a particular sector, so new players would face a lack of opportunities for expansion and farce opposition from established market leaders. In practice, imagine a firm trying to enter the sport clothes and apparel market in Europe where the market is dominated by Nike, Adidas, Puma etc. Unless you are capable of developing an extremely competitive product, and by the mean of it disrupt the market, it would be very difficult to survive. From an opposite point of view, a company would have identical problems in developing its business in a country where the economy is underdeveloped, labor force is not skilled, and the market has no possibility at all to absorb the new supply. If you have no customers because they can't afford to buy your product you won't last long. Even if you produce an internationally sellable product, you would struggle in finding trained and qualified workforce. It's a situation that can be common in third world countries. So small companies usually have less resources and opportunities to bear the risk of going international (Calof 1993), and alternatively they have to build the infrastructure needed to compete internationally which is probably not already in the organization.

2.2.2 Resources, capabilities and regulation in internationalization strategies

Talking about work force, labor cost and regulation can be an important barrier. In last decades the phenomenon of outsourcing have been widely spread among companies of every size as a way to obtain saving from the cost of labor and more suitable regulation in other countries. Anyway, there are some side effect a company might face. Firstly, depending on where the business has the main activities there are transportation costs to be paid. Second the "made in" effect on brand and perceived quality of the product is an important aspect, especially in high end products industry. Even if the industrial capacity is not even comparable, if a customer can choose between a made in Italy and a

made in China product he/she will most probably go for the made in Italy, as long as the higher price is perceived as fair. If a firm decide to move part of its operations out of the home country it needs to take into consideration not only which resources are available, but also if there are the necessary capabilities to exploit those resources or, if there are not, if it is possible to import those capabilities and how costly would it be to do so. Given what we have said in previous line it is to be said that there are advantages, in terms of sales growth and profitability coming from outsourcing, as Di Gregorio, Musteen and Thomas found (2009),and it remains important to correctly evaluate the cost benefit trade off on a 360 degrees basis, as outsourcing still presents a great number of complications. Whitaker, Mithas and Krisnan (2010) studying offshoring processes identified the necessity of organizational learning structures in order to acquire those capabilities needed to develop effectively outsourced activities, but it is not a minor effort to do so. The difficulties we identified, together with a renewed social responsibility culture respect to the country of origin, has recently moved some big companies to begin strong investment at home again, sometimes reshoring activities.

Another important factor for companies development and growth is the openness of the home country to the rest of the world and by contrast in what measure the target country is open to foreign investments. It might seem obvious in the west world where we have European Union international treaties , but it may be not in the rest of the world. Facilitations and expansion opportunities mostly comes from bilateral and multilateral accords, which are not globally diffused and in some cases are crippled by both economic and actual wars. In other cases, they have been canceled due to political reasons. Kahiya and Dean (2015) in their work based the internationalization of firms in different stages founding how this kind of barriers were significative at all stages of development while procedures barriers and macroeconomic factors are more important in the later stages when the development of international activities have become very important for the firm. Then, there are sheltered industries which are particularly difficult, if not impossible, to enter if you are an external agent. This may be due to restrictive regulations or because the peculiarities of the industry make it unsuitable to get in. With the increasing globalization there remain only few sectors really restricted to domestic business, but there still are. The reasons for this are mostly linked to the particularity of resources needed, the possibility for these resources to be transferred for long distances (perishability is a limit for some of them) and to the peculiarities of each territory and consequently customers necessities. The biggest obstacle is trade barriers. The fact is, if a company operates in an EU country, it has most of Europe as a starting available market, if a company is based and operates in Jordan or Vietnam it will find more difficult to spread in other markets. Take as an example Huawei, which is tech giant and still it is not allowed to sell in U.S. mostly for political reasons.

2.2.3 Internationalization and financing

From a financial point of view, different countries have different financing possibilities and infrastructures, but also higher exposure to exogenous factors. In United States and United Kingdom, a firm can quite easily go on financial markets when it needs resources while in Germany it will most likely have to raise funds from banks through loans. If neither of the two systems are available or weakly developed a firm will struggle to get financial resources and to fuel a possible growth. In order to have an idea of the impact of internationalization on financial structure we can look at Mansi and Reeb (2002) research, based on a sample of US companies. Based on a Reeb previous study (2001), which contended to past work the validity of stating that internationalized firms have less debt due to higher risks, their result was inverse to the past. Internationalized companies demonstrated to have on average 30% more debt respect to "domestic only" equivalents. When a company becomes large enough, it could go public in international markets and the potential to have an international audience willing to invest and the amount of obtainable financing would become much larger. Going international is a way to fulfill what is missing in the home country and multiply the reachable audience, but it has its costs as in disclosure requirement, currency risk (for both who provides and who gets) and the cost of listing on financial markets. An Italian company that wants to go public in US markets will have to meet US stock market requirements to get listed there and investors have a different level of protection. Agency theory explains why investor protection is an important aspect. As we have seen in the previous chapter, as the moment of bankruptcy approaches, shareholders will try to extract as much value they can before the end. In order to prevent unfair behaviors every country has a legislation which determines rights and protection for each category of investors. It follows that in countries where equity investors are highly protected, usually market oriented countries, there will be a higher supply of equity capitals, while in countries where creditors are more protected there will be a higher supply of debt capital. A firm will then find less difficult and costly to get financing from one or the other source based on the country where it is.

2.2.4 Comparative advantage

From a more operative point of view, operating in multiple countries often require a physical presence both for managing business and for law requirement. A multinational company which operates in one hundred countries will probably need to open branches and affiliates in at least the most important markets as it would become very difficult and probably inefficient to manage all activities from the headquarter. Sometimes a reason to spread internationally is to acquire resources that are not available in the home country and cannot be moved or it's not economically efficient to move them. It can be done either by direct investment or by acquiring an already existing company. Before we further

analyze how a company can enter markets in other nations, it is worth summarizing what discussed by defining comparative advantage.

Comparative advantage comes from the particular opportunities that a country can offer respect to another. It has been the focus of a lot of researches in the past decades, we mention and refer to three studies by Shelby and Morgan (1995), Maneschi (1998) and Keushnigg (2012), which are significative for the aim of our work and are suitable to extract a clear idea of what comparative advantage is and how it impacts firms strategies. Firstly, there is the aforementioned availability of resources and capabilities which can be specific of a country. If you are a tech company developing software and hardware you will probably find Silicon Valley, South Korea and Japan more attractive due to the high availability of skilled engineers and most advanced hardware to test the software. If you are a company who needs large workforce to assembly a product or to produce an almost standardized product you will find nations like Taiwan and Bangladesh more attractive to establish a production unit or to outsource production. It could be also convenient to settle in a place where natural resources are available. If the resource is not movable it could be a must do, if it is possible to move it around the globe it could still be a good way for lowering transportation costs. There is, then, the necessary analysis of local industries. There may exist the possibility for reciprocal advantages coming from present industries from value chain continuity among firms and capabilities interchange. If you are a beverage company, it could be helpful to have the bottles and cans producer near to the production site. Related industries can also help in the development of the market. Lower production costs can help spreading the product over a larger customer base while if there is a firm with a similar product already in the market, even if it could be a competitor, it could be possible to take advantage from an already developed market, an already known and diffused product category, developed distribution and commercial channels. This is directly connected to the next point which is the condition of the market in terms of demands. Different markets respond in diverse ways to the same type of product or service. Cultural peculiarities also play their part. Firstly, there is a theme of financial availability. It is difficult that a luxury brand could flourish in a third world country like it can in an European countries or in U.S. BMW and Mercedes are not making most of their profits in Mozambique or Peru where there is neither a large customer base nor a well-developed road system, so it would be unwise to push with investments in those countries right now. In order to explain better what is intended by cultural aspect, we will use the example of Italy. In Italy there are some habits and products that are quite dissimilar from other parts of the world. Take the coffee industry for example. In Italy coffee is consumed in the form of espresso, a short coffee with a particularly intense flavor, which is usually consumed in a few minutes. There are an incredible number of coffee bar and no big overpowered agent. In U.S. and a lot of countries in Europe coffee is served in a quite long

more waterish form, far more delicate in flavor and it is not just a matter of moments, but it usually implies staying in the coffee shop for some time. The world leader in this case is Starbucks a multinational company that operates in a lot of different countries. In Italy, Starbucks is present with only one point of sale which has opened only recently. This happened because Starbucks management recognized that the Italian way of consuming coffee was very different from the product they offer, and an aggressive development would have not paid off as there wouldn't have been any fit between their way of consuming coffee and the way as intended in Italy. Strategically speaking, it would have been an error entering heavily the Italian market. This point is directly related to the final topic of the group. When a company compete internationally it needs to adapt its strategy. It needs to be adapted to the resources and capabilities available in each territory, to cultural peculiarities, to the sector it is going to compete in, the structure of industries all around the sector and the presence of competitors which often triggers a push forward mechanism to survive. A monopolist would not be as prone as firm who face strong competition in improving its product for the best of its customers.

2.2.5 Foreign investments

Now that all aspects about international activities have been covered the focus shifts on how to become an international company and enter new markets. There are two main ways: exporting the product or direct investment in the foreign country. The decision to enter in one of the two ways depends upon several factors. Clearly the product has to be transportable. If is not, whether this happens for physical reasons or perishability, then the only way is to product on the site. Next to this first assessment, you need to determine which are the transportation costs involved and compare it to alternatives. Beside transportation costs there are transaction costs. In some countries importation tariffs can be a high obstacle to overcome. There is then, the degree of profit appropriability that needs to be evaluated. This depends on how you sell the product in the country. If you sell directly, you will probably capture most of the profits but you will need to handle directly the infrastructure necessary in the area so an affiliate will be probably necessary. You could sell through an agent or a distributor avoiding the necessary investment in an ad hoc structure. You could also license the product or the technology to a local organization, but you need to be protected from being copied and by this incurring the risk of losing upcoming profits. Patents work good for pharmaceutical and chemicals that have a good law coverage, but if you are trading a tech product or a software you are more exposed to risk of losing profit appropriability in a short amount of time. International product trading can be convenient when the product is not differentiated among countries for culturally specific factors, the product ownership and recognition is protected by means of law and patents, and it presents reasonable transaction and transportation costs. The alternative is direct investment in foreign countries which allows a firm to exploit local resources and capabilities. Analyzing

international activity of firms in his 2002 work, Saggi found a correlation between foreign direct investments and higher levels of growth and productivity. Given the results of his work, we now try to understand what aspects of FDIs could be relevant.

In case of FDI, the first advantage is that the product benefits from transportation costs savings, if production happens " in loco", it can be better fitted to local customers and there is the possibility for knowledge acquisition and merging with already present capabilities, as it is also pointed out by Grossman, Helpman and Szeidl (2006). This mean that the output could be then exported in other markets benefitting other company activities. Knowledge transmission among firms international activities can be a source of advantage as argued by Saggi. Some products and most of the services cannot be produced distantly from the place where they are consumed, so direct investment in local production becomes a need. Kogut (1983) recognized a major flexibility in companies with international activities conducted locally by mean of direct investments. Companies direct investment can be classified in two categories. A firm can either form a joint venture with another company, that may be already present in the territory or go by itself. In the first case there is the creation of an entity where the two or more companies involved confer assets in order to develop operations. In the second case the firm invest by itself in the creation of a subsidiary for the selected country. In either case, there are two main typologies of operations conducted. The subsidiary fully or partially owned, only conduct marketing and distribution operation. This may be the case of firms with global products that may need local management or presence for other reasons. These other reasons may be political and legal, which may require the company to have local presence because of the need for handling relationship with very diverse institutions respect to central structures. Geographical distance can be a problem where the presence of decision taking organs is needed locally and the communication links are not sufficient. Economical distance from one country to another is a point of attention. Different countries have different possibilities, as we said, so the business must be structured to be adapted to local financial availability and knowledge level. The subsidiary can be fully integrated. The production, marketing and distribution are all locally managed. There may be a matter of convenience for the presence of local natural resources which are not available in other places, the country may have some characteristics and strength that are useful to the firm (availability of a great workforce for instance), or more simply it may be convenient to produce the product locally rather that moving it around the world (typical of products with low weight to value ratio and services). Political reasons here play their role again. Some industries may be viewed as strategically important, so government don't want them to be controlled by external forces, but they prefer to have direct control over them. The choice of a joint venture over a wholly owned subsidiary, or vice versa, depends upon different facts. We refer to Kogut (1988) that worked to understand which were the

main motivation for the formation of joint ventures. Firstly, some projects require huge investments, going alone could be not possible or very risky. Secondly it can be possible that a firm has not certain capabilities or resources that another firm has and the same for the other side. A joint venture here it's a way of optimizing investments and to acquire what you miss. The advantage that could come from sharing and acquiring knowledge could also be a risk of seeing the other firm acquiring your capabilities and resources and this would probably end up with the premature end of the joint venture and a loss of competitiveness (a competitor now has your same capabilities and resources, loss of possible competitive advantage). Morover, not being the only decision maker can slow down every decisional process leading to inefficiencies. We can conclude that there is a trade-off in choosing for a solo investment against a joint venture. The joint venture may lower the overall exposure of single firms, but every firm need to protect its particular capabilities and there is the need for a major effort in coordination in order to not end up with a slow inefficient organization.

2.3 Vertical Integration and diversification

Companies also have to choose how they want to structure their value chain in order to compete in the most effective way possible. There are two main dimensions where they can move: vertical dimension, which is translated in vertical integration, and a horizontal dimension, which is translated in diversification. Vertical integration is basically the process of expanding toward previous or later parts of the value chain in the firm set of activities. Diversification is the process of expanding, with various intensity, the product base of the firm. We are going to address vertical integration first.

2.3.1 Vertical integration

At the base of the decision to go for vertical integration is the presence of transaction costs. When a company doesn't produce or own the necessary inputs, it needs to go searching for them in the market. Cheung (2016) reviewed and analyzed transaction costs from an external and internal (taking into account organizational costs) point of view. Firstly, we discuss those we call external costs, that are related to relationships with suppliers in order to get a first "reason why" for vertical integration Searching for the wright supplier represents the first cost. Considering a new supplier implies analyzing its capacity to meet input requirements and its capacity to face fluctuations in the requests. Then, there follows analysis of the degree of fit of the input provided respect to the final product, and the examination of the costs related to comparing and finding different possibilities of course. After the wright supplier has been found, negotiation is needed. We can refer to Foss (2000) research on the topic. Negotiation implies costs for the time spent and the opportunity cost of concentrating

resources in doing it. So, integrating and internalizing can become an appealing solution. It is though, a fundamental phase, as it is one of the factors defining both the cost of the product, so the margins, and a first idea of the quantities involved in the deal. Writing and defining the contract, then, has costs. The contract must be structured to define as much as possible the boundaries for activities of both parts and flexibility and reduce asymmetries and possibilities for privileged positions for one of the parts. Even the most complete contract needs a proper monitoring activity to be fully enforced. Monitoring activity of course, implies an effort and it costs. If the monitoring activity is well done and one of the participants is not compliant to the contract the firm needs to have the strength of enforcing the contract. Again, enforcing a contract involves costs and time spending. If then, even the enforcing activity is not effective the result could be a litigation. A well done contract should indicate how to manage a litigation, but it still involves costs, like legal costs, supply disruption and, as a consequence, the danger of slowing down firms activities. If these are the costs that push a firm to go for vertical integration, there are other costs involved in this choice. Expanding the set of conducted activities, which can be very different from one another, needs for a great organizational effort. This effort is translated also in a more cumbersome and complex administrative structure, which implies costs and a greater risk of inefficiencies. As it is stressed out in Cheng work, monitoring activity needs to be implemented also internally, and it has to be applied at all levels, starting from the work force, ending with management. As we are going to see later, it is very important to understand precisely how big these costs are in vertical integration where the structure can be very wide and complicated.

Vertical integration has different forms. Harrigan (1986), while studying different integration strategies, defined different stages of vertical integration. We will follow his way of thinking in defining these different stages. We start by defining the absence of vertical integration, where a firm handles a single phase of the product life, whatever this part is. For example, it can be production, commercialization or transformation of the most basic natural resource needed for the production. There are then long term contracts with the supplier or the buyer. This solution implies a longer relationship, which could mean specific investments for the supplier. Specific investments are made with the objective of offering a product with specific characteristics needed by the buyer, so a failure or a breach of contract could have serious consequences for the parts involved. It may be a way to anticipate adverse circumstances and stabilize the situation for a predetermined time span. The next level is vertical partnership. In vertical partnership two or more agents agree on a long term collaboration. The aim is to have a specifically developed structure in order to gain flexibility and security. Of course, there must be incentives to avoid opportunistic behaviors, especially because here specific investments are even stronger. Another type of vertical integration is franchising, where, by

mean of a contract, a firm which owns a trademark and the business system, allows another agent to use the brand and sell using the parent company system. The topic was deeply threated by Carney and Gedajlovic (1991) In this way the local entrepreneur benefits from the marketing and the visibility of the producer and supplier, beside the business system, and the parent company benefits from the local knowledge which the franchisee is supposed to have. The strongest way in which vertical integration can happen is when a company buys the supplier or the buyer, integrating their activities, or it builds by itself what it needs to conduct new activities. In order to do so, the company needs to have resources and capabilities to acquire and manage a new activity. That's why often companies prefer to buy or outsource services and other needs. As we saw, developing capabilities can be very difficult, especially if they are very different from the ones the company has for its core business. Airways carriers, for instance, owns and operate large numbers of aircraft every day and have a continuous turnover of these machines that can cost several hundreds of millions. It may be convenient for them to build in house the airplanes and lowering the acquisition costs, but it would mean also to build the infrastructure of capabilities and acquire all the resources necessary for a very complicated process like developing and building an aircraft would be.

There is then, to consider in which direction a company chooses to expand. We mention again Harrigan's (1986) work. Starting from a particular point it can integrate backward or downward. An example of forward integration can be a clothes producer that develop its own distribution infrastructure of stores. A bottling company that buy a bottle producer or a glassmaker is an example of backward integration. There are several reasons why firms go for vertical integration strategy. Firstly, they may be trying to acquire a more efficient structure from the correlations among the various parts of the value chain. Sharing processes and a closer link between activities can improve technical efficiency of a firm. Another reason could be the will of integrating or reaching scale economies that are currently out of the firm operative area, with the effect of lowering costs. Vertical integration also allows for a stricter control of production and a stricter and more direct quality control. Where the product is weakly standardized, controlling the quality of all inputs can play a very important role and a greater specificity and compatibility. There is then the acquisition of new capabilities which can be then retained. Expanding vertically may require a big financial, administrative and organizational effort but the payoff in terms of new skills that the company acquire may give the flexibility needed in bad times beside the possibility to expand the business in new activities with a lower risk level. On the other hand, even if capabilities are developed, they need to be continuously upgraded and different stages of the operation system may have different developing skills and efforts. If not well managed it could become a problem in terms of costs and the result

could be confusion in the organization which eventually leads to inefficiencies and loss of quality in those capabilities that have been developed.

When deciding to go for a more vertically integrated structure a company should take into consideration a wide set of variables and natural consequences that could face. Firstly, there is the rigidity that vertical integration could create in the firm capacity to respond to external environment changes. A contract could be ended by paying a penalty, or a supply could be interrupted, but if the demand falls a vertically integrated company could remain with an unused production capacity. This is strictly linked to the situation of the market where the firm is operating. In a very volatile market, it is unadvisable to stiff the company structure through vertical integration. If, by converse, to be unstable is the relationship or the reliability of suppliers, contracting costs would rise and vertical integration becomes more advantageous. Still considering the presence of multiple suppliers, expanding in different parts of the value chain could put the firm in direct competition with its suppliers or its customers. Follows that when there is a great number of suppliers, entering that set of activities would encounter fierce competition by former suppliers. Also, if they are in competition among them, there is more room for negotiation and the firm could gain bigger advantages from contracting rather than producing. We talked about specific investments before. They are taken into account when a company is evaluating vertical integration. High specific investments are a push toward vertical integration as the costs become more similar with the disadvantage of asymmetry of information. Information asymmetries are another topic to be considered. In presence of asymmetries, contract definition and monitoring costs raise. The underlying concept is similar to the one of information asymmetries internal to the firm, among class of investors and between investors and managers, problem that we analyzed in the previous chapter. There is then the problem of managing incentives. In market contracts both parts are incentivized to get the best deal possible and to perform efficiently in order not to lose a customer. If there are different stages all managed by the same entity, this kind of incentive is lost. To recreate a more competitive and compelling environment, firms often use shared services, half internal and half external. In this way the incentive is midway between the two stages. From a purely operative and strategic point of view, it needs to be evaluated how similar are the controlled stages of production and how sharable a common strategy could be in case of integration. Designing computers is very different from mining metals or treating oil in order to make the plastic, even if both are the base for components that make the computer. Huge investments would be needed and there would be necessary a great effort to develop the capabilities necessary to learning those new activities. It follows that such an investment would probably be excessive respect to the increase in performance that the company would have.

2.3.2 Diversification

Now that we've seen how an organization moves vertically through market and production stages, we go deeper in analyzing "horizontal" strategies, in other words how firms chose to diversify their business. The most immediate reason to diversify is to lower the risk level of the firm. Different businesses will ensure to the firm different sources of revenues in case of a decline in performance. It makes sense from an operative point of view, but it is not completely true from a financial point of view as Kochhart and Hitt (1998) pointed out. As a matter of fact, cost of capital depends on the beta of the firm as we have seen earlier. The beta represents the correlation of the firm with the market and it does not take into account, in the base CAPM version, of any specific risk of the firm under the assumption that investors can diversify their portfolio and avoid bearing specific risks. If a firm expands by acquiring another firm, the new beta will be the weighted average of the two. If we consider only the cost of capital asset, it would be efficient for a firm to diversify only if it could do so at a lower cost respect to an average investor. This is hardly true, so the real benefit doesn't come from lowering cost of capital in this way. What has a real financial impact in diversification is the possibility to move resources internally. Imagine a firm with two different businesses. If one is in need of resources for investments and the other has free cash flow to invest the company could move resources from one to another. This of course, would limit the necessity for issues of both new debt and equity. As a consequence, the company would avoid issuing costs and it would also avoid raise in risk associated with more debt and the higher costs related to equity. In this way the information asymmetry problem is much lower. Still, this process has its pain points. Resources reallocation should be strategically and financially driven. The main risk is that this possibility becomes a tool for empire building or politicized decisions.

We can now move on and see what the implied aspects of diversification choices are. Firstly, we need to define what types of diversification we can face. We refer to the classification used by Rumelt (1982) who used a group of S&P 500 firms as a sample to study the link between diversification and profitability. Diversification can happen in related businesses with a dominant one. In this case the firm keeps the focus on the core business and diversify in ancillary businesses that provide advantages to the main one. Advantages could be the lowering of transaction costs and exploiting acquired capabilities and resources in favor of the main activity. There is then parenting advantage. In other words, the added value of including a new activity is not only the value of the activity itself but also an additional benefit from having the activity conducted inside the organization. The second type of diversification is related diversification. The difference with the former is that here there is not a dominant business branch. The firm invests in businesses that are connected in order to exploit resources and capabilities across all of them with the aim of reaching and economy of scope. In this

way the gain from possessed resources and capabilities is maximized. Lastly, there is unrelated diversification. In unrelated diversification we have the weakest sharing of capabilities among businesses. The great independency between different activities should provide a lower risk level for the company if considered as one. On the other hand, it loses the additional value that is gained from embedding different businesses in related diversification case. It follows that unrelated diversification should be correlated with a lower profitability. Literature has always pointed in this direction, however there are some considerations to be done before concluding that. Firstly, it has also been observed (Rumelt, 1982) that including a correction for risk and industry characteristics often thin the difference in performances in the two cases. Secondly, it is hard to define a precise measure of correlation between performance and diversification strategy. Lastly, beside the simplest correlation between the previous two, there are other factors. One example is management costs related to a widely diversified structure with different types. If there are four different businesses in an organization, it may be not optimal to use the same decision making process among the four and if one decision is widely accepted it could have good implications for one business and bad for another. The consequence, from an operational point of view, is that even if a central structure is kept, single businesses will need specific management and it will raise costs. As they are all part of a single organization, they will still need to be coordinated and it will imply the presence of the needed capabilities to do so, and the necessity to invest resources in this activity.

Now it is important to understand better the logical pattern firms follow when they have to choose where to diversify. There are two main consideration the firm should do before investing in diversification. The first one is: Is the targeted industry attractive? It is translated in the evaluation of several factors. The first of course is profitability. If an industry is not profitable it is probably not attractive, but it needs to be considered if the industry has great future growth possibilities. The consequent step is to assess the maturity grade of the industry, or the evaluation of how sustained the growth is and if there is room for expansion. Mature industries will probably not add a lot in terms of future value, but they guaranty immediate profitability (if they are profitable at all). The valuation should be done in relation to the industry in which the corporation is currently operating. If the current industry has a stagnant growth or is declining expanding to a different one could easily seem to be more attractive. So, the choice should be more on the qualities of the industries in terms of integration of resources and capabilities, if the diversification happens for a more risk management related motivation, the assessment should take deeply into consideration growth capabilities and specific risk uncorrelation. Another factor to be assessed carefully is the cost of entry. As we have seen before, one of the pillars of the protection of an industry are the barriers to entry which can be both law barriers and economical barriers. Both are important in the diversification process. Regulative barriers

of course are the first to be assessed, if they cannot be overcome the process stops. Once it is clear that is legally possible to enter a new industry there must be seen which the costs are related to entrance. The initial investment should not be higher than the present value of future profits, otherwise the diversification would be not viable financially. There could be still could be a positive side effect on other businesses in the organization that could make the acquisition of a new line of business convenient, so this is the next step to be assessed. Suppose now that the industry in which a company wants to enter is accessible legally speaking, it has high potential in terms of growth and profits and it also gives the opportunity to dilute specific risk. The next question the company should pose itself is: Is this the best solution available? The point is that an opportunity cost analysis should be carried on. The investing decision should take into consideration all available possibilities and the consequences of each on the business, comprising also the possibility for the firm to not diversify and stay in the current situation, whether it is a core business focus or a different type of diversification.

The most important thing at this point is to precisely identify what are the synergies that are consequent from the new business inclusion and if there is any competitive advantage that could derive from it. The analysis should be carried on three different types of resources that could be shared and that we mentioned before. Of course, there are tangible resources. The firm needs to understand how current tangible resources can be integrated from both the old business and the new one. Tangible resources, for example, are production sites, sales forces and network, information technology systems and technological innovations. The objective is to enhance efficiency by eliminating duplications and introduce new capacities related to new resources from which the business can benefit. If we want to include also human capital in tangibles there is another advantage from diversification. In diversified companies there is the possibility of moving employees with the desired capabilities, from one activity to another when needed, avoiding the necessity of going on the labor market. This is convenient because it allows the firm to avoid hiring and firing costs, save the time necessary to advertise the availability of a position and the time necessary for the hiring process. There is also an advantage in terms of information asymmetries. When a company hires from the market the only information source it has about the candidate is basically his curriculum. <instead ,when the company moves employees from one activity or business to another, it has a clear knowledge of the past of the employee. The possibility of moving to various roles is also a tool to keep employees in the company, as they have the possibility to vary in their careers remaining in the same company. Intangible resources are also very important. Intangibles resources that can be shared are brands, patents and reputation. They are hardly measurable in value terms, but they are fundamental, and it is needed to take them into account. For instance, if we think about franchising activity, this is mainly based on exploiting the value of an affirmed brand and the capabilities of a

bigger organization. Lastly, organizational capabilities. How the company is organized affects multiple aspects, we talked in previous chapters of internal transaction costs, and it is a complicated topic as noticeable by Stanford (2015). Organizational capabilities are intended as the capacity of transferring management capabilities through the organization and deploying them in different businesses. The organizational structure is an important factor in an efficient management system, the correct structure simplifies the decision making process and the information flow across the multiple level of the organization. Connected to this topic there is the importance of strategic synergies in diversification. A fundamental factor in diversification is the capacity to align all businesses to a corporate level management system. Applying similar procedures and methods allows for a more efficient control and a less time dispersing decision method. In multi-business conglomerates, like Virgin group, General Electric, or Japanese conglomerates like Yamaha and Toshiba that produce a wide range of products, starting from musical instruments and up to motor bikes and boat engines, this is a key factor in order to gain a competitive advantage that could make the difference between competing and failing. Incongruences and fragmentation in the management system can be very costly, both because of the cost of a too big structure and for the unalignment among businesses that could cause inefficiencies.

2.4 Research and financing

Every organization has two main objectives which are surviving and growing. In this paragraph we will focus on how companies grow and survive through research and development and how they can fuel this growth financially speaking. We distinguish two main groups for our analysis: young and small firms on one side, big and grown firms on the other.

2.4.1 Financing growth in small firms

For small and newly born firms the bound with research is usually very strong, if not the reason why they exist. In these types of firm, the objective is often to enter the market with an innovative product or service which currently either doesn't exist or it represents a big step up respect to present one. This activity involves starting investments that can be of a different magnitude and will require various amounts of time to get profitable if they ever survive or become successful. It follows that the value of these companies comes from the growth options embedded in the activity. This have two consequences. Firstly, the firm value is strictly related to the value of the growth option, if not completely dependent on it, so there are usually few or nihil tangible assets to secure the investment for investors. Secondly, innovations imply creating a new market or expanding in a new way a current

one. Consequently, there are no or few actual information to estimate the probability of success and the demand of the product/service and this raise the risk and the volatility of the investment. Huang and Xu (1998) categorized business ideas in two main groups in order to try to define the process of understanding the evaluation on necessary resources for entrepreneurs and the investment and profitability for investors. They defined a first group of entrepreneurs as the ones with an idea which requires a low investment and its ex-ante profitable while the second group comprises entrepreneurs with an idea that requires a big investment and it's not ex-ante profitable. They also divided the period of activity to develop the idea in a number of time span. Two periods for the first kind on entrepreneurs and three for the second kind. These periods define investment phases. In the first phase the investment is sunk anyway, in the second the investment is sunk only partially. At the beginning nor the entrepreneur nor the investor know to which of the two categories the idea is belonging. Only after the first of the two periods the entrepreneur will know to which group the idea belongs, while the investor will discover it after two periods. At this point the investors will have the option to liquidate or to carry on with the investment. That's the reason why the investment is considered only partially sunk in the second period. This simple model helps to understand the basic process and problems involved in investing in new companies.

2.4.2 Choice of financing source: banks

Whether the financial need is low or high it is necessary to define how to get these resources. The topic is strictly related to debt policies we analyzed in the previous chapter. The least costly source of financing would be internal resources both for direct costs and for agency problem related reasons. There are two main drawbacks though. Firstly, in general internal financing causes a commitment problem with managers. We saw in the previous chapter how debt is used as tool to keep managers on point in running the business and choosing wisely new investment under the threat of financial distress. Secondly, only big and wealthy firms may have enough internal resources to finance themselves. Small firms usually don't, so they have to find another way to fuel their growth. This way is usually not the market, as the market presents too high cost and too high volumes that small firms are not able to sustain and meet in order to get to an efficient level of market operations. The other problem with going to the market is the fact that financing research and development present high risks that by themselves causes a raise in the requested premium. Besides, it in small firms the greatest part of the value comes from the growth option related to the success of the developing product which is difficultly evaluable. The information asymmetry problem here plays a bigger role, as the agents on the market not only have to perform an evaluation with limited or incomplete

information, but they are evaluating something which have possibly no comparison in the present and with a high volatility. If you are a new player, you also need to be credible and build your own reputation, otherwise you won't be trusted by the market. In conclusion traditional capital markets, are not a suitable solution for both debt and equity in case of small firms. There are some alternatives. The first one, that we shall examine more profoundly, are bank loans. We can refer to the analysis carried on by Cornell and Shapiro (1988) that analyzed the ways in which firms of different sizes finance themselves. Bank loans have the advantage of a close relationship between the bank and the firm. It mitigates information asymmetries problems and allows for a more deep and fit evaluation of the company. During the relationship and the growth of the firm the bank follows the firm development and monitors the financial situation and immediately observe when financial distress situation is approaching. In case things are going well, the terms of the financing deal can be revised and adapted to the need of the firm. It is in the interest of the bank to maintain a growing company as a customer. This company will use banking services, which are a source of fees and so profits, also in the future. The bank has interests to see the firm growing also because the bank has a stake in the firm once it opened credit lines that have to be repaid of course, but they also generate revenues from the flow of interests. The closer relationship also helps lowering the information asymmetry problem when other investors enter the firms, as the banker is almost an insider with a high amount of information and can closely monitor the management. Using bank services may also provide greater flexibility in case new funds are needed. It is responsibility of the bank to provide the necessary resources promptly. Even though we have seen that bank loans can be a good alternative for firms searching for funds they have one major drawback. It is still debt. It means that in case business doesn't go well or the company does not grow enough the presence of debt it is likely to put the firm in financial distress.

2.4.3 Choice of financing source: Venture capital

There are other alternatives for the management. In innovative companies with a high potential but no present profitability or possibility to fuel growth and development there is the venture capital way. The researching work we will refer to in this part is from Cornell and Shapiro (1988), who, as we also saw in the previous paragraph, examined in which ways firms have to finance research and development. In venture capital financing the investment is usually made through equity or preferred stocks. Preferred stocks are used to provide to the investors priority in case of liquidation. In the particular case of innovative firms and start-ups this may have a limited effect as this companies, as we said, usually have little or no tangible assets to be liquidated. It still remains a first way to protect the investment, as it is a way to transfer risk to entrepreneurs from investors. Venture capitalist are not generic equity investors. They are usually specialized firms or financial investment funds which

mainly operate in the small firm market. As a consequence, there are some peculiarities. Firstly, investor may require a particular financial and organizational structure regarding managers payoff. The base pay for a manager is usually low and more skewed to reward for performances achieved. In this way they are also financially motivated by having the possibility of selling shares, in the future at a higher price. The objective is to maintain the management as bounded as possible to the situation of the firm in order to avoid all the agency problems that are typical of big firms. If managers and entrepreneurs are willing to bear this enhanced risk and they strongly believe in their ideas and in the future of the company, they will accept this constrains. One other thing the venture capitalist can do in order to better control for risk taken is to split investments over time and at certain milestones. In this way the firm is bounded and motivated to reach promised objectives in order to get additional resources. In this way the possible problem of excessive and wasteful spending is avoided and there is lesser possibility for empire building of managers as they won't have the possibility to do this. The financier, on its side, also has the possibility to option out at each stage if he/she want to. There is a price for the investor in this case. Firstly, the price will be higher from the start, both in most immediate financial terms and in control terms. By investing in multiple and small branches the control stake will be diluted. Secondly, if the business goes well, the firm will have a higher value and the price of equity will be higher at each investment point. Venture capital comes with some costs and some risks and sometimes the combination of those with possible constrains wanted from the investors can tight entrepreneur's hands. A different way of giving to investors the possibility to be covered in the investment without the necessity of particular covenants is by using convertible instruments. The emission of convertible bonds should give to the investor major safety. In case the firm is going well and it's profitable the investor can convert bonds into equity and have a gain from the increased value of the company. In case it goes bad the investor keeps the bond with a fixed income and the priority in case of liquidation. The fact that there is the option embedded lowers the cost of the bond respect to straight debt. Convertibles are a good option when there is a disagreement between managers and investors on the risk of the firm. Going back to information asymmetries problems, managers, who are supposed to have a better set of information respect to investors, opt for convertibles when they think that the firm is undervalued and addressed with a too high level of risk. If well designed the convertible should be insensitive to risk variation as argued by Brennan and Swartz (1980). When the risk rises the probability of default raises, it lowers the value of the bond, but the value of equity raises increasing the value of the option embedded. In this way the two effects are counterbalanced. It remains true that, from an entrepreneurial or managerial point of view, there is a loss of flexibility, which is given up to the investor and the risk of being put in financial distress by the presence of the bond, which is debt anyway, with all the related consequences. This is a big

problem when the need for flexibility of this kind of firms is taken in account. Financial flexibility is fundamental for firms with volatile profits and a high level of uncertainty. In addition, in situation where there is no precedent to look at, it is difficult to predict the future financial need that the company will encounter during time, as well as the behavior of competitors in a possibly newborn market and the market behavior itself could be very unpredictable. Unexpected raises or drops in demand are something that grown and stable companies can more easily handle, leveraging on expertise and resources, but for small firms it can be a big problem.

2.4.4 R&D financing in big companies

We have analyzed problems and possibilities that small firms can meet in financing research and development, but big grown firms are active on these topics too. In case of big firms, the process of investing is in some ways simpler and more logical to be traced, still based the analysis of what we have said in previous paragraphs. Small and young firms are often built on the basis of an idea that needs to be developed in order to enter or create a market and grow. For big firms there are additional reasons. There are some firms that need to invest in R&D because it is the key for keeping their competitive advantage in the market and/or survive. This is the case, for example, of tech companies. If Microsoft would have stuck to DOS operative system without evolving to a more user friendly one, like Window is, it would have probably completely disappeared in favor of other OS producers like Apple and lately Google. Innovation in this case is the key to survive. Apple and Samsung have to improve their smartphones every year with new features because of the strong competition coming from China, which have similar level experience, but at a lower cost. Another case are pharmaceutical firms. Even the most successful company needs to develop new medicines because it will come the day when the patent on their best-selling product will expire and it will be available to competitors or it will be simply outclassed by a better product. These are examples of industries where R&D is fundamental on a daily basis for the health of the organization.

There are then, companies who use innovation as a way for diversifying from a declining or saturated market. These firms, by creating a new product or service, open new possibilities for growth in the current market or create a new one (Blue Ocean strategy[3]). A very recent example of this behavior

[3] A Blue Ocean Strategy imply the creation of a new niche or a new market with the introduction of an activity or a product. By contrast a Red Ocean strategy is one where a firm enters an already existing market with its product competing with already present players (Kim and Maouborgne, 2004).

can be observed in the tobacco industry. Following the sudden growth of e-cigarettes market that eroded the market share of nicotine consumption and the declining number of smokers of conventional cigarettes, big tobacco companies has started introducing new nicotine or tobacco related products that substitutes cigarettes and that have a high technological content, which by itself is quite appealing nowadays. The result was the creation of multiple markets where old tobacco enterprises are competing among themselves and with product specialists. For instance, in the e-cigarette market nowadays there is Jull, which has a 30% participation of Altria group, Vype which is the electronic cigarette from British-American Tobacco (BAT) and Blu from Imperial Brands. In the heated tobacco products market Philip Morris and BAT are competing with their platforms. All these products are in-home made and are the result of years of research. At the same time, they are all still competing in the declining, but still highly profitable cigarette market. This was an example of how companies exploit their resources to acquire new capabilities in order to evolve and survive.

There is then, the case of firms that persecute R&D politics simply because they have the capabilities to do so and it is a great occasion for growth when the risk is correctly evaluated. Respect to small firms, clearly this type of company has different ways to finance their R&D activity. Firstly, they usually have internal resource to deploy. Internal funds are the cheapest way of financing as we saw analyzing the pecking order and the trade-off theory. There is no interest to be paid or capital to be given back at the end of the period. So, there is limited possibility of financial distress directly related to the use of these resources. There are other reasons why they could not be used. If internal funds are exhausted, firms' liquidity could be put on stake and the risk perceived from external investors would become greater. It would raise the cost of debt and the premium wanted for equity. Then there are management related costs. Debt put pressure on management because it needs to be repaid, equity owners have at least a small incentive to monitor management operations. With internal funds these incentives are lost and there is the risk of inefficient use of resources. Finally, using internal funds means to bear the entire risk of whatever project they are used for, which may not be the desire of the firm. This is why it has been observed (Huang and Xu, 1998) that firms usually prefer to use debt or to pool together for big and high risk projects. Debt is a viable possibility, as these firms often have the possibility to cover it with guarantees based on already owned assets. It also gives the possibility to exploit tax shields, which together with other incentives on R&D activities that may be present differently from country to country and advantageous policies on amortizations and depreciations, may give great advantages. In this case debt does not present any risk premium, or at least in a milder way, respect to the one that is already typical of the firm. Risk pooling with other organizations is an alternative.

Some projects may be too big even for a grown and well established company. Joining activities with other players gives the possibility to share risks, the possibility to have a bigger amount of resources available and to take advantage of capabilities that are not currently present in the firm. We can take Airbus Industrie as an example. The development of aircrafts is a complex, long and costly process. In 1960' there was a worldwide leader, Boeing, which dominated the market for commercial aircraft as it was by far the biggest and richer in resources and capabilities aggregated under a single company and after Boeing there were Lockeed Martin and Mc Donnel-Douglas all from the US, later acquired by Boeing itself. In order to compete with American firms, in 1970 in Europe, the main French and German constructors joined in a consortium to put together the resources necessary to develop a worthy rival to superior American planes. The consortium was later joined by Spanish and English constructors becoming a European company. Nowadays after a series of mergers, acquisitions and bankrupts Boeing and Airbus are basically the undisputed leaders in the industry with a small gap in favor of Boeing separating them. The consortium organization and the pooling of resources allowed Airbus to develop very successful product like the A-320 which sold almost 9000[4] units. The emission of new equity as we have seen in the previous chapter results in the more costly way of financing. It is more probable that stocks are used as a payment method for a new entity in case of the creation of one as the result of a joint venture with other companies.

We conclude the paragraph by clearing the difference between invention and innovation. This is an historically debated and examined topic, so it is worth mentioning Ruttan's work (1959) in defining the timeline and definition of invention and innovation. The invention is the act of creating something new. Innovation means to make it available to the market. This differentiation is very important in defining who gets most of the benefit available from the two stages. Inventions need to be protected by patents and copyright if it is possible, or by industrial secret otherwise. Giving up the exploitation opportunities that come from an invention means to lose all related profits. There is then the transition from invention to innovation which can be difficult. An invention could not be useful itself, but it could need somethings else to become useful and profitable. Instant messaging is near to useless if I don't have a smartphone to carry with me and get messages wherever I am. Transforming inventions in innovation needs for specific capabilities that may not be in possess of the inventor. A mechanic that build the best car in the world in its garage, will probably not be able to replicate and sell his product because he does not have the production capabilities nor the infrastructure necessary to sell it around the world. He should better sell the right to use the car project to a big car maker which can deploy production and selling skills. Once the innovation is on the market it still needs to be protected

[4] 15000 including the entire A-320 family (A-318, A-319, A-320 and A-321). Data source: Airbus.com

in order to harvest the biggest part of the benefits that comes from it. Beside legal protection, which may not be effective for some categories of products, there are mainly two ways to avoid competitors to copy it. The first one is to make it difficult to copy. The time that competitors spend to understand how to replicate a successful product it's time that the innovator has to harvest as much profits as he can. The second way is to keep a differentiation gap. The product may be replicable, but not completely. If the original gain a "status" of superiority or a peculiar and singular characteristic not linked to technical and replicable characteristics, the innovator will have the possibility to keep the greater part of the gain for him. In conclusion, the greatest invention of all time will not bring to the inventor any benefit if it is not protected and it is not followed by a proper and well organized innovation process.

Chapter 3

Sample selection and variables theoretical significance

3.0 Scope of the chapter

The natural follow up to what was discussed in previous chapter is to try to recognize the theoretical framework we identified for both financial structure and strategy in real world. In this chapter we try to define a model which is able to distinguish different financial behaviors for different groups of firms. There will be a group of firms following a related diversification strategy, one following an unrelated diversification strategy and a last one following a vertical integration strategy. Each group will be defined on the base of the strategy companies inside it seems to follow. Despite the fact that many theories exist about how financial structure decisions are taken, there has been no conclusive proof of a particular pattern followed by managements around the world. Of course, it remains that mainstream theories (like pecking order and tradeoff theories), which we also analyzed, maintain their importance and validity in defining the framework for such studies and they are the base for every further step in research. There is then, still ambiguity about how and if financial structure affects performance and if there is a relationship that work the way around. In this chapter a model will be built. The objective is to define if the hypothesis we discerned from the theory in previous chapters about corporate strategy choice effect on the financial structure are really relevant and follow the general theory of finance discussed in the first chapter. Once the relation between financial characteristics of each group and the capital structure variable are assessed the next step will be to verify if this capital structure variable is really different from group to group. Separate tests will be conducted for this particular objective.

Summarizing, we will start by clearly defining hypothesis, the determination methodology of the sample and data source, we will then move to assess how the model is constructed and the methodology used to evaluate it. The final part will of course be to examine tests results.

3.1 Hypotheses and variables

The main theme is to define a relationship between strategy and capital structure. In order to do so, we need to formulate hypothesis which are evaluable from a set of financial variables and tests. We look at the work done by Barton and Gordon (1984). The structure of the model will be similar, as it will be the approach to strategic variables. On the base of what discussed in the previous chapters the indicators we use and the classification for the sample are developed in a different way that we will see in the next paragraphs.

3.1.1 Strategic Hypotheses

We firstly need to identify the hypothesis we can extrapolate relating strategy and financial structure relationship. The reasons to justify our strategic hypothesis have been discussed in chapter two, especially in paragraph and 2.2. for what regards resources and capabilities acquisition and deployment and 2.3 for what regards characteristics of each strategy (2.3.1 for vertical integration and 2.3.2 for the two types of diversification we are including in the test. The related diversification group will be used as a baseline for our comparison as we expect it to be the average value between the three groups and the more balanced strategy in terms of structure rigidity, financial need flexibility as well as financing need and risk appetite.

Hypothesis 1) *Related diversification firms will be to have an average level of debt between the three strategies.*

It is the starting point of this analysis. Limited capacity to move resources from one business to another in case of bad times push for debt necessity when investing. Tax advantages are better exploited by long term debt, as we have seen in the theoretical part (paragraph 1.3.2 positive relationship between debt maturity structure) and in this group, from chapter two theory we can expect debt to be related to long term investments mainly.

Hypothesis 2) *Unrelated diversified firms will have the lowest leverage level.*

One reason is higher self- financing capabilities and lower risk appetite. Debt will mostly a tool for management control and with short maturity. Different businesses may be related to management excessive independency and related behaviors as we have seen in the first chapter (1.5.3).

Hypothesis 3) *Vertically integrated firms will have the highest debt level of the group.*

As seen in the theoretical part (both financial and strategical), they bear the risk of a stiffer structure in order to avoid transaction and market costs. Debt will be related to large investments. Large investments are usually long term in cases such vertical expansion. These firms may follow a matching principle between asset and debt maturities.

RD	Average leverage level (Neutral Relationship)
UD	Lowest leverage level (Negative Relationship)
VI	Highest leverage level (Positive Relationship)

Table 1: expected leverage ranking

3.1.2 Financial Hypotheses

We need to define here what is the expected relationship of financial figures to debt level in the firm. The relationships were chose based on what was discussed in chapter 1. Here, general relationships are extrapolated as a general expected rule. This is done with the objective of understanding, by mean of the test, how each strategy group will behave respect to the general rule.

Hypothesis 4) *Maturity structure of debt should be on average positively correlated to leverage*.

Long term debt tends to be structural debt coming from big and long term investments often correlated with tangible assets. It keeps and better exploits, respect to short term debt, its tax shield function and is a semi-permanent instrument of management discipline control (paragraph 1.3.2) .

Hypothesis 5) *Size is expected to be positively related to leverage.*

The reasons are pretty clear from chapter one. Big firms have access to all debt markets and usually have a higher number of tangible assets to secure debt. Beside these, they can better optimize on emission and placement costs due to usually importantly higher volumes.

Hypothesis 6) *Profitability is expected to be in negative relation with debt levels.*

Quite simply, more profitable companies are able to finance a higher part of their activities with internal sources.

Hypothesis 7) *Availability of high amounts of internal resources is expected to be negatively related to debt levels.*

The presence of a high level of stored internal resources should be a source of financing in case of necessity for investments and financing more short term activities.

	LT/TD	Size	Profit Margin	Ret Earn/ Assets
D/A	+	+	-	-

Table 2: expected relationship in the regression model

3.1.3 Strategic variables

We start with the *related diversification* group. In this group we have companies that operate in markets that share similarities in skill and capabilities necessary in order to run the business and share resources between different product lines and businesses. Here there is the possibility to optimize some processes and deploy capabilities across businesses. We can mention some examples from the sample we choose and that we are going to further discuss later. Nestlé, for instance, is a worldwide giant in food for adults, food for infants, water, milk and milk related beverages. What the company does, it is production and distribution in different markets. Nestlé deploys its production capabilities and knowledge about the product categories it covers over the full range of its products and across 86 countries around the world, benefitting of optimization and scale economies. Food products vary from cereals for breakfast to ice creams and frozen foods. Coca Cola operates across the range of beverages markets starting from classical carbonated sodas ending with milk. Changing industry, multinational tobacco companies are using the infrastructures and market knowledge they gained in cigarettes market to expand their activities in electronic cigarettes and other products. They are basically moving from a tobacco centric market view to a nicotine centric strategy. One last example is BMW which bases its businesses on engine and engineering knowledge and capabilities operating in both automobiles and motorcycles markets.

As stated previously, the hypothesis for this group is that it will present medium dimensions (relatively to the selected population) and good profitability. This strategy will be related to an average debt level between the three. One of the reasons why we hypothesize medium debt levels due to the limited possibility of moving internal resources from business to business in time of need due to relatedness in performance across activities (similar markets suffer in a similar way for similar reasons). It is still expected to be lower than the vertically integrated group due to a minor expected tangibles fixed asset to cover debt and a different typology of investments.

There is then the *unrelated diversification* group. These firms operate a wide range of businesses in different markets and industries. Consequently, different business models and business strategies have to be put in action in this case. In this group we can find a high number of Japanese conglomerates. This kind of organizations operates a wide number of activities. For example, Hitachi it's a hard disk and other electronic devices producer, but it's also a locomotives builder. This seems to be an already quite diversified set of activities for a single company, but in reality is only a fraction of the activities the organization brings on. For instance, on the other extreme of its businesses, Hitachi is also a nuclear reactors builder. This is quite far in term of knowledge and capabilities from what needed for hard disk production. Another example is Alphabet. Alphabet is the parent company of Google. The company is not simply a tech giant operating in internet Ads business, but it also has under its control a set of companies operating in a wide range of sectors, going from robotics to venture capital investments. These companies present, usually, less synergies across the organization, and a more divisional organization. Skills and capabilities are hardly transmitted and transmissible from one part of the organization to the other and businesses are scarcely or not related. The point of interest here is an hypothetically lower profit margin, bigger dimensions respect to the previous group and, more impacting on debt levels, more possibilities for internal financing through resource transferring from one business to another. It follows that the predicted debt level should be lower than the previous group.

The last sample is composed by *vertically integrated* firms. This companies cover the value and production chain vertically. They are involved in different phases of the product life. A classic example are oil companies like Exxon, Shell and Total who cover the oil extraction business starting from research, moving on with extraction, transportation and refining, ending with selling it to public. The process of integration requires often large investments in assets and specialization of resources for each stage. The result is the necessity for specific investments. On the other hand, this kind of strategy is quite often chosen with the objective of reaching economies of scale in mass production industries. This represent as we know from previous chapter a great advantage. From a different point of view, it is also a source of rigidity to demand shocks which can represent a menace to the company survival. A different example from this sample are technology companies like Microsoft and Apple. These two companies design and develop devices and components. They then outsource the production and partially cover the commercialization of their products through direct retail activities. On top of the hardware development and commercialization, they also develop the software for their products and support services covering the all the user experience and controlling every part of the product offered. We expect this group to have the larger amount of debt for two main reasons. Firstly, they have the larger need for capitals given the necessity to cover different activities with different

resources and capabilities needed. Secondly, this kind of firms usually have a great number of tangibles assets to secure the debt. This allows them to have a higher share of debt in their capital structure. Imagine a company like Arcelor Mittal that owns production plants and mining structures. This is the group of firms we expect to be the larger and the one with more debt in their structure.

3.1.4 Financial variables

Now that we defined what we expect to be related to each strategy, we need to define a set of financial variables that are suitable to represent the different characteristics that we attributed to each strategy group and that are capable of explaining a particular relationship with debt levels. A measure for debt maturity structure will be defined, one for size of the company, one for profitability and one for self-financing capability.

Long Term To Total debt

In order to determine a relationship between debt maturity and debt level a long term debt to total debt ratio has been defined for the sample. Long term debt should be associated with firms with stable growth rate and safe cash flows that can assure repayments for the long term. We expect it to be higher in those firms with a high number of tangible assets with a long life for both a matter of debt securitization and because of the matching principle of maturities. As highlighted in the theoretical part, companies with high growth expectations will rather get lower term debt in order to recontract it at a later stage. The same is true for companies who thinks they are mis valued. On average this indicator is expected to have a positive relation with debt levels.

Log of Sales

The size of the company will be defined by the log of sales. Log of sales has been chosen over capitalization because market caps are quite influenced by information flows and interpretations differences between investors that, together with different expectations represent a strong bias in market values. Asset value, which was another possibility, was exposed to several company specific factors. Firstly, different businesses require different amount of assets to be run at parity of results. Assets are then biased by the operational activity of its company. A tech company like Facebook has less than half of Walmart assets but produces more than double of Walmart's' profits. Log of sales is a measure of the volumes is able to produce no matter the entity of a single transaction, resulting the most comparable indicator. It does not mean it is perfect, it still is affected by possible seasonality in sales of certain markets and the health status of the same, but it represents a good and sufficiently comparable proxy. Bigger size is expected to have a positive relationship with debt levels.

Profit Margin

There are several good indicators of profitability available. Profit margin has been considered to be a good indicator of both operative and financial operation effectiveness in a straight and unbiased way. ROE was biased by companies with negative equity value on the balance sheet. ROA was strictly related to assets presenting the same problems that were considered in choosing a size proxy. Profit margin represents what is available to become a self-financing source or return to stockholders. According to the pecking order theory and the "need for flexibility" of the management, this measure will be negatively related to debt levels.

Retained Earnings / Assets

A more accurate measure of self-financing capabilities was needed beside profitability. With this indicator we want to understand if there are significative differences between groups due to strategies followed. In other words, we want to know if different sources of revenue and profits are really related to major usage of internal funds. This indicator is expected to be negatively related to debt levels

Debt/ Assets

The ratio of debt and assets will represent our output variable respect to which we will test significance of previously selected variables. It is the classical and more direct measure of leverage. The variable will be used in both the regression analysis as dependent variable. It will be used in the ANOVA test and in the tests we are going to run for mean values that will be run in order to verify the statistical difference among the three groups.

Indicator	D/A	LT/TD	Log of Sales	Profit Margin	Ret Earn/ Assets
Variables	Leverage	Debt maturity structure	Size proxy	Available resources to stockholders	Self-financing capabilty

Table 3: Selected financial Indicators for the model

3.2 Data and Sample determination

Data is coming from the comparation and reconciliation of several sources in order to test the robustness of the same. Two main sources were used, Yahoo! finance and Thompson Reuters. An additional check was done for all those firms which are listed in US on the SEC database of companies fillings. Main figures utilized for the variables were then double checked in companies financial

statements. The main basis comes from financial statements on Yahoo! Finance. Data are collected for a four year period.

The sample has been determined on a qualitative basis after a study of business operations, skill and capabilities deployed by companies. Rumelt and Wringley used two ratios to define the degree of specialization and relatedness which were based on the identification of the portion of sales related to the major activity (for specialization), and to the relatedness of sales in one activity to sales of another activity. In our case the firms have been chosen after a single firm based study. The reason to do this comes from the belief that there is a tradeoff between a smaller number of companies in the sample and an ad-hoc selection and classification of firms. Basing it on logical basis, as we will try to do, is expected to obtain a more fitting classification. One company was classified in one group if the business model, the structure and product lines presented the peculiarities identified in theory were observable. For what regards related diversification, the main driver has been the capacity of firms to operate in different but similar markets deploying successfully the skills they have in the organization. Skills and capabilities here are expected to be successfully deployed in order to spread the benefits deriving from them from business to business and optimizing the resource allocation at the same time. An example from the sample. LVMH it's the French company who owns several luxury brands in different areas of interest. It has a strong presence in alcoholic beverages market with brands like Belvedere and Moet & Chandon (among others), it is affirmed in jewelry with Bulgary, De Beers Diamond Jewellers and TAG Heuer as well as in clothing (Luis Vuitton, Fendi, Marc Jacobs and several others) and parfums market. It is clear that these products are quite different among them both in production and also physically. What they have in common is that they all are luxury products. LVMH exploited its capacities and knowledge in marketing luxury brand creating a conglomerate of over 60 brands which all take advantage of the same set of capabilities the company developed. Different examples are Sony and Canon. Sony acquired a huge amount of knowledge in electronics and graphic during years by producing all kinds of entertainment electronics and it has become a leader in videogame consoles (with the PlayStation brand). It also became a film producer, beside producing cameras for filming those same films, and a record label, while it is also a producer of audio devices. The company basically covers all branches of the entertainment industry. The main capability they developed have been of being able of creating and supporting the platform needed in each entertainment sector. Canon, on its side, it's a leader producer of lenses. Their skills in development and production of optical lenses gave them the possibility to become one of the most important players in the photographic cameras and commercial telescopes.

Unrelated companies have been chosen with the same logic, but of course, with different characteristics. This group is composed by companies who operates in totally different markets or

industries within the boundaries of the same organization. The presence of strong differences among businesses make the translation of skills and capabilities quite difficult, as a consequence these companies are often organized in several divisions each operating a particular business. An analysis of single businesses of these companies was run in order to determine if they would have fit in the group. We now see some examples to better understand the process.

Related Diversification	Unrelated Diversification	Vertical Integration
Johnson&Johnson	Amazon	Microsoft
Nestlè	Alphabet	Apple
Intel	Airbus	McDonald's
coca cola	samsung group	Exxon
LVMH	Boeing	Shell
Pepsico	Unilever	TSMC
philip morris Int.	3M	Netflix
P&G	GE	Nike
Altria	Siemens	Stabucks
BAT	Hitachi	Inditex
Mondelez	Toshiba	Adidas
Sony	Yamaha corp	Tesla
Honda	Motorola Solutions	Dell
BMW	Philips	HP
Canon	Toyota	Total
Imperial tobacco	Mitsui	Archelor Mittal

Table 4: The three groups of the sample

Amazon is the most famous online shopping platform with a market cap of around 900 billion dollars. The company was born as a simple shopping platform, but it has changed quite a lot during years. Firstly, Amazon has become a producer as it commercializes several products which are sold directly buy them (they usually act as intermediaries). This put them in direct competitions with its customers (the sellers). Amazon has next become a leader web services provider. Its cloud and server services are very popular even for corporate level customer, for examples, Netflix runs its stream service on Amazon's servers. They are also leaders in logistic services, which they also offer to both entities that sell on their website and entities that do not sell. While in the past the delivery service was externally provided they are now expanding in this area too. Besides drones and other innovative initiatives, they have become, like in Italy, postal operators, a fact that put them in direct competition with local and global delivery services firms. So, Amazon is a retailer, a tech company and a logistic services company at the same time. Three areas that impose different handling of operations. More

commercial for retail, technical for informatic services and organizational and asset intensive for logistic. Two firms that may seem to be out of scope in the group are Boeing and Airbus as they are usually seen for commercial aircrafts production. They have been inserted in the group because, beside aircrafts production, they also develop helicopters, both commercial and military, military airplanes, weapons and they are active in open space vehicles production.

The last group is the one of vertically integrated firms. The ratio in choosing the firms for the sample have been to select companies who cover more than one stage of the value chain of a product or business even if not consecutive. In other words, a company may be undertaking the production of a good and the selling of the same but not the packaging.

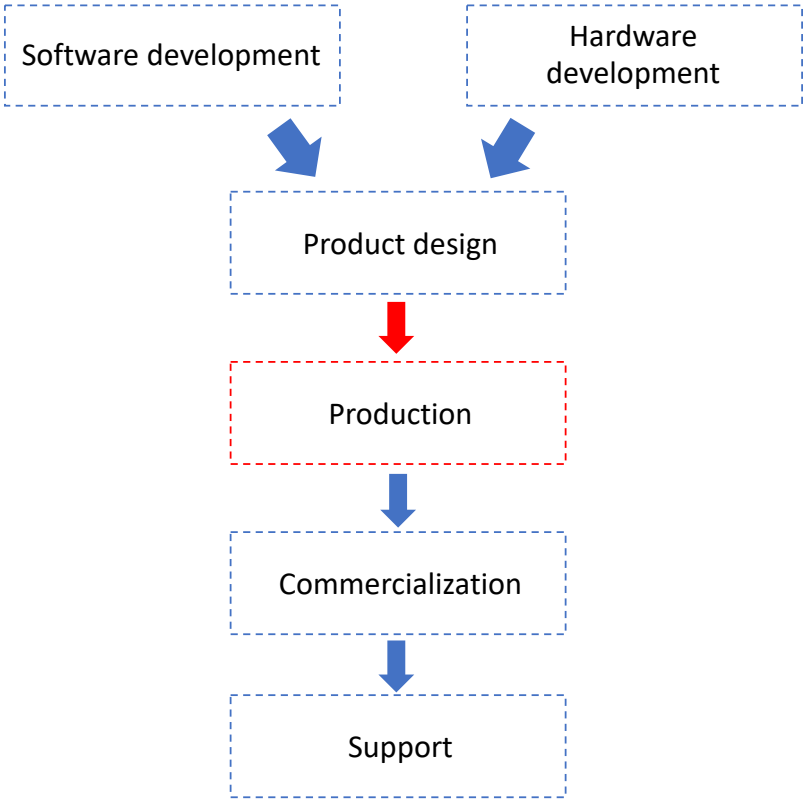

Table 5: Apple and Microsoft, example: in blue the activities undertaken by the companies directly, in red those activities that are outsourced

This is the case we have seen before with Apple and Microsoft (Table 5). They design and develop software and hardware, production is then outsourced, they are involved in the commercialization at least partially and, finally, they provide continuous software updates and technical support. Nike operates in a similar way, as they provide design and developments, commercial support and sales, but they don't directly do the production par. There are then fully integrated firms. Examples are oil

companies like Shell and ExxonMobil which covers from the research and exploration activity to the fuel selling activity at fuel pumps. We already went through their characteristics in the previous paragraph. It is worth mentioning two interesting cases in the group. The first one is Netflix, the well known streaming platform. Netflix is part of this group because beside streaming contents online, it is also a producer. To be more precise, Netflix started buying the rights for all the contents it streamed from their producers. The business model was similar to their original movie rent activity. The next step for them was to start developing and producing their own contents and to remove the external ones in favor of those that are home made.

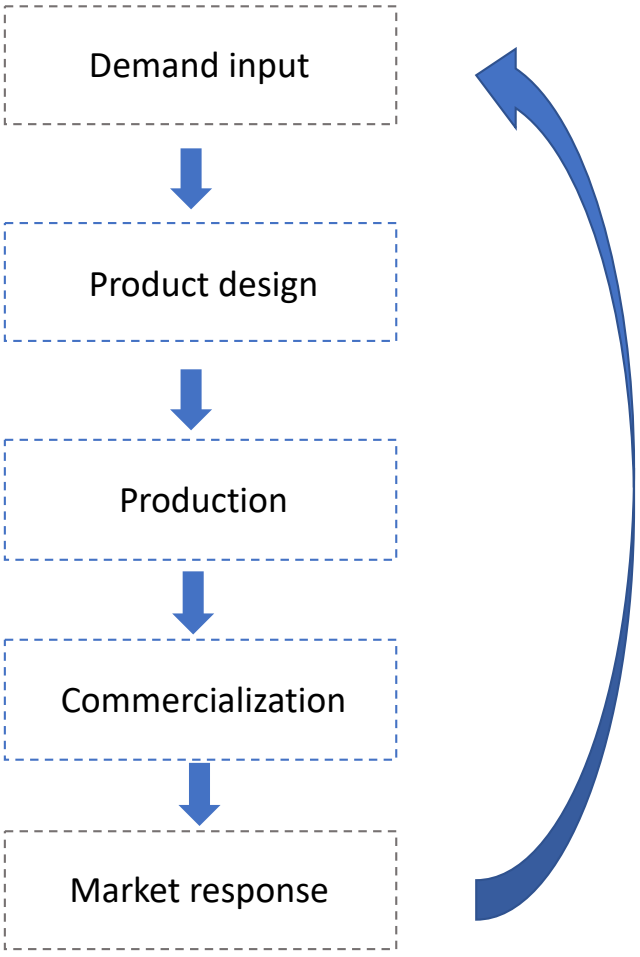

Table 6: Inditex integration model

This process, which is still in progress and expanding, has been then copied by the other major streaming platform, like Amazon Prime Video, that is part of the Prime services package. The result was that Netflix moved from being a simple streamer to be a content producer who streamed its own production. It is quite a big step for the company that was competing with Blockbuster in the video renting market. The last example we bring is Inditex. Inditex is the company that owns the well-

known brand Zara, which is present around the world with a great number of stores. The company integrated the design and production system by internalizing it in order to be able to go more quickly and efficiently to the market (Table 6). Inditex designs its new product, produces them and then sells them through their direct retail infrastructure rather than moving on with a slower process of internal design and external production before going back to direct retailing again. In this case vertical integration together with the right set of skill, capabilities and resources provides to Inditex a competitive advantage.

Finally, there are the home country and the size effect to be evaluated. As we have seen in the previous chapters the home country can have a strong effect from both a financial and an operative point of view. Financially, debt policies depend on taxation, market access, capital and investor availability and finally bank system development. Operatively, regulations impact operations. Bureaucratic timings can slow down processes. Markets then, can be more or less developed. In order to avoid biasedness of one group respect to another due to geographical factors, every group has a similar composition in terms of nationality variety. This has been done with the aim of reflecting the same country effect in the same way in each of the three groups without limiting the study to only one country (Table 7).

Related Diversification	Unrelated Diversification	Vertical Integration
US	US	US
CH	US	US
US	EU	US
US	KR	US
EU	US	EU
US	UK	TW
CH	US	US
US	US	US
US	EU	US
US	JP	EU
US	JP	EU
JP	JP	US
JP	US	US
EU	EU	US
JP	JP	EU
UK	JP	EU

Table 7: nations involved

All of the firms are listed on markets and with a size that varies from one trillion to 8 billion, 200 billion on average. The difference between the bigger and the smaller may seem to be worryingly big, but, all companies selected are big enough to access high volumes markets and to operate internationally in order to not suffer from national limitations. This should avoid all those restrictive

size effects we examined in chapter one. We expect that the only significative effect for the test will be the scale up or down of debt in absolute values respect to each firm dimension.

3.3 Defining the model

The model we use for the analysis is based on a population of firms divided in three samples. The three samples are based on the strategy the companies follow. As anticipated, the first group of firms are firms who follow a related diversification strategy, the second group an unrelated diversification strategy and the third group a vertical integration strategy (Table 8). These particular categories were chosen because they presented a suitable and interesting set of characteristics to be tested based on the theory previously developed and also because they cover the main categories identified by Wringley (1970) and the extended and more specific distinction made by Rumelt (1974). The categorization has been deeply analyzed. Now, we briefly summarize which were their categories and where they came from historically. Wringley categorized firms in four groups: Single business, Dominant, Related and unrelated. Vertically integrated firms seem to be missing. We can reconcile the classification with the one done by Rumelt in order to identify them. According to Rumelt's work 9 categories were identified: single business, dominant vertical, dominant constrained, dominant linked, dominant unrelated, related constrained, related linked and unrelated businesses. Vertically integrated firms are defined in the group "dominant vertical" (Grant, Jammine; 1988). The three categories that has been chosen here reflects, in an aggregated way, the strategies identified by the two former studies. Single Businesses are the only category not captured in the test. Past studies, Barton and Gordon (1984), to which we will refer later, among them, showed that they do not significantly differ from the mean of the population for what regards capital structure variable.

Samples			
	Related Diversification	Unrelated Diversification	Vertical Integration
#	16	16	16
yers of Obs	4	4	4
# of Countries	6	6	7

Table 8: Sample characteristics

It is worth to briefly sum up which were the factors entering in financial and strategic choices and that defined the hypothesis that have been made. Firstly, there is to be considered the existing capital structure and the amount of risk it implies. The first consideration that can be done is how much appetite for risk the firm has. The financing choice may differ due to different valuation about the

tradeoff between debt and equity given the risk taken and the overall cost of debt. Already risky companies should be less prone to bear more risk. The risk-control framework will be in part defined by financial variables that the management of the firm can observe but cannot directly control. Together with the desired flexibility level they define a perimeter in which leverage decisions are taken. There are then external factors. Firstly, it needs to be possible to get the wanted financing by mean of the preferred instrument. As we have seen size and geography affect the capacity of the firm to get debt financing rather than other forms of debt. External environment also defines how investors react to certain levels of risk. An already risky firm may be willing of bearing even more risk, but investors may not be willing to follow this idea and they would not invest. Relating to wanted flexibility, debt and equity represent a bound to external investors for the management of the company and they are also costly. The two previous fact may lead to prefer internal financing which allow them to have full control and flexibility. This idea follows the Pecking order theory. We talked a lot about managers goals affecting multiple sides of a company activity. As already discussed, this agency problem has a certain importance in firms life. From a more "model related" point of view, management goals need to be supported by all the strategic decisions and the financial structure should be chosen in order to facilitate reaching them. Strategy affects all the points considered above as it can define the geographical access to resources (financial and non-financial), the environmental risk to which the firm is exposed, the size of the investment required for the activities the firms choses to carry on and the flexibility the organization has to adapt and change quickly when needed or wanted. In the next paragraph each part of the model will be described, and the tests commented. The leverage will be regressed respect to a set of financial variables. Each strategy should show a peculiar behavior. Tests are conducted on each group separately and finally jointly. The analysis has been carried on for each year in order to make intelligible any change in that has been robust in the group during the observation time.

3.4 Regression analysis and results

We are going to run two sets of tests. The first one will be a multiple regression on the defined leverage measure variable level respect to the variables we examined and choose before. The second will be made of two parts. An ANOVA test, which was run in order to confirm statistical difference among the three groups and a T-test to confirm the hypothesized relationship between groups. The strategic variable was considered an implied variable. The regressions have been run separately for each group, and for each year of observation. An additional fixed effects regression model was run

to check for robustness with a different approach. Treating strategy as an implied variable was preferred respect to treating strategy as a dummy variable.

$$D/A=a+b1\ LT/TD+b2\ Size+b3\ Profit\ M.+B4\ Ret\ Earnings/\ Assets$$

Full model

Before running the full model variables were added one by one and the model was run each time, in order observe the significance and the possible overlapping of results respect to other variables as well as the improvement of the model. The test has been run for single groups and for the full sample.

3.4.1 Results

We start with the regression test and precisely with the related diversification group. The regression analysis showed mixed results (Table 9). Firstly, it is to be noted that there seems to be a time bias. The model better fits for older data. In 2015, maturity structure, profitability and self-financing capability showed to be significant at a 1% confidence level. The best predictor in this group is the debt maturity structure indicator, which is in positive relationship with leverage levels.

Related	2018	2017	2016	2015
Intercept				
	-0,11	-0,11	-0,35	0,31
LT/TD	*	*	**	***
	0,53	0,50	0,69	0,61
Log of Sales				
	0,08	0,08	0,14	-0,14
Profit Margin			*	***
	-0,75	-0,08	-0,57	-1,72
Ret Earn/ Assets				**
	0,20	0,06	0,18	0,27
* α=10%	** α=5%	*** α=1%	R^2 Total	51%
R^2	33%	29%	54%	67%

Table 9: maturity structure has a relevant relationship with leverage ratios. The stars indicate the significance level showed by the model

By 2016 and 2015 profitability and self-financing become significant. Profitability as expected is in a strong negative relation with leverage. Contrary to what hypothesized, and quite surprisingly, the weight of retained earning showed a low but positive relationship. Related companies seem to link their debt choices to long term investments. We remember from the first chapter that long term debt allows a better exploitation of tax advantages in profitable firms even if it is associated with higher agency costs in case of volatility situation. What is more correlated and better explains this result here, is linked to the firm operative point of view, is the matching principle that may explain the result for this group. Firms with related businesses are less prone to a quick turnover of activities and usually have more stable structures. Long term debt may reflect debt acquisition choices as it could be connected to new investments connected to enlarging activities and acquiring resources rather than to short end financial choices. We can explain the positive link with retained earnings as a will to keep a buffer in case of bad periods. Such behavior could be related to a tradeoff like strategy. The company recognize the higher agency and distress cost related to long term debt and keeps a security buffer. As we said, related diversification strategies expose firms to business volatility more than unrelated diversification in change of the possibility for more optimization and efficiency.

The unrelated strategy group showed the best results in terms of significance. We can see that almost all variables at a certain point showed to be significant at a 1% confidence level (table 10). We start again with the maturity structure indicator. Respect to the related group it shows an inverse relationship. We can look at it together with other relevant results in order to understand the full picture of the group.

Unrelated	2018	2017	2016	2015
Intercept	***	***	***	***
	11,88	13,29	10,73	10,47
LT/TD	***	***	***	***
	-6,26	-9,65	-6,70	-5,95
Log of Sales	***	***	***	***
	-4,39	-4,43	-4,43	-4,19
Profit Margin	**	**		
	-11,82	-21,18	2,88	-6,43
Ret Earn/ Assets	***			
	2,44	5,17	1,97	2,55
* α=10%	** α=5%	*** α=1%	R^2 Total	77%
R^	74%	83%	70%	70%

Table 10: unrelated group results

Leverage is negatively related to size. Bigger firms seem to be able to finance themselves internally or from other sources rather than by debt. It could confirm the view of the pecking order theory where internal funds are the first source. Structural debt is counterbalanced by lower overall leverage. Unrelated firms use more internal resources as bigger and more profitable they are to fuel growth and finance long term opportunities. The only year in which self-financing capability is significant it appears again to be positively related to debt. Overall seems to be confirmed that these companies keep a "safer" behavior both operatively and financially. It is confirmed the expectation of observing the lower average leverage level as we will see in the next test.

The vertical integration sample was the most disappointing in terms of significance of results. Most of the variables did not provided a valid relationship with leverage levels. The most interesting thing is that we find again a positive relationship between maturity structure and leverage. Considering the fact that low significance could be related to a more personalized management style among companies of this group, higher long term debt positive relationship may be explained again by the matching principle as we anticipated in the hypothesis paragraph.

V.I	2018	2017	2016	2015
Intercept				
	0,19	0,21	0,12	0,18
LT/TD	**	*		
	0,50	0,30	0,20	0,21
Log of Sales				
	-0,09	-0,05	0,00	0,00
Profit Margin			*	
	0,13	0,09	0,13	0,05
Ret Earn/ Assets				
	0,20	0,06	0,18	0,05
* α=10%	** α=5%	*** α=1%	R^2 Total	25%
R^	48%	30%	15%	10%

Table 11: Vertical integration group results

The similarities in results between related diversification and vertical integration is driven by similar needs with different objectives. Relatedness in businesses could be driven by the search for optimization and efficient use of resources, integration is driven by the desire to avoid market and

transactional costs. Long term financing better suits these long to be implemented objectives and does not drain immediately companies resources. The average resource exploitation is longer here and the support from other internal sources of financing is naturally limited. We find again a positive relation with the amount of retained earnings in the company showing a common point among the three groups even if the result is not quite reliable due to low significance. In the year 2016 a low positive correlation with profitability is showed. This value could be explained in a simple way. More profitable firms tend to expand their activities and they do it by mean of debt, which is now contractable at better terms, as a profitable firm is a more safety investment. Also, investments for vertical integration are usually quite big and internal resources are often not enough. It makes sense from this starting point that when profitability is higher firms invest in expansion at better terms.

We show here the overall result of the model. Beside strategic and financial consideration we want to stress the quality of the model and the chosen variables. The more reliable variable seemed to be the maturity structure indicator which showed significance in all samples at a good confidence level.

Full Model	2018	2017	2016	2015
Intercept	***	***	***	***
	5,93	5,83	5,83	5,83
LT/TD	***	***	***	***
	-2,36	-2,57	- 2,89	- 2,57
Log of Sales	***	***	***	***
	-2,26	-2,28	- 2,33	- 2,28
Profit Margin				
	-2,78	-0,46	- 0,07	- 0,46
Ret Earn/ Assets				
	0,78	0,66	0,86	0,66
* α=10%	** α=5%	*** α=1%	R^2 Total	34%
R^	34%	34%	34%	34%

Table 12: Full model results

Beside it, size also was quite robust when significance, even if it showed unexpected results. A negative relationship with debt was not completely obvious. Usually big companies tend to have more debt given that their size is given by a dominant position in their industry(ies) that gives them a solid contracting base for financing activities. Beside this fact size is usually also related to international activities and access to different market that together with scaled activities that lower costs, have the

effect of making debt financing more economical. The self-financing indicator was not effective except for few cases. It gave anyway the hint that commonly companies keep more earnings in the organization as the debt level raises and vice versa, they seem to use it as a buffer for higher leverage levels. Profitability, except for the vertical integration sample, showed the expected negative relationship with leverage.

We also wanted to check the relationships and the model validity controlling for fixed effects. Fixed models aim to eliminate those parts of the intercept value that are containing unknown effects on the other variables and that are influencing the error of the regression. A within estimator method was used to build this model (table 13). As it is a panel method, it needed a higher number of observations, so all four years were pooled.

Full Model Fixed effect	Intercept	LT/TD	Log of Sales	Profit Margin	Ret Earn/ Assets
	***	***	***	***	***
	1E-17	3E-01	-8E-02	-2E-01	9E-02
	* α=10%	** α=5%	*** α=1%	R^2 Total	28%
# observation		192	192	192	192
F stat	18	Significance Level			1E-12

Table 13: Fixed effect model

The result of this model was an overall high significance of all variables, but the value of the coefficients resulted being very low, indicating small effects of these variables on the leverage. On the other hand, this model showed a lower R^2. It seems that the other methodology better fits in explaining the behavior of this sample of firms with this set of variables. An interesting thing to notice is that the only coefficient to show a different sign is the maturity structure one. Basing our evaluation on this model we could conclude by confirming the second hypothesis made, while it was not confirmed in the previous case.

We start the second set of tests by testing the overall difference among the three groups. As we said before, the related diversification group has been used as a starting point and the other two were confronted respect to it for what regards the T- test. The first test was executed in order to be sure that the objective variable was effectively different among the three groups and to have a hint about which was the most leveraged one. A one way ANOVA test was run for this reason. Table 14 shows the results.

Groups	*Avg*	*Variance*	
Related diversification	0,48	0,02	1
Unrelated diversification	0,36	0,04	3
Vertical integration	0,45	0,03	2

Variance analisys

Origin of the variation	*SQ*	*dof*	*MQ*	*F*	*Significance*	*F crit*
Between groups	0,52	2,00	0,26	8,48	0,00	3,04
In groups	5,84	189,00	0,03			
Total	6,36	191,00				α=5%

Table 14: ANOVA test results

Firstly, and most importantly it confirmed that the three samples are actually statistically different. The test has been run with a 5% confidence level. We can take a first hint about the outcome of our hypothesis about the mean values of the samples. Contrary to what we hypothesized the related group showed the highest leverage, followed with a small difference by the vertical integration group. As expected the unrelated diversification strategy has been proven to be associated with the lowest leverage level. We now need to test if these differences in the average value of leverage are statistically different. As we said in the previous paragraph the baseline will be the related group as it is assumed to be the average value. The T- test that was conducted on the three values tested different differences among the averages. The difference in favor of related diversification was confirmed with a good significance at 95% (Table 15). The hypothesized difference was a 2% in favor of related diversification. Higher differences were significative only by lowering the power of the test

	RD	*UD*
Var	0,03	0,03
obs	64	64
Hypothesized difference	0,02	
dof	125	
T stat	1,94	
T crit	1,66	

Table 15: Related diversification Vs Unrelated diversification

The test between related diversification and vertical integration didn't show significant differences even with a lower power of the test. This result does not confirm what we previously hypothesized (Table 16). We can back up this output with the results of the regression analysis. The two groups

showed similar results in the variables relation with the leverage. This might suggest that this two groups have similar behaviors in how they decide debt levels in the organization.

	VI	*DR*
Var	0,33	0,34
obs	64	64
Hypothesized difference	0,001	
dof	125	
T stat	-0,17	
T crit	1,29	

Table 16: Related diversification Vs Vertical Integration

It remains true that the tests conducted have some limitation given the difficulty in measuring the strategy variable, which here is treated as an implicit variable, and the intensity by which every strategy is followed by firms. The strategy variable is supposed to incorporate all those behaviors impacting financial structure that are not discernable from the financial variable. It is clearly difficult to draw a direct link between a qualitative variable and a quantitative one like leverage. The qualitative approach we used was our way to have a more precise valuation of the strategy defined, but it came at a cost which is the limited number of observations for each year. The limited number of observations may have left space for larger estimation error and didn't allow to use better fitting models. The main aim was to obtain a clean sample for each group justifiable one by one. So, respect to Rumelt's work on defining a strategy variable it has different limitations. Results, though, were in line with previous researches in terms of explanatory power. Different approaches were tried and showed similar results. The conclusion is, that these tests are good to get a direction of what the relationships are in between strategy and financial structure, but they are not conclusive in giving a definitive answer.

3.4.2 Hypotheses summary

Summarizing the results relating to the hypothesis we made earlier:

- Hypotheses 1), 2) and 3) are only partially confirmed. The levered group didn't show significant difference respect to the vertical integration group. The difference between the related and the vertically integrated group is not statistically different from zero. As expected, the unrelated diversification group. Only the second hypothesis is confirmed.

- Hypothesis 4) about the positive relationship of leverage with maturity structure, it seems to be confirmed for two out of three groups (related diversification and vertical integration) with a good significance level. On the other hand, it has a strong negative effect for the unrelated group. This causes the negative relationship to be true also when the full model is run.
- Hypothesis 5) was surprisingly not confirmed in all cases with a strong significance level in the full model . It could suggest a tendency in big firms, who allegedly have more resources, to rely more on internal funds.
- Hypothesis 6) was confirmed by the two diversification groups. The vertically integrated group showed one observation in positive relation with leverage, but it was weakly significant.
- Hypothesis 7) was not confirmed as two cases of positive relationship were shown. Anyway, it did not show statistical significance on average. The reason of such relationship, as explained in the previous chapters could be that these internal resources are accumulated as a buffer against the risk of insolvency due to lack of current period profits to cover it.

Conclusions and final remarks

In this work we examined the relationship between two very important aspects of a company activity: capital structure decisions and corporate strategy. We went through the literature and analyzed the evolution of the theory about capital structure choices. In order to understand what need to be taken into account when evaluating financial decisions there was no better point to start rather than Modigliani and Miller theorem. As we saw their theorem was based on strict assumption about perfect markets and investor rationality. Their work gave the baseline for successive steps into formulating new hypothesis by adding more complications derived from removing the strict assumption they based on their model. In order to track the evolution of the theoretical framework, we examined the first friction we needed to consider in addition to the M&M perfect market model, which is the effect of a non-neutral debt. Debt needs to be chose based on the maturity structure the company desires and the typology needs fit the company characteristics. Small firms will rather difficultly have access public market debt as it requires high volumes and high costs of managing debt offers to public. This type of firm will rather rely on bank loans, where they are strictly followed from an institution and/or to private financing which is the usual way of financing for more risky companies. Maturity structure depends on several factors. Some studies suggested that longer maturities allow for a better exploitation of tax benefits, others focused their attention to the signaling hypothesis and the matching

maturities principle. Weather the explanation is one or the other it remains sure that maturity needs to fit firms characteristic. Different debt typologies, then, have different consequences on the profile risk of the firm and by this impacting debt related costs. Debt can be secured or not, senior or junior, bank loans or bond emissions, hybrid instruments or plain debt, and each of these characteristics brings different consequences which impact the financial structure. The fact that debt, contrary to Modigliani and Miller's assumptions, is related to risk of bankrupt and brings other costs on top of interests brings us to the tradeoff theory, where capital structure choices are taken considering the tradeoff between debt benefits (lower direct cost respect to equity and tax shields) and disadvantages (financial distress, bankruptcy costs, debt overhang). The tradeoff theory takes into consideration debt mainly from a quantitative point of view. If we add agency problems and information asymmetries to the set of decision tolls we will need to decide which source of financing, besides offering a good tradeoff of debt related costs and benefit, allows for the more efficient exploitation of resources, lower the managerial power when excessive and keeps the cost of every source of capital fair given the information flow available to those investors. The outcome of such considerations is the pecking order theory. Internal funds are here considered to be the cheaper source of financing followed by debt and equity as last. The point is that managers are favorited because of their superior information. This fact may lead to unfair behaviors and empire building, beside incorrect valuation of the company by external investors which may lead to mispricing. Debt is important as a way of keeping management focused on firm profitability in order to be able to repay for the bore debt. After financial choices have been examined in all of their motivations and effects the focus shifted to an analysis of how strategic choices are taken and what effects and causes can be then found in firms which follow one strategy or the other. Strategy is how a firm structure its activities in order to be able to respond to external competitive changes and in order to gain a competitive advantage that allows the firm to survive, grow and expand. An analysis of the impact of geographical factors, as for has been done for debt, was conducted. Strategic geographic expansion allows a firm to enter both new financial and non-financial markets, which is a great growth opportunity if correctly managed. Different strategies are linked to a different management of skills, capabilities and resources. The kind of resources a firm have and the efficiency of how the same are managed define also what the firm is missing. The structure a particular strategy brings impacts how financial decisions are taken. Some firms may be more prone to risk taking, other to diluting risks, some firms may need large infrastructure to operate, other may be more dynamic. We selected three strategy groups and built a sample. The first group was composed by firms who are pursuing a related diversification strategy. These companies are supposed to show long term investments for the expansion in related businesses where their capabilities can be exploited with the objective of reaching a superior efficiency and

exploit synergies between businesses. They are exposed to negative flexions in the performance as all revenue streams are related. The second group is composed by companies who follow an unrelated diversification strategy. This group follows a strategy aimed to lower profit volatility and risk exposure. As businesses are not related, in case of need, resources could be moved from one business to another. This process should lower the need for external financing and consequently the leverage of the firm. If confirmed, the hypothesis of this group having the lowest leverage, would be an hint to a pecking order like behavior. Vertically integrated firms represent the last group in the test. This strategy is mainly chosen to avoid market costs and transaction costs. By integrating multiple stages of the value chain companies gain control over life stages of their products and are able to reach scale economies that lower production costs. There are two main drawbacks of this strategy. Firstly, it usually requires huge investments necessary for acquiring both tangible assets and skill and capabilities that are missing. Secondly, the firm is more exposed to market volatility. When the demand drops the firm is stuck with unexploited production capacity that cannot be dismissed easily. Following the first more theoretical parts, the two main topics have been merged in order to explain financial behaviors by mean of strategic factors and vice versa. With this objective a model was built, and a regression analysis has been run. The result confirmed that unrelated firms seems to be less prone to risk both financially and operatively. This was quite expected. The direct link between retained earnings and leverage level suggests that internal sources are used as a security buffer for debt when there is the need to finance large activities. The other two groups showed an interesting positive relationship of long term debt to leverage levels. The origin of such result can be traced back to how such firms manage their activities. These firms need to finance long term expansion and they have ideally a lower turnover of activities due to the synergies and economies of scale that are derived from their structure. It follows that as much as they want to expand and support their structure they need to do long term investments often secured by intangible assets acquired. The model was derived from the Barton and Gordon's (1984) test, variables were changed in order to get a structure that better fitted the framework constructed in first two chapters. The model obtained a level of significance similar to the one from Barton and Gordon even if the sample selection method, and of course the timing of observations, were quite different. A different approach, controlling for fixed effects, showed much lower coefficients, but also lower explanatory power. The conclusion is that there is space for more technical analysis of the topic, but the results were quite well explained by the theoretical framework built during the work. From a financial point of view, it seems that there is a difference between strategic groups in how the process of financing is conducted. Related and vertically integrated companies seems to follow a method which is nearer to the tradeoff theory, where debt costs are smoothed by the availability of back up assets and the test supports the idea that

these companies raise leverage in direct positive relation to the amount of retained earnings they have. Unrelated companies apparently follow a process which is more skewed toward the pecking order theory. The presence of multiple businesses and the diversity of them could make the information asymmetry and the agency problem more worrying, pushing the company to avoid risk of unfair valuation and excessive financial risk. We then conclude that a link between corporate strategy and capital structure seems to exist even if not directly observable through a single measure but inferenced by a set of various variables.

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Synopsis

Linking Capital structure to corporate strategy

Introduction

The aim of the following work will be to assess the relationship between strategic choices and financial structure in companies. This implies understanding how these choices are made in different in different phases of a company life, in which way they decide to get financing, for how long and by mean of which instruments. Topics will include discussions and interpretations about information asymmetries, governance and relevance of debt related issues and benefits. We will then have to understand how strategic choices are made. First there is the need to specify differences among corporate and business strategy. The focus will be on corporate strategy. The preliminary identification of the forces defining the environment where firms life cycle is developed is

fundamental in order to understand the meaning of choosing one strategy instead of another. There are two main strategy category we will go in deeper, which are diversification and vertical integration. Once the theoretical part will be concluded, the conclusion will be to set up a model in order to define what kind of relationship exists (if it actually exists at all) between the choice of a strategy and some particular characteristics in the capital structure and performance of firms. A regression approach will be used. There have been done several studies on the topic and they will be taken into consideration in order to move the current analysis on an already experimented path trying to add some new and solid conclusions to what have been done in the past.

Chapter 1 The evolution of capital structure theories: literary review

Introduction to capital structure related studies

Despite in the Modigliani and Miller theorem (M&M from now on), one of the most important theories about the understanding of the cost of capital, it is stated that in a perfect market the capital structure does not have an impact on the firm value, this topic has always been a major area of studies since corporate finance exists. In real world perfect markets as described by M&M don't exist. A lot of frictions happen to influence capital structure choices in all companies. Taxes, debt side effects, growth opportunities, managers incentives, signaling to markets, arbitrage opportunities, information transmission inefficiencies and investor behavior are some of them. In this chapter we are going to further discuss these topics and we will try to give an overview of what are the main theories in literature.

The theory of capital structure: Modigliani and Miller

In order to understand how capital structure related studies evolved over time we need to start from the more significative modern view of capital structure elaborated by Modigliani and Miller. Their work was published in their 1958 "The cost of capital, corporation finance and the theory of investment".

Their theoretical framework is sustained by two main assumptions: 1) the market value of the firm depends on value of the cash flows generated by its assets and they don't depend on the leverage choice and 2) the firms levered equity costs of capital increases with the firm's market value debt equity ratio. This is possible with perfect capital markets. For perfect capital markets we intend a situation where all agents in the market have access and capabilities to trade the same securities. Also, prices of these securities must be the present value of their cash flows. The second characteristic of perfect markets is the absence of any friction. By friction we intend the absence of taxation, transaction or issuance costs, bankruptcy costs and other debt related costs and externalities. Thirdly,

in perfect markets, information is available equally to everybody. With the same information set available, all agents derive the same price for each security and there are no arbitrage opportunities.

The first proposition says that the value of the firm only depends on the firms cash flow and it's completely independent from capital structure choices. The ineffectiveness of leverage is due to the fact that all agents have equal access to financial markets, and they can adjust their own degree of financial leverage (Popescu and Visinescu, 2009) defining by this the possibility for homemade leverage. Because of homemade leverage, if firms and investors have the same possibility to modify their financial structure there will be no benefit for one if the other can adjust its structure by itself in terms of value. Another consequence is that there will be only one price for every security the company. In absence of frictions the cash flow generated will be completely available for investors. Securities that brings the same payoff it must have the same price.

The second proposition states that the equity cost of capital becomes proportionally higher as the leverage raise. The total cost of capital is defined as:

$$Ru= Re*(E/(E+D))+Rd*(D/(E+D))$$

where Ru is the unlevered cost of capital, Re is the equity cost of capital and Rd the debt cost of capital. If we solve the equation for Re the result is that portfolio of equity and debt is reflected in the assets of the firm. With prices defined by cash flows the return of assets and the cost of capital must be equal. The counterbalancing effect is due to the fact that debt has a lower risk premium respect to equity, and it has seniority in repayment. Equity required return will raise with debt weight.

The natural evolution of the M&M model was to embed the presence of all those factors that are present in real markets and observe the consequences of such. Frictions.

Debt, and related frictions

The first assumption we will later remove from the M&M theorem is debt impact irrelevance in financial structure choices. We need to be able to distinguish between different typologies of debt in order to fully understand debt financing decisions. Before we move to these more technical aspects we need to discuss qualitative and quantitative effects debt have on the company who issues it.

Financial distress and other debt related distortions

The choice of the amount of debt a firm is willing to bear is not only a mechanical process, it also has side effects on the company. There are direct costs related to the default process, but there are also indirect costs which are related to the image damage the firm bears, to creditor free riding and contracts loss. Knowing that a certain company is exposed to the possibility of defaulting investors should take into account the present value of these costs in the price of the debt they require.

Managers, who can be involved in the ownership of the firm or strictly related to shareholders rather than debt holders, might start to invest in project with a higher risk and lower present expected value rather than in less risky but also less profitable projects. If it goes badly the creditors take the loss and in case it goes well shareholders have a gain. This process of substituting low risk assets with other with a higher risk is known as asset substitution. The risk shifting behavior was first identified as an indirect cost and an agency cost of debt by Jensen and Meckling (1976). Another debt related phenomenon could be a tendency to underinvest if there is no additional advantage for shareholders. Debt overhang problems have been widely studied in past years. Myers (1977) and Miller (1977) stressed the problem and tested the theoretical structure even if in the end the conclusion was that these kinds of costs remain very difficult to be estimated precisely.

The Maturity structure

Firstly, we need to define what is the difference between short term and long term debt. From an accounting point of view, it is considered short term debt everything that has to be paid within a year. Following what Brick and Ravid (1985) argued, and also demonstrated, long term debt allows a better exploitation of tax advantages as the tax shield is accelerated. By adding the volatility of interest rates, it was demonstrated by Kim et al. (1995) in a multi-period model the optimality of a long term debt structure to maximize the investor tax advantages. It is very difficult to precisely predict future cash flows, so in presence of a high degree of volatility long term debt can be riskier and correlated with higher agency and bankruptcy cost. Moreover, issuing long term debt could not be affordable for all firms, even if a continuous roll-over of short term debt can become more expensive with time. On the other hand, issuing short term debt to put pressure on managers seems to be a good way to make them operate in a more efficient way and also to lower monitoring costs in presence of this agency problem. From a more operative point of view, debt length is also linked to the maturity of firms' assets. Matching the maturity of cash flows generated from assets with those required by liabilities is a method of controlling financial distress related costs. It is also possible that a firm targets a certain leverage structure. Companies decide if they are targeting a certain amount of debt and how the maturity of this debt should be composed. The flexibility and reactiveness in adjusting to the target depend mainly from the cost of doing so and the availability of a sufficiently deep debt markets.

Tax shields

The tax shield generated from debt is for sure one of the most important things a management team have to keep in mind when deciding future financial sources for the firm. The tax shield generated by interest payments can be a great source of value. Theoretically a firm could shield all the earning

before interests taxes, in practice such an amount of debt would very likely put the firm in financial distress. There is one major hold on the exploitation of tax shield, and it is the fact that to shield some profits you need to have profits first. The interests associated with debt could draw cash flow putting the firm on the edge and incapable of self-financing, profits would plunge, and the tax advantage lost. So even if the tax advantage linked to debt could seem a great opportunity to add value to a company it has its, quite strong, drawbacks. In tax shields evaluation it needs to be considered the country of incorporation and the main country where activities are conducted. In every country both companies and investors have different treatment. Beside corporate taxes there are personal taxes to be taken into account.

Theory evolution with debt assumption: The tradeoff theory

A theoretical framework that better considerate agency costs of debt is the tradeoff theory. The tradeoff theory states that a company will have a target debt to equity ratio and will adjust its structure in order to meet the target and maximize present value of debt benefits. An organization needs to organize the structure in a way in which the benefit from the tax shield is not overcompensated by the present value of all bankruptcy associated costs. In this way the value of the firm will be maximized too for all stakeholders.

We first go through Shyam-Sunder and Myers (1999) for a deeper understanding of the related researches context. Every company will have a trade-off curve, which represents the relation between the leverage and cost/benefit associated. It is a natural consequence that for safe and profitable firms, with plenty of profits to shield from taxes and assets that would still have their value in case of financial distress. Empirically these assumptions are translated into two main predictions. Debt level will move toward the predicted target, and there will be a relation between profitability, asset risk and type together with the tax status. In the end their model, better performs in discerning when the pecking order is valid and leave the significance of the trade-off not well defined. Another example of study about this fact can be traced in a research made by De Jong, Verbeek and Verwijmeren (2011). The test was done in two different situations: one, when the debt is over the target but under the max capacity, and the two theories disagree as the pecking order would predict a debt increase and the trade-off would predict a decrease in case of issuance, and two, for repurchasing decisions, when the debt is below the target debt ratio, pecking order theory predicts debt repurchase, causing a further decrease in leverage while trade-off push toward the target. In 3/4 of them they found evidence against trade off theory by analyzing how over levered firms still issued debt in moments of need for new resources.

Agency problems and asymmetry of information

In order to understand more precisely the pecking order theory, we now need to see which are the implications from the falling of the other fundamental assumption behind the M&M model: all agents have the same access to information and the same capability to process them. The problem rises from differences in available information for any agent and from different interests and objectives that each has. As pointed out by Akerlof (1970) it could lead to a potential break down of capital markets, and at a corporate managing level it can cause distorted behaviors and internal competition. A classical situation is the asymmetry of information between managers and investors. Managers have usually a deeper knowledge of the business and the company situation and they could take advantage by acting in their interest rather than investors interest. Oliver Hart (1995) argued how debt could be used to discipline mangers. The main point it is in the need to repay debt and the menace of bankruptcy. In order for this kind of strategy to be effective, debt raising must be backed up by a proper bankruptcy process with an appropriate penalty in case the event takes place. The financial structure may, on the other hand, be a consequence of external information flow imperfection. As an example, undervalued firms will tend to issue more mis-priced short term debt, with the ratio of re-contracting new debt at a better price once the information and the evaluation are aligned.

For what regards market information, the main assumption is that in presence of asymmetric information there will be a risk of moral hazard. Lower quality agents will try to sell on the market at a price in line with the high quality agents levering on the fact that a misinformed investor will not be capable of discerning which are good or bad opportunities. In this situation non cheating agents will not stay on the market anymore as they are not at a fair price stage. In order to try to solve the problem, one solution is to regulate market disclosure and managers contracts in order to get the best trade-off between cost of regulating and writing the contract and the benefit of avoiding mispricing behaviors in the market.

Capital structure within the framework of information asymmetries and agency problems: Pecking order theory related studies

As we saw, managers have more information than investors and will tend to act in favor of older shareholders (which prefer to not dilute their share of control) and in favor of themselves. Managers could pursuit personal goals by using in their advantage internal information which neither shareholders nor debt holders know. Another agency problem raises between shareholders and debt holders. By having more information and, possibly, influence on the management, it could happen that the raised debt is used to create value for equity investors rather than for the whole group of investors. Managers, again, have more information and because of that, lenders will try to have as

much control as possible over them. They will incur in monitoring costs. These costs are debt agency costs related to information asymmetry.

Several studies have been conducted in order to understand whether the pecking order theory is valid or not. Shyam-Sunders and Myers (1999) concluded that the pecking order theory is a good descriptor of capital structure choices in general, Frank and Goyal (2003) arrived at a different conclusion instead, affirming that this particular theoretical framework better fits to large companies rather than small ones. In their research, the results showed that internal funding, on average is not sufficient to cover investments needs and most importantly that debt does not dominate equity issues when external funding is needed. While equity issues are proved to have a relationship with financing deficit, debt related decisions, in general, does not. Lemon and Zender's model was an expanded version of the Shyam-Sunders and Myers one, where heterogeneity among firms' debt capacity was taken into account. The results were in line with the pecking order theory. Leary and Roberts (2010) in contrast with initial researches showed results indicating that the pecking order was mostly followed by firms with low information asymmetries.

Chapter 2 Strategy models

Corporate level strategy: overview

We start by borrowing the definition of strategy from Porter (2008) in order to clarify immediately what are we going to talk about in this chapter. Strategy defines how a company organize itself in order to better respond to changes in the market, the industry and the whole economic environment. The aim is to gain a competitive advantage versus present and future competitors. In the meantime, the chosen strategy should allow the organization capable of keeping a structure and a business organization that can survive for a prolonged time span.

We need to distinguish between corporate and business strategy. Corporate strategy sets where the firm is competing and operating, so in which industry and market it is going to compete, and how it is going to operate. Business strategy defines how a firm is going to be present within a particular market. We are going to focus on corporate strategy. A company that is deciding for a new strategy needs to understand the industrial environment around it. Porter suggests the five forces approach. The five forces are dimensions that a company needs to evaluate before it decides where to move. These five forces are: threat of new entrance, rivalry among the existing competitors in the industry, threat of substitutes products to present ones, bargaining power of suppliers and bargaining power of customers. Companies don't only have to look at the surrounding environment when they are deciding their strategy. A good shaped strategy has to be defined by assessing what needs to be changed in the current organization and operative model. The strategy should be chosen in order to

best exploit them companies resources and capabilities. There are two dimensions where a company can move: horizontal and vertical.

Accessing new financial and non-financial markets through internationalization

The nation where it mainly operates affects financial and strategic decisions from multiple perspectives. Also, as founded in Park and Jang's (2010) research, internationalization may become a need at a certain point in order to prosecute a growth pattern.

From a financial point of view, different countries have different financing possibilities and infrastructures. In United States and United Kingdom, a firm can quite easily go on financial markets when it needs resources while in Germany it will most likely have to raise funds from banks through loans. In order to have an idea of the impact of internationalization on financial structure we can look at Mansi and Reeb (2002) research, based on a sample of US companies. Based on a Reeb previous study (2001), which contended to past work the validity of stating that internationalized firms have less debt due to higher risks, their result was inverse to the past. Internationalized companies demonstrated to have on average 30% more debt respect to domestic only equivalents. There is then comparative advantage to be evaluated. Comparative advantage comes from the particular opportunities that a country can offer respect to another. There may then, exist the possibility for reciprocal advantages coming from present industries from value chain continuity among firms and capabilities interchange.

There are two main ways of doing foreign investments: exporting the product or direct investment in the foreign country. For exportation you need to determine which are the transportation costs involved and compare it to alternatives. Beside transportation costs there are transaction costs. In some countries importation tariffs can be a high obstacle to overcome. There is then, the degree of profit appropriability that needs to be evaluated. This depends on how you sell the product in the country. If you sell directly, you will probably capture most of the profits but you will need to handle directly the infrastructure necessary in the area so an affiliate will be probably necessary. You could also license the product or the technology to a local organization, but you need to be protected from being copied and by this incurring in the risk of losing upcoming profits. The alternative is direct investment in foreign countries which allows a firm to exploit local resources and capabilities. Analyzing international activity of firms in his 2002 work, Saggi found a correlation between foreign direct investments and higher levels of growth and productivity.

Vertical Integration and diversification

Vertical integration

At the base of the decision of going for vertical integration is the presence of transaction costs. Cheung (2016) reviewed and analyzed transaction costs from an external and internal (taking into account organizational costs) point of view. We first discuss those we call external costs. Searching the wright supplier represents the first cost. After the wright supplier has been found, negotiation is needed. We can refer to Foss (2000) research on the topic. Negotiation implies costs for the time spent and the opportunity cost of concentrating resources in doing it. Writing and defining the contract, then, has costs. Finally, even the most complete contract needs a proper monitoring activity to be fully enforced. As it is stressed out in Cheng's work, monitoring activity needs to be implemented also internally, and it is needed to be considered the fact that this applies at all levels, starting from the work force, ending with management. Vertical integration has different forms. We start by defining the absence of vertical integration, where a firm handle a single phase of the product life, whatever this part is. There are then long term contracts with the supplier or the buyer which imply specific investments. The next level is vertical partnership where two or more agents agree on a long term collaboration. Another type of vertical integration is franchising, where, by mean of a contract, a firm which owns a trademark and the business system, allows another agent to use the brand and sell using the parent company system. There is then, to consider in which direction a company chooses to expand. We mention again Harrigan's (1986) work. Starting from a particular point it can integrate backward or downward. Expanding vertically may require a big financial, administrative and organizational effort but the payoff in terms of new skills that the company acquire may give the flexibility needed in bad times beside the possibility to expand the business in new activities with a lower risk level. When deciding to go for a more vertically integrated structure a company should take into consideration a wide set of variables and natural consequences that could face. Firstly, there is the rigidity that vertical integration could create in the firm capacity to respond to external environment changes. In a very volatile market, it is unadvisable to stiff the company structure through vertical integration. There is then the problem of managing incentives. In market contracts both parts are incentivized to get the best deal possible and to perform efficiently in order not to lose a customer. If there are different stages all managed by the same entity, this kind of incentive is lost. To recreate a more competitive and compelling environment, firms often used shared services, half internal and half external.

Diversification

The more immediate reason to diversify is to lower the risk level of the firm. Different businesses will ensure to the firm different sources of revenues in case of a decline in performance. Diversification can happen in related businesses with a dominant one. Advantages could be the lowering of transaction costs and exploiting acquired capabilities and resources in favor of the main

activity. The second type of diversification is related diversification. The firm invests in businesses that are connected in order to exploit resources and capabilities across all of them with the aim of reaching and economy of scope. Lastly, there is unrelated diversification. In unrelated diversification we have the weakest sharing of capabilities among businesses. The great independency between different activities should provide a lower risk level for the company if considered as one. There are two main consideration the firm should do before investing in diversification. The first of course is profitability. If an industry is not profitable it is probably not attractive. it needs to be considered if the industry has great future growth possibilities. The consequent step is to assess the maturity grade of the industry and the growth sustainability. Another factor to be assessed carefully is the cost of entry and the presence of regulative barriers. The most important thing at this point is to precisely identify what are the synergies that are consequent from the new business inclusion and if there is any competitive advantage that could derive from it. The analysis should be carried on three different types of resources that could be shared and we mentioned before: tangible, intangible and. organizational resources and capabilities.

Research and financing

For what regards small and newly born firms the bound with research is usually very strong. In these types of firm, the objective is often to enter the market with an innovative product or service which currently either doesn't exist or it represent a big step up respect to present one. The firm value is strictly related to the value of the implied growth option, if not completely dependent on it, so there are usually few or nihil tangible assets to secure the investment for investors. The innovation process implies creating a new market or expanding in a new way a current one. Consequently, there are no or few actual information to estimate the probability of success. Traditional capital markets are not a suitable solution in case of small firms. There are some alternatives. The first one is a bank loan. Bank loans have the advantage of a close relationship between the bank and the firm. It mitigates information asymmetries problems and allows for a more deep and fit evaluation of the company. In venture capital financing the investment is usually made through equity or preferred stocks. This kind of investor may require a particular financial and organizational structure regarding managers payoff. The objective is to maintain the management as bounded as possible to the situation of the firm in order to avoid agency problems typical of big firms. One other thing the venture capitalist can do in order to better control for risk taken is to split investments over time and at certain milestones.

In case of big firms, the process of investing is in some ways simpler and more logical to be traced, also basing the analysis on what we said in previous paragraphs. There are some firms that need to invest in R&D because it is the key for keeping their competitive advantage in the market. There are

then, companies who use innovation as a way for diversifying from a declining or saturated market. These firms, by creating a new product or service, open new possibilities for grow in the current market or create a new one (Blue Ocean strategy). There is then, the case of firms that persecute R&D politics simply because they have the capabilities to do so and it is a great growth occasion when the risk is correctly evaluated.

Chapter 3 Sample selection and variables theoretical significance

Hypotheses and variables

Strategic Hypotheses

We now need to identify the hypothesis we can extrapolate relating strategy and financial structure relationship. The reasons to justify our strategic hypothesis have been discussed in chapter two, especially in paragraph and 2.2. for what regards resources and capabilities acquisition and deployment and 2.3 for what regards characteristics of each strategy (2.3.1 for vertical integration and 2.3.2 for the two types of diversification we are including in the test. The related diversification group will be used as a baseline for our comparison.

Hypothesis 1) *Related diversification firms will be to have an average level of debt between the three strategies.*

It is the starting point of this analysis. Limited capacity to move resources from one business to another in case of bad times push for debt necessity when investing. Tax advantages are better exploited by long term debt, as we have seen in the theoretical part (paragraph 1.3.2 positive relationship between debt maturity structure) and in this group, from chapter two theory we can expect debt to be related to long term investments mainly.

Hypothesis 2) *Unrelated diversified firms will have the lowest leverage level.*

One reason is higher self- financing capabilities and lower risk appetite. Debt will mostly a tool for management control and with short maturity. Different businesses may be related to management excessive independency and related behaviors as we have seen in the first chapter (1.5.3).

Hypothesis 3) *Vertically integrated firms will have the highest debt level of the group.*

As seen in the theoretical part (both financial and strategical), they bear the risk of a stiffer structure in order to avoid transaction and market costs. Debt will be related to large investments. Large investments are usually long term in cases such vertical expansion. These firms may follow a matching principle between asset and debt maturities.

Financial Hypothesis

We need to define here what is the expected relationship of financial figures to debt level in the firm. Here, general relationships are extrapolated as a general expected rule.

Hypothesis 4) *Maturity structure of debt should be on average positively correlated to leverage*.

Long term debt tends to be structural debt coming from big and long term investments often correlated with tangible assets. It keeps and better exploits, respect to short term debt, its tax shield function and is a semi-permanent instrument of management discipline control (paragraph 1.3.2) .

Hypothesis 5) *Size is expected to be positively related to leverage.*

The reasons are pretty clear from chapter one. Big firms have access to all debt markets and usually have a higher number of tangible assets to secure debt. Beside these, they can better optimize on emission and placement costs due to usually importantly higher volumes.

Hypothesis 6) *Profitability is expected to be in negative relation with debt levels.*

Quite simply, more profitable companies are able to finance a higher part of their activities with internal sources.

Hypothesis 7) *Availability of high amounts of internal resources is expected to be negatively related to debt levels.*

The presence of a high level of stored internal resources should be a source of financing in case of necessity for investments and financing more short term activities.

Strategy variables

We start with the *related diversification* group. In this group we have companies that operate in markets that share similarities in skill and capabilities necessary in order to run the business and share resources between different product lines and businesses. Here there is the possibility to optimize some processes and deploy capabilities across businesses. .

There is then the *unrelated diversification* group. These firms operate a wide range of businesses in different markets and industries. Different business models and business strategies have to be put in action in this case. This kind of organizations operates a wide number of activities. These companies usually present less synergies across the organization, and a more divisional organization. Skills and capabilities are hardly transmitted and transmissible from one part of the organization to the other and businesses are scarcely or not related. Lower profit margin, bigger dimensions respect to the previous group and, impacting on debt levels, more possibilities for internal financing through resource transferring from one business to another. Are expected. It follows that the predicted debt level should be lower than the previous group.

The last sample is composed by *vertically integrated* firms. This companies cover the value and production chain vertically. They are involved in different phases of the product life. The process of integration requires often large investments in assets and specialization of resources for each stage. This kind of strategy is quite often chosen with the objective of reaching economies of scale in mass production industries. This represent as we know from previous chapter a great advantage. We expect this group to have the larger amount of debt in the sample. Firstly, they have the larger need for capitals given the necessity to cover different activities with different resources and capabilities needed. Secondly, this kind of firms usually have a great number of tangibles assets to secure the debt.

Financial variables

Now that we defined what we expect to be related to each strategy, we need to define a set of financial variables that are suitable to represent the different characteristics that we attributed to each strategy group and that are capable of explaining a particular relationship with debt levels.

Long Term To Total debt

In order to determine a relationship between debt maturity and debt level a long term debt to total debt ratio has been defined for the sample. Long term debt should be associated with firms with stable growth rate and safe cash flows that can assure repayments for the long term. Also, we expect it to be higher in those firms with a high number of tangible assets with a long life for both a matter of debt security and for the matching principle of maturities. On average this indicator is expected to have a positive relation with debt levels.

Log of Sales

The size of the company will be defined by the log of sales. Log of sales has been chosen over capitalization because market caps are quite influenced by information flows and interpretations differences between investors that, together with different expectations represent a strong bias in market values. Asset value, which was another possibility, was exposed to several company specific factors. Bigger size is expected to have a positive relationship with debt levels.

Profit Margin

Profit margin has been considered to be a good indicator of both operative and financial operation effectiveness in a straight and unbiased way. ROE was biased by companies with negative equity value on the balance sheet. ROA was strictly related to assets presenting the same problems that were considered in choosing a size proxy. Profit margin represents what is available to become a self-financing source or return to stockholders. This measure will be negatively related to debt levels.

Retained Earnings / Assets

A more accurate measure of self-financing capabilities was needed beside profitability. With this indicator we want to understand if there are significative differences between groups due to strategies followed. This indicator is expected to be negatively related to debt levels

Debt/ Assets

The ratio of debt and assets will represent our output variable respect to which we will test significance of previously selected variables. It is the classical and more direct measure of leverage. The variable will be used in both the regression analysis as dependent variable and in the ANOVA test and in the tests we are going to run for mean values that will be run in order to verify the statistical difference among the three groups.

Data and Sample determination

Data is coming from the comparation and reconciliation of several sources in order to test the robustness of the same. Two main sources were used which are Yahoo! finance and Thompson Reuters. An additional check was done for all those firms which are listed in US on the SEC database of companies fillings. Main figures utilized for the variables were then double checked in companies financial statements. The main basis comes from financial statements on Yahoo! Finance. Data are collected for a four year period.

The sample has been determined on a qualitative basis after a study of business operations, skill and capabilities deployed by companies. In our case the firms have been chosen after a single firm based study. The reason to do this comes from the belief that there is a tradeoff between a smaller number of companies in the sample and an ad-hoc selection and classification of firms, which, if based on logical bases as we will try to do, is expected to obtain a more fitting classification. For what regards related diversification, the main driver has been the capacity of firms to operate in different but similar markets deploying successfully the skills they have in the organization. Unrelated group is composed by companies who operates in totally different markets or industries within the boundaries of the same organization. The ratio in choosing vertically integrated firms for the sample have been to select companies who cover more than one stage of the value chain of a product or business even if not consecutive. Finally, there are the home country and the size effect to be evaluated. As we have seen in the previous chapters the home country can have a strong effect from both a financial and an operative point of view. In order to avoid biasedness of one group respect to another due to geographical factors, every group has a similar composition in terms of nationality variety. This has been done with the aim of reflecting the same country effect in the same way in each of the three groups without limiting the study to only one country. All of the firms are listed on markets and with

a size that varies from one trillion to 8 billion, 200 billion on average. All companies selected are big enough to access high volumes markets and to operate internationally in order to not suffer from national limitations.

Defining the model

The model we use for the analysis is based on a population of firms divided in three samples. The three samples are based on the strategy the companies follow. As anticipated, the first group of firms are firms who follow a related diversification strategy, the second group an unrelated diversification strategy and the third group a vertical integration strategy. These particular categories were chosen because they presented a suitable and interesting set of characteristics to be tested based on the theory previously developed and also because they cover the main categories identified by Wringley (1970) and the extended and more specific distinction made by Rumelt (1974).. Wringley categorized firms in four groups: Single business, Dominant, Related and unrelated. Vertically integrated firms seem to be missing. We can reconcile the classification with the one done by Rumelt in order to identify them. According to Rumelt's work 9 categories were identified: single business, dominant vertical, dominant constrained, dominant linked, dominant unrelated, related constrained, related linked and unrelated businesses. Vertically integrated firms are defined in the group "dominant vertical" (Grant, Jammine; 1988). The three categories that has been chosen here reflects, in an aggregated way, the strategies identified by the two former studies. Single Businesses are the only category not captured in the test. Past studies, Barton and Gordon (1984), to which we will refer later, among them, showed that they do not significantly differ from the mean of the population for what regards capital structure variable.

There is to be considered the existing capital structure and the amount of risk it implies. The financing choice may differ due to different valuation about the tradeoff between debt and equity given the risk taken and the overall cost of debt. The risk-control framework will be in part defined by financial variables that the management of the firm can observe but cannot directly control. There are then external factors. Firstly, it needs to be possible to get the wanted financing by mean of the preferred instrument. The next point, relating to wanted flexibility, is that debt and equity represent a bound to external investors for the management of the company and they are also costly. The two previous fact may lead to prefer internal financing which allow them to have full control and flexibility. This idea follows the Pecking order theory. We talked a lot about managers goals affecting multiple sides of a company activity. As already discussed, this agency problem has a certain importance in firms life. From a more "model related" point of view, management goals need to be supported by all the strategic decisions and the financial structure should be chosen in order to facilitate reaching them.

Strategy affects all the points considered above as it can define the geographical access to resources (financial and non-financial), the environmental risk to which the firm is exposed, the size of the investment required for the activities the firms choses to carry on and the flexibility the organization has to adapt and change quickly when needed or wanted. The analysis has been carried on for each year in order to make intelligible any change in that has been robust in the group during the observation time.

Regression analysis and results

We are going to run two sets of tests. The first one will be a multiple regression on the defined leverage measure variable level respect to the variables we examined and choose before. The second will be made of two parts. An ANOVA test, which was run in order to confirm statistical difference among the three groups and a T-test to confirm the hypothesized relationship between groups. The strategic variable was considered an implied variable. The regressions have been run separately for each group, and for each year of observation. An additional fixed effects regression model was run to check for robustness with a different approach. Treating strategy as an implied variable was preferred respect to treating strategy as a dummy variable.

We start with the regression test and precisely with the related diversification group. The regression analysis showed mixed results (Table 9). Firstly, it is to be noted that there seems to be a time bias. The model better fits for older data. In 2015, maturity structure, profitability and self-financing capability showed to be significant at a 1% confidence level. The best predictor in this group is the debt maturity structure indicator, which is in positive relationship with leverage levels.

Related	2018	2017	2016	2015
Intercept				
	-0,11	-0,11	-0,35	0,31
LT/TD	*	*	**	***
	0,53	0,50	0,69	0,61
Log of Sales				
	0,08	0,08	0,14	-0,14
Profit Margin			*	***
	-0,75	-0,08	-0,57	-1,72
Ret Earn/ Assets				**
	0,20	0,06	0,18	0,27
* $\underline{\alpha}$=10%	** $\underline{\alpha}$=5%	*** $\underline{\alpha}$=1%	R^2 Total	51%
R^2	33%	29%	54%	67%

Table 9: maturity structure has a relevant relationship with leverage ratios. The stars indicate the significance level showed by the model

By 2016 and 2015 profitability and self-financing become significant. Profitability as expected is in a strong negative relation with leverage. Contrary to what hypothesized, and quite surprisingly, the weight of retained earning showed a low but positive relationship. Related companies seem to link their debt choices to long term investments. We remember from the first chapter that long term debt

allows a better exploitation of tax advantages in profitable firms. What is more correlated and better explains this result here, it is the matching principle that may explain the result for this group. Firms with related businesses are less prone to a quick turnover of activities and usually have more stable structures. Long term debt may reflect debt acquisition choices as it could be connected to new investments connected to enlarging activities and acquiring resources rather than to short end financial choices. We can explain the positive link with retained earnings as a will to keep a buffer in case of bad periods. Such behavior could be related to a tradeoff like strategy. The company recognize the higher agency and distress cost related to long term debt and keeps a security buffer. As we said, related diversification strategies expose firms to business volatility more than unrelated diversification in change of the possibility for more optimization and efficiency.

The unrelated strategy group showed the best results in terms of significance. We can see that almost all variables at a certain point showed to be significant at a 1% confidence level (table 10). We start again with the maturity structure indicator. Respect to the related group it shows an inverse relationship.

Unrelated	2018	2017	2016	2015
Intercept	***	***	***	***
	11,88	13,29	10,73	10,47
LT/TD	***	***	***	***
	-6,26	-9,65	-6,70	-5,95
Log of Sales	***	***	***	***
	-4,39	-4,43	-4,43	-4,19
Profit Margin	**	**		
	-11,82	-21,18	2,88	-6,43
Ret Earn/ Assets		***		
	2,44	5,17	1,97	2,55
* α=10%	** α=5%	*** α=1%	R^2 Total	77%
R^	74%	83%	70%	70%

Table 10: unrelated group results

Leverage is negatively related to size. Bigger firms seem to be able to finance themselves internally or from other sources rather than by debt. It could confirm the view of the pecking order theory where internal funds are the first source. Structural debt is counterbalanced by lower overall leverage. Unrelated firms use more internal resources as bigger and more profitable they are to fuel growth and finance long term opportunities. The only year in which self-financing capability is significant it appears again to be positively related to debt. It is confirmed the expectation of observing the lower average leverage level as we will see in the next test.

The vertical integration sample was the most disappointing in terms of significance of results. Most of the variables did not provided a valid relationship with leverage levels. The most interesting thing is that we find again a positive relationship between maturity structure and leverage. Considering the fact that low significance could be related to a more personalized management style among

companies of this group, higher long term debt positive relationship may be explained again by the matching principle as we anticipated in the hypothesis paragraph.

V.I	2018	2017	2016	2015
Intercept				
	0,19	0,21	0,12	0,18
LT/TD	**	*		
	0,50	0,30	0,20	0,21
Log of Sales				
	-0,09	-0,05	0,00	0,00
Profit Margin			*	
	0,13	0,09	0,13	0,05
Ret Earn/ Assets				
	0,20	0,06	0,18	0,05
* α=10%	** α=5%	*** α=1%	R^2 Total	25%
R^	48%	30%	15%	10%

Table 11: Vertical integration group results

The similarities in results between related diversification and vertical integration is driven by similar needs with different objectives. Relatedness in businesses could be driven by the search for optimization and efficient use of resources, integration is driven by the desire to avoid market and transactional costs. Long term financing better suits these long to be implemented objectives and does not drain immediately companies resources. The average resource exploitation is longer here and the support from other internal sources of financing is naturally limited. In the year 2016 a low positive correlation with profitability is showed. This value could be explained in a simple way. More profitable firms tend to expand their activities and they do it by mean of debt, which is now contractable at better terms, as a profitable firm is a more safety investment. It makes sense from this starting point that when profitability is higher firms invest in expansion at better terms.

We show here the overall result of the model. Beside strategic and financial consideration we want to stress the quality of the model and the chosen variables. The more reliable variable seemed to be the maturity structure indicator which showed significance in all samples at a good confidence level.

Full Model	2018	2017	2016	2015
Intercept	***	***	***	***
	5,93	5,83	5,83	5,83
LT/TD	***	***	***	***
	-2,36	-2,57	- 2,89	- 2,57
Log of Sales	***	***	***	***
	-2,26	-2,28	- 2,33	- 2,28
Profit Margin				
	-2,78	-0,46	- 0,07	- 0,46
Ret Earn/ Assets				
	0,78	0,66	0,86	0,66
* α=10%	** α=5%	*** α=1%	R^2 Total	34%
R^	34%	34%	34%	34%

Table 12: Full model results

Beside it, size also was quite robust when significance, even if it showed unexpected results. A negative relationship with debt was not completely obvious. Usually big companies tend to have more debt given that their size is given by a dominant position in their industry(ies) that gives them a solid contracting base for financing activities. Beside this fact, size is usually also related to international activities and access to different market that have the effect of making debt financing more economical. The self-financing indicator was not effective except for few cases. It gave anyway the hint that commonly companies keep more earnings in the organization as the debt level raises and vice versa, they seem to use it as a buffer for higher leverage levels. Profitability, except for the vertical integration sample, showed the expected negative relationship with leverage.

We also wanted to check the relationships and the model validity controlling for fixed effects. Fixed models aim to eliminate those parts of the intercept value that are containing unknown effects on the other variables and that are influencing the error of the regression. A within estimator method was used to build this model (table 13). As it is a panel method, it needed a higher number of observations, so all four years were pooled.

Full Model Fixed effect	Intercept	LT/TD	Log of Sales	Profit Margin	Ret Earn/ Assets
	***	***	***	***	***
	1E-17	3E-01	-8E-02	-2E-01	9E-02
	* α=10%	** α=5%	*** α=1%	R^2 Total	28%
# observation		192	192	192	192
F stat	18	Significance Level			1E-12

Table 13: Fixed effect model

The result of this model was an overall high significance of all variables, but the value of the coefficients resulted being very low, indicating small effects of these variables on the leverage. On the other hand, this model showed a lower R^2. It seems that the other methodology better fits in explaining the behavior of this sample of firms with this set of variables.

We start the second set of tests by testing the overall difference among the three groups. The first test was executed in order to be sure that the groups were effectively different among them. It was a one way ANOVA. Table 14 shows the results.

Groups	*Avg*	*Variance*	
Related diversification	0,48	0,02	1
Unrelated diversification	0,36	0,04	3
Vertical integration	0,45	0,03	2

Variance analisys

Origin of the variation	*SQ*	*dof*	*MQ*	*F*	*Significance*	*F crit*
Between groups	0,52	2,00	0,26	8,48	0,00	3,04
In groups	5,84	189,00	0,03			
Total	6,36	191,00				α=5%

Table 14: ANOVA test results

Firstly, and most importantly it confirmed that the three samples are actually statistically different. We can take a first hint about the outcome of our hypothesis about the mean values of the samples. Contrary to what we hypothesized the related group showed the highest leverage, followed with a small difference by the vertical integration group. As expected the unrelated diversification strategy has been proven to be associated with the lowest leverage level. We now need to test if these differences in the average value of leverage are statistically different. The baseline will be the related group as it is assumed to be the average value. The T- test that was conducted on the three values tested different differences among the averages. The difference in favor of related diversification was confirmed with a good significance at 95% (Table 15).

	RD	*UD*
Var	0,03	0,03
obs	64	64
Hypothesized difference	0,02	
dof	125	
T stat	1,94	
T crit	1,66	

Table 15: Related diversification Vs Unrelated diversification

The test between related diversification and vertical integration didn't show significant differences even with a lower power of the test. This result does not confirm what we previously hypothesized (Table 16).

	VI	*DR*
Var	0,33	0,34
obs	64	64
Hypothesized difference	0,001	
dof	125	
T stat	-0,17	
T crit	1,29	

Table 16: Related diversification Vs Vertical Integration

It remains true that the tests conducted have some limitation given the difficulty in measuring the strategy variable and the intensity by which every strategy is followed by firms. The strategy variable is supposed to incorporate all those behaviors impacting financial structure that are not discernable from the financial variable. It is clearly difficult to draw a direct link between a qualitative variable and a quantitative one like leverage. The qualitative approach we used was our way to have a more precise valuation of the strategy defined, but it came at a cost which is the limited number of observations for each year. The limited number of observations may have left space for larger estimation error and didn't allow to use different models. So, respect to Rumelt's work on defining a strategy variable it has different limitations. Results, though, were in line with previous researches in terms of explanatory power. Different approaches were tried and showed similar results. The

conclusion is, that these tests are good to get a direction of what the relationships are in between strategy and financial structure, but they are not conclusive in giving a definitive answer.

Hypotheses summary

Summarizing the results relating to the hypothesis we made earlier:

- Hypotheses 1), 2) and 3) : Only the second hypothesis is confirmed.
- Hypothesis 4) confirmed for two out of three groups (related diversification and vertical integration) with a good significance level. Strong negative effect for the unrelated group.
- Hypothesis 5) was surprisingly not confirmed in all cases with a strong significance level in the full model .
- Hypothesis 6) was confirmed by the two diversification groups. Weakly significant.
- Hypothesis 7) was not confirmed as two cases of positive relationship were shown. Anyway, it did not show statistical significance on average