FOCUS ON
THE CHOICE OF DEBT MATURITY

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INTRODUCTION

Since Modigliani and Miller (1958, 1963), a great number of researchers have sought to establish the existence of an optimal capital structure. Even so, if there is an advantage by using debt, the impact on the firm's value remains marginal. Hence, the presence of debt has a positive influence on financial profitability, only if operating profit is higher than loan interest.

However, debt is not a homogeneous block and must be examined according to its characteristics. Without being exhaustive, we can distinguish: direct debt (bondholders) and bank debt (banking debt); secured debt (senior debt) and subordinated debt (junior debt) or current liabilities (Short Term Debt -STD-) and long term debt (Long Term Debt -LTD-). The first characteristic concerns the nature of the debt, the second its "security", the last its maturity.

Maturity is the remaining life expectancy of the loan. It is the time which separates the present date with the term (or the repayment) the debt)[1].

In our paper we shall focus on the last aspect, i.e, debt maturity. In other words, what are the determinants able to explain the presence and the importance of LTD? Should we search for these determinants in internal and/or external characteristics of companies or in the existence of informational asymmetry?

Several factors have been used to explain corporate debt maturity. The authors who have covered this problem have traditionally distinguished factors connected with informational asymmetry and those connected with environmental characteristics (I) - in the broadest sense - and idiosyncratic characteristics such as: assets, risk, size, performance and capital structure (II).

Consequently, our paper will be organised as follows. In the first section, we will present the external characteristics able to explain debt maturity. In the second part, we will turn to internal and idiosyncratic characteristics. Finally, we give our conclusions.

I. DEBT MATURITY IS INFLUENCED BY EXTERNAL CHARACTERISTICS

I.1. Debt maturity and informational asymmetry

a. Contracting cost hypotheses

The agency costs of debt can influence corporate debt maturity. Myers (1977) argues that STD reduces the underinvestment problem. Indeed, for Myers, a corporation's future investment opportunities are like options. The value of the firm depends on the way that firm will them use optimically. When a firm makes profit, this profit is split between bondholders and stockholders. In a case where bondholder can capture all (or almost all) the profit the shareholders have no incentive to make efforts. In some cases, stockholders can reject a project with positive NPV. Myers called that the 'underinvestment problem'. In line with Galai and Masulis (1976) and to avoid this problem, several means can be used to reduce these agency costs. The first two are either to reduce the amount of debt in capital structure or to include covenants in the credit contracts. The last is to shorten the debt maturity. If debt matures before the growth oppor-

1. The authors within various empirical articles do not agree on the measurement used. Some authors consider the LTD as the debt payable in more than 1 year (Scherr and Hulburt, 2001; Antoniou et al., 2002; Heyman et al., 2003), in more than 3 years (Barclay and Smith, 1995; Barclay et al., 1997) in more than 5 years (Guesdes and Opler, 1996 ; Okzan, 2000). Other authors prefer to use a weighted average (Stohs and Mauer, 1996; Johnson, 2003). Finally, other studies (Nekhili, 1999; Datta et al., 2005) use several measures and show that there is no ??? important sensibility of the results in the choice of the definition of the debt maturity. Nevertheless, the choice of one indicator can have some influence on the results highlighted in the different empirical studies.

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tunity, this disincentive can be eliminated. In other words and by quoting Guesdes and Opler (1996, p. 1812) STD "reduces the potential underinvestment caused by debt overhang because the lenders and borrowers recontract before growth options are exercised". Consequently, we should observe a positive relationship between STD and investment opportunity sets. In this line, Barnea et al. (1980) argue that the risk of asset substitution is reduced by STD because the latter is relatively insensitive to shifts in risk of the underlying assets.

In this framework numerous contributions have sought to highlight the relationship between, on the one hand, growth opportunities and STD and on the other hand, the relationship between STD and underinvestment. On the first point, almost all studies (Barclay and Smith, 1995; Guesdes and Opler, 1996; Nekhili, 1999; Bevan and Danbolt, 2000; Okzan, 2000) highlight a positive relationship between STD and growth opportunities. On the contrary, the results do not all confirm the hypothesis of Barnea et al. (1980). The difference may be explained by the measurement of LTD (more than 5 years for Guedes and Opler (1996), more than one year for Scherr and Hulburt (2001), whereas Barclay and Smith (1995) used a weighted average between STD and LTD).

b. Signalling hypotheses

Firm's quality

In the case of informational asymmetry ex-ante, the use of debt maturity (i.e. STD or LTD) can be an effective signal to give information about the firm's quality. Flannery (1986)[2] and Kale and Noe (1990) suggest that firms with attractive growth opportunities have incentives to use a stronger proportion of STD to indicate to the market the future growth opportunities.

In other words, when a firm has private information for its future perspectives, all its securities are actually underestimated. Consequently, a firm will seek to reduce this underevaluation. To do so, the 'good quality' firms makes use of STD, since the undervaluation of STD is lower that the undervaluation of LTD. This result is presented by Child et al. (2005) in the model which examines the interactions between investment decisions and financing in an overinvestment context.

They highlight that the search (or the need) for financial flexibility leads to a stronger use because STD reduces the problems of underinvestment. In other words, if the initial choice of the amount of the debt depends on growth opportunities, Child et al. (2005) show that the choice of the STD depends on STD cost / advantage.

Although the STD can alleviate the problems of underinvestment, this advantage is offset by a stronger liquidity risk whose cause results from the nature of LTD (by definition, more frequent renewal).

In this vein, a risky company is likely to borrow LTD to avoid renegotiation with its banks (the financial risk is thus added to the economic risk of the project). Conversely, a less risky company would be ready to bear the costs of debt renewals by borrowing in the short term to indicate its quality. After all, if the STD imposes a frequent refinancing decision, it also allows a reputation to be built up (Flannery, 1986) because the company can frequently meet its commitments[3] and show its strength.

This argument highlights the point that strong growth opportunities create incentives for firms to issue STD to indicate their quality and their future perspectives.

We can say that in other words, if the STD allows the company to develop its quality and reputation, we might should observe a negative relation between the quality of the company and the LTD.

In a general way, the hypothesis of Flannery (1986) Kale and Noe (1990) is not invalidated (Scherr and Hulburt, 2001; Barclay and Smith, 1995; Guesdes and Opler, 1996; Ozkan, 2000) or checked (Stohs and Mauer, 1996; Nekhili, 1999; Danisevka, 2002).

The differences between the main empirical results come from the choice of measurement of debt maturity and risk.

Credit risk

In this line, Diamond (1991, 1993) highlights the fact that the choice of the use of STD can help firms to develop their 'reputational capital' with the financial intermediaries. The ability for the borrower to meet its short-term commitments (without any problems) allows it, on one hand, to confirm its solvency, and, on the other hand, to issue debt on the market (Fama, 1985).

In other words, firms with a low risk of liquidity (or with strong quality in terms of credit - i.e. good quality firms) should have more LTD than firms with a strong risk of liquidity (or lower quality in terms of credit - i.e. poor quality firms) because the good quality firms have to face a weaker liquidation risk.

To sum up, Diamond (1991, 1993) assumes that firms with favourable information about future profitability will prefer to issue STD.

Therefore, the model of Diamond (1991) seems to predict a non-monotonous relation between the risk and the debt maturity. For firms with low risk, the use of the STD is determined by the advantages connected with reputation. For companies at very strong risk,

2. We may note the analysis of Flannery can also be understood in the framework of the transaction costs theory. Flannery argues that managers can issue debt to face financial problems. He distinguishes two periods and assumes that in any transaction the cost of new debt is C (it is the same cost for LTD and STD). In a first step, the firm chooses to issue either LTD or STD. At the end of this first period (at time T), the firm's value is V-C. If firm issues LTD, the firm is not compelled to refinance. On the contrary, in the case of STD, the firm in a second step will be compelled to refinance its debt. At time T+1, the firm's value will be V-2C. In the case of value maximisation, the choice of LTD is rational.

3. Let us remember that although STD is a signal of the firm's quality, its use has not only advantages but drawbacks too. Indeed, the use of STD may increase, ceteris paribus, the risk of default of the company and lead to bankruptcy, because of not refinancing the debt when it is due.

the firm is compelled to use STD. Indeed, STD exposes the firm to the risk of excessive liquidations. In that case, lenders are reluctant to refinance the debt if bad news arrives.

Moreover, the situation is more strongly contrasted for firms with an intermediate risk.

We can thus expect a non linear (convex type) relation. For the very good quality firms (high rating, the STD financing would be rather than LTD financing because of the weak risk of refinancing. At the other extremity the poor quality firms (bad rating would also use STD because of the costs of asymmetrical information selection. Finally, the firms of average quality would use LTD.

All studies, using different methodologies confirm Diamond's hypothesis.

I.2. Debt maturity and economic and financial hypotheses

a. Term structure and debt maturity : tax benefit

The choice of debt maturity can be influenced by fiscal motives connected with the presence of the debt (Brick and Ravid, 1985). The authors follow the line of Kale et al. (1985) and show the use of LTD is optimal when the structure of the interest rates is increasing, and, in the case of decreasing structure of the rates, STD must be chosen.

The expected value if the firm's tax liabilities depends on the maturity structure of its debt because a firm may default on its promised debt payments. In the case of an upward sloping structure of interest rate, the probability of default increases with time and the value of a firm's interest tax shield is reduced upon default.

For Brick and Ravid (1985) capital structure is determined by the trade-off existing between the debt advantages - connected with the fiscal advantages - and the costs of bankruptcy. More accurately, they show that debt maturity increases when fiscal debt advantage decreases. Thus, optimal maturity would positively be associated with the costs of debt and negatively associated with the firm's value volatility. In other words, if the yield curve is upward sloping, the issuing cost of LTD is greater than the expected interest expense from rolling STD. On the contrary, if the yield curve is downward sloping, issuing STD increases the firm's value. More accurately, Brick and Ravid (1985) suggest that optimal debt maturity would seem to be positively connected with issuing costs and negatively connected with fiscal advantage and firm volatility.

In a later study, Brick and Ravid (1991) show that the expected value of the fiscal advantage depends on the debt maturity whatever the form of interest rate curve. In their model the choice of the financial structure is made before the choice of debt maturity.

In line with Brick and Ravid (1985), by considering that the structure of the interest rates has an ascending slope, Mauer and Lewellen (1987) and Emery et al. (1988) highlight, with models, the fact that the LTD is optimal because the debt tax savings are greater (incentive for the borrower) and the payment of interest is delayed.

Empirical studies confirm these hypotheses. The hypotheses of Brick and Ravid are checked by (Stohs and Mauer, 1996; Scherr and Hulburt, 2001) and those of Mauer and Lewellen by Guesdes and Opler (1996).

b. Debt maturity and the legal and financial system

We can divide our discussion into two sub-parts: the legal system and the financial system.

Legal system

As underlined by La Porta et al. (1997), one of the main characteristics able to explain the firms' financial behaviour is the legal system. In particular, creditor rights which can secure the investors within the legal framework. For La Porta et al. (1998, 1999) the law has an influence on firms' financial choice. By considering the legal system, La Porta et al. (1998, 1999) argue the Anglo-Saxon system (common law) is superior to the Latin system (civil law) for creditor rights and economic performance. Hence, because creditor rights are better guaranteed in the common law system than in civil law system, we should observe a more frequent use of LTD in the Anglo-Saxon countries.

In a wide-ranging empirical study using a sample of 30 countries, Demirguc-Kunt and Maksimovic (1999) highlight the fact that institutional factors have an influence on debt maturity. More accurately, in the countries where the banking sector is more greatly developed, firms use LTD, ceteris paribus, more often. Furthermore, State subsidies to the industrial sector are positively correlated with LTD issuing. Another empirical study made by Fan and Titman (2003) confirms this result. For these authors, the most corrupted countries seem to issue more STDs. For them, the most important point is the quality of the legal system, the latter being shaped by its efficiency and integrity (whose measurement is made by a corruption index).

Financial system

A financial system has several characteristics: its architecture and actors on the one hand, its working rules, on the other.

Architecture and actors

La Porta et al. (1998, 1999) suggest that the presence of intermediaries is negatively associated with leverage and STD. This suggests their importance in information conveying.

Concerning investor preference, La Porta et al. (1998, 1999) highlight the fact that the insurance sector is more strongly developed in some countries (for instance the United States). By considering that the insurers have comparative advantages to catch LTD, they stress the point that, in a country where institutional

investment is more developed, the issuing of LTD is higher. On the contrary, as banks have incentives to have STD in order to control firms, we can assume that, in the countries where the banking sector is stronger the issuing of STD is higher. In this vein, Fan and Titman (2003) highlight the fact that strict control (by audit) and numerous financial analysts have a positive influence on LTD issuing in the American chemical sector.

Functioning rules and liquidity

Concerning liquidity, institutional investors have an incentive to hold stocks and shares. The authors observe that there is a positive correlation between institutional investors and STD. In order to highlight this phenomenon, La Rocca and La Rocca (2004) made a comparative approach in one particular country: Italy. Indeed, the authors stressed the fact that, for the most part, Italian firms are SME (Small and medium-sized enterprises). The firm such as that described by Berle and Means (1932) is an exception in Italy and the ownership structure is highly concentrated. One can consider that the Italian financial system is rather a 'creditor oriented system' than a 'market oriented system'. Moreover, local development is very different between the north and the south. The authors highlight a greater use of LTD in the north because the financial development is more pronounced. This result is in line with La Porta et al. (1998, 1999).

Until now, our reading of debt maturity has been made in the light of external factors. It remains incomplete. All organizations have internal characteristics such as assets, leverage, ownership structure and so on...Besides those factors, it is necessary to know if the firm's internal characteristics can explain the debt maturity. This is the subject of the discussion in the next section.

II. DEBT MATURITY AND IDIOSYNCRATIC FACTORS

Several elements can characterize companies. Our comment is not exhaustive but merely wishes to report the main characteristics able to explain debt maturity.

We shall focus on the following points: firstly, asset structure, risk, size and performance and secondly, capital structure in a broad sense (i.e. financial and ownership structure).

II.1. Debt maturity, asset structure, size and the firm's risk

a. Debt maturity and asset structure

Asset structure is a factor which must be taken into account in debt maturity. The use of STD leads to a need for liquid assets and short term resources so that the firm is able to meet its commitments normally. Hence, we should observe a strong inclination towards STD for firms benefiting from substantial liquid assets.

In the same vein, Morris (1976) shows, within a theoretical model, that the financing of a fixed asset by a succession of short term loans, increases the risk of default. He concludes on the 'matching principle' which consists in matching debt maturity and asset maturity. Furthermore, the presence of liquid assets also has an effect on the risk of insolvency, because, ceteris paribus, the increase in liquid assets leads on the one hand, to a reduction in risk of insolvency and, on the other hand, to an alleviation of refinancing problems. This argument is not new and Myers (1977) also puts it forward, by considering that the adjustment of the debt maturity according to asset maturity is a factor in alleviating agency costs. It is interesting to note that all empirical studies highlight a positive relationship between STD and liquid assets (Guesdes and Opler, 1996; Bevan and Danbolt, 2000, Okzan, 2000, Scherr and Hulburt, 2001, Daniesevska, 2002; Heyman et al., 2003; Garcia-Teruel and Solano, 2004).

b. Debt maturity and risk

At the same time and in line with the asset structure, Kane et al. (1985) and Sarkar (1999) suggest that debt maturity increases when the volatility of the firm's value decreases. The reasoning is the following one. As the weak volatility of the value of the firm prevents it from frequently restructuring its capital structure, the firm will issue an LTD. In other words, the change in the firm's value would tend to lead to periodical issues of STD.

c. Debt maturity and size

Finally, assets are mostly considered as a measure of corporate size (together with turnover and the number of employees). Thus, the problems of informational asymmetry ex-post and ex-ante are even more important when we consider small and medium-sized firms (SME).

Berger and Udell (1998)[4] highlight the point that SME have specific characteristics: greater opaqueness (which stresses the problems of informational asymmetry), a wide confusion between the functions of decision and control, a bigger inclination to undergo financial difficulties (Titman and Wessels, 1988) and to undergo credit rationing (Fazzari and Petersen, 1993).

With these distinctive features, we can add others: fiscal management in relationship with patrimonial considerations or the will to prevent a take over bid. In this line, we can consider that SMEs have more difficulties reaching the capital markets (for shares

4. In the same vein, we can, following the theory of Berger and Udell (1998). These authors consider that the process of reputation building leads the company to modify its financing sources through time. Gradually, with the development of its 'reputational capital', the company whose set up was financed by 'love money', will later use venture capital and trade credit. At the end, its will seek to diversify its sources of funds by issuing debt and shares (IPO or SEO). Thus, the authors suggest that LTD is positively associated with a firm's age.

In others words, with STD, banks are going to try to estimate the capacity of the company to meet its commitments.

and LTD). This leads to the assumption of a positive relation between debt maturity and size.

Unfortunately the empirical results are conflicting. The relationship of Berger and Udell (1998) is checked by Barclay and Smith (1995), Titman and Wessels (1988), Okzan (2000), Garcia-Teruel and Solano (2004) and Billett et al. (2007). On the contrary Stohs et Mauer (1996), Scherr and Hulburt (2001) and Heyman et al. (2003) suggest no relationship between size and debt maturity and even some authors such as Guesdes and Opler (1996) or Bevan et Danbolt (2000) highlight exactly the opposite relationship, that is to say a positive relationship between size and STD. These results seem unclear. If one considers the period, the country and the methodologies used, we cannot discover relevant characteristics able of differentiating between the 3 groups. Consequently, the relationship between size and STD has not been established. Other empirical studies should be carried out to improve our understanding of this point.

d. Debt maturity and performance

In a more recent study, Datta et al. (2005) renew the approach by considering corporate performance. They stress the point that the very successful companies are profitable enough to be able to pay back debt. Thus, they have an incentive to use STD because the ability to meet ones commitments normally and without problems is a way to build up a good reputation. This argument is very close to the model of Flannery (1986).

II.2. Debt maturity and capital structure

Capital structure can have two meanings. The first is the amount of capital divided by debt (i.e the leverage). The second lies in the ownership structure. We will discuss these two points later.

a. Debt maturity and leverage

In their empirical study Stohs and Mauer (1996) challenge the results of Barclay and Smith (1995) on the relationship between debt maturity and growth opportunities. Indeed, Stohs and Mauer (1996) use leverage as an explanatory control variable. In this case, they suggest that growth opportunity does not have the same influence on debt maturity. Indeed, not only is the influence weaker, but it is also non significant. Thus, Stohs and Mauer (1996) conclude that the agency cost hypothesis as a means to explain debt maturity is not complete.

Within the hypothesis of dependence between financial structure and debt maturity, a change in the explanatory variable can have direct and indirect effects on the corporate financial policy. For example, a change in growth opportunities may lead to direct and indirect effects on debt maturity. Indeed, on the one hand, when the firm has more growth opportunities, it can use STD more often in order to mitigate the underinvestment problem, but, on the other hand, the increase in growth opportunities leads a firm to reduce its debt level (i.e. leverage) in order to tackle agency costs and consequently the firm may wish to reduce its leverage in order to reduce debt maturity. Two cases can be highlighted. In the first, the two effects are complementary allowing a direct identification of hypotheses. In the second, the two effects are conflicting, so it is necessary to use a methodology to differentiate the two contrary effects. This methodology is based on simultaneous regressions.

Leland and Toft (1996) suggest there is a positive relationship between debt maturity and leverage. To do this, the authors calculate the leverage able to maximise the corporate value with different debt maturity levels. The authors highlight the point that the optimal leverage is equal to 19% for a short debt maturity level (less than 6 months) and 46% for a debt maturity equal to 20 years. This result is in line with that of Diamond (1991) whose results suggest that the most highly-leveraged firms use more LTD. The reasoning is the following. The liquidity risk (i.e. for Diamond, the indirect costs connected with debt renegotiation) is the risk that a solvency firm, but not liquid, be not able to repay funds in particular when the debt maturity is lower than the life expectancy of its assets. Indeed, in this case, claimholders can increase the interest rate or start winding up proceedings which is inefficient from the economic point of view, but useful for claimholders to control the firm). In the case where the leverage is weak, the firms can use STD without being exposed to a liquidity risk, which suggests a positive relationship between leverage and debt maturity. Two empirical studies Elyasiani et al. (2002) and Mejri (2008) confirm this hypothesis. Nevertheless, Dennis et al. (2000) and more recently Billett et al. (2007) suggest a negative relationship between debt maturity and leverage.

Nevertheless, as we mentioned above, the relationship between leverage and debt maturity may be influenced by investment choices (Childs et al., 2005). For these authors financing decisions and investment choices have a combined influence on the financial policy. This idea is in line with the underinvestment problem developed by Myers (1977). In this context, Childs et al. (2005) suggest that the decrease in debt maturity can alleviate the underinvestment problem and reduce the asset substituting effect because the STD is re-evaluated more frequently. In this framework, the value of STD is less sensitive to corporate and risk value.

Finally, Johnson (2003) questions the problem of the relation between debt maturity and leverage. The question is the following. Are debt maturity and leverage substitutable or complementary? For Johnson (2003), the sign of this relationship is determined by an advantage/cost reasoning between the increase in liquidity risk and the decrease in the underinvestment problem. In the case where the adjustment costs of financial structure are high, the firm will prefer LTD. On the contrary, when the firm has good financial

flexibility, it will prefer STD. Until now, the results are conflicting, undoubtedly because this relationship is not only influenced by liquidity risk and growth opportunities but too by other explanatory variables.

b. Debt maturity and ownership structure

Ownership structure can be characterised by several factors for instance, without being exhaustive: the composition of the Board of Directors, the presence of outside directors, the concentration of capital, the percentage of shares held by the managers. In our discussion, we focus on the percentage of shares held by managers.

Berger et al. (1997) suggest, in line with Schleifer and Vishny (1989), that in firms where there are no incentives for performance, managers try to avoid debt. Thus, in the same vein the use of debt is determined by managers' will for entrenchment.

As noted by Jensen (1986), financial structure is also able to manage agency conflicts and to reduce the 'free cash flow'. Jensen (1986) explained that the best way to reduce conflicts of interest is to increase debt level. Leverage provides discipline and monitoring not available to a firm completely financed by equity. According to the 'free cash flow' theory, debt creates value by imposing discipline on organizations which in turn reduces agency costs (Jensen, 1986). The use of debt has two functions: 1) it decreases the free cash flow that could be wasted by managers and, 2) it increases the probability of bankruptcy and the possibility of job loss for managers [5](thus leading to the disciplining effect).

When a firm wants to control management, it can issue debt, which has the effect of 'the sword of Damocles' for a manager. To avoid this pressure, the manager can try to choose a debt maturity level. When managers held no or a few shares, they seek to avoid the market and external pressure. Hence, they prefer to issue LTD because renegotiation is less frequent. On the contrary, the holding of shares by managers means that shareholders' interests and managers' interests converge. Thus, in this case, the managers can choose to issue more STD, which is a means of pressure and compels more frequent monitoring to be carried out.

In line with this, by using the governance theory, Datta et al. (2005), highlight two main results.

Firstly, they suggest a positive (and significant) relationship between shares held by managers and debt maturity. When the holding is high, the managers prefer to issue LTD. This result is in line with that of Diamond (1991). Indeed, for high credit quality firms, the benefits of monitoring are expected to dominate the expected costs of inefficient liquidation. Given that the liquidity risk is less a concern for these firms, managers are expected to choose STD with associated monitoring benefits if their interests are aligned with those of the shareholders.

Secondly, the authors re-examine the relationship between debt maturity and growth opportunities in the corporate governance framework. By considering managerial stock ownership, the authors highlight that the need for frequent external monitoring is greater for low-growth firms because agency costs due to managerial discretion increase with declining investment opportunities (Jung et al. 1996). More accurately, their analysis shows that on the one hand, firms with high growth opportunities have more LTD in their capital structure, and on the other hand, among firms with low growth opportunities, managers with high equity ownership choose a higher proportion of STD than managers with low equity ownership. This suggests that managerial stock ownership is effective in facilitating external monitoring (specifically for firms with greater agency costs of managerial discretion). This result is in line with that of Stulz (2000) who argues that debt is a very strong tool to control manager discretion. This idea is not new. Indeed Rajan and Winton (1995) show that STD offers the possibility of controlling managers, yet expending little effort.

Finally, Marchica (2005) seeks to know if LTD and managerial ownership are substitute or not. The author highlights a correlation between debt maturity and managerial ownership especially for highly-leveraged firms. If managerial ownership is low, the choice of LTD by managers will be made as a means of alignment of their interests with those of shareholders. At the other extremity, high managerial discretion can lead managers to search for entrenchment, to the prejudice of investors. To avoid these costs, managers will issue more STD in order to reduce agency costs. Thus, Marchica (2005) argues there is a non monotonous relationship between managerial ownership and STD.

Tables 1, 2 and 3 (*in Annex*) sum up the main theoretical hypotheses and the main empirical results.

III. CONCLUSION

The objective of this paper was to determine the main factors capable of influencing debt maturity. More precisely, we can divide them into two subgroups.

Firstly, debt maturity is influenced by external characteristics. The existence of informational (ex-post) asymmetry - agency costs - and (ex ante) asymmetry - signalling costs - are able to understand some features of debt maturity. Thus, the existence of STD can avoid the underinvestment problem (Myers, 1977). In the same vein, Barclay and Smithy or Guesdes and Opler (1996) highlight a positive relationship between STD and growth opportunities. Moreover STD can be used as a signal of a firm's quality (Flannery, 1986). Moreover, other external factors such as

5. Jensen (1986, p. 323-329) defines free cash flow as the cash available when all projects with NPV>0 have been realized.

tax benefits, financial architecture and the legal system are of use to understand debt maturity choices. Hence, with an increasing structure of interest rates and/or better legal protection, we observe a greater use of LTD.

Secondly, debt maturity can be understood via the characteristics of the firm (i.e. asset structure and capital structure). Although size and asset maturity have a positive influence on LTD, performance and risk seems have a contrary influence.

Thirdly, we note a reflexive relationship between financial structure and LTD

Fourthly, we have little knowledge on the relationship between LTD and corporate governance. Therefore, what is the relation between the board and LTD? If the manager holds shares, does he prefer to issue LTD or STD? Moreover, in considering that the managerial firm is not the only organisational form, are the first results the same for all countries and all organisational forms (for instance family firms)?

From this, we can note several questions which may allow developments for future research.

Firstly, in order to highlight the influence of these different factors, some main methodologies are used (OLS, 2 SLS, GMM or panel data). Other methodologies (such as simultaneous equations) can more accurately define the relationship between some variables (for example between leverage and debt maturity). Nevertheless, some hypotheses question these methods because the relations are not always linear. Thus, credit risk (or credit quality) has both a negative and positive influence on LTD (Diamond, 1991). Some other methods for instance, like Self organising maps, a non linear method could be used to more accurately determine the influence of main explanatory variables on LTD. Secondly, we note that the authors have not reached on a consensus on the measurement of LTD. Other future research should take into account this problem by using robustness tests.

Is Debt maturity a 'puzzle'? Indeed, further research needs to be undertaken. In particular what are the influences of covenants on debt maturity, or, is debt maturity a means to predict corporate performance? We encourage other researchers to examine these issues in future work. ■

Table 1: Debt maturity and corporate governance

The first column explains the theoretical framework and the authors. The second column describes the main hypotheses. The third column highlights the main empirical results.

Debt maturity and corporate governance: creditor rights		
Legal System La Porta et al. (1998) La Porta et al. (1999)	Law has an influence on finance. The countries where the investors are better protected (common law) allow firms to have more LTD	Investor protections allows debt maturity to increase Demirguc-Kunt and Maksimovic (1999) Fan and Titman (2003)
Financial System La Porta et al. (1998) La Porta et al. (1999)	A developed financial system has a positive influence on debt maturity	Financial system and debt maturity (LTD) Local development has a positive influence on debt maturity La Rocca and La Rocca (2004) Debt maturity and intermediaries' information Existence of strong control (audit) and numerous financial analysts lead to a lengthening of debt maturity Fan and Titman (2003)

Table 2: Debt maturity and informational asymmetry

The first column explains the theoretical framework and the authors. The second column describes the main hypotheses. The third column highlights the main empirical results.

Theroretical discussion and authors	Main Hypotheses	Main empirical results
Debt maturity and agency costs (agency theory)		
Myers (1977)		
	Firms with highest growth opportunities should issue more STD	Positive relationship between growth opportunities and STD Barclay and Smith (1995) Guesdes and Opler (1996) Nekhili (1999) Bevan and Danbolt (2000) Okzan (2000) Presumption of positive relationship between growth opportunities and STD Scherr and Hulburt (2001) Heyman et al. (2003)
Barnea et al. (1980)	The use of STD reduces the underinvestment risk	Validation of 'asset substitution hypothesis' Barclay and Smith (1995) Guesdes and Opler (1996) No validation of 'asset substitution hypothesis' Stohs and Mauer (1996)
Signalling and debt maturity		
Flannery (1986) Kale and Noe (1990)	The STD is using to convey information on the corporate growth opportunities and the quality of the firm	No relationship between the level of informational asymmetry and debt maturity Barclay and Smith (1995) Guesdes and Opler (1996) Ozkan (2000) Doubtful relation -according to the chosen period- between informational asymmetry and debt maturity Scherr and Hulburt (2001) Positive correlation between informational asymmetry and debt maturity Stohs and Mauer (1996) Nekhili (1999) Danisevka (2002)
Diamond (1991) Goswami et al. (1995)	Firms with the highest credit rating issue STD because the refinancing risk is small Firms with a very bad credit rating are unable to borrow LTD because of extreme adverse selection costs	Non monotonous relationship between the risk and debt maturity Guesdes and Opler (1996) Stohs and Mauer (1996) Scherr and Hulburt (2001)
Debt maturity and structure of interest rates		
Brick and Ravid (1985)	The higher the marginal tax rate, the more incentives firms have to issue LTD.	Issuing LTD is positively correlated with the difference between long tern interest rates and short term interest rates Stohs and Mauer (1996) Scherr and Hulburt (2001)
Mauer and Lewellen (1987)	The LTD is attractive when interest rates are volatile and the firm expects a stream of taxable earnings	Guesdes and Opler (1996)

Table 3: Debt maturity and the firm's characteristics

The first column explains the theoretical framework and the authors. The second column describes the main hypotheses. The third column highlights the main empirical results.

Theroretical discussion and authors	Main Hypotheses	Main empirical results
Debt maturity and corporate characteristics		
Asset structure (Matching principle) Morris (1976)	We should observe a bigger use of STD for firms with strong liquid assets	Positive correlation between STD and asset liquidity Guesdes and Opler (1996) Stohs and Mauer (1996) Demirguc-Kunt and Maksimovic (1999) Bevan and Danbolt (2000) Okzan (2000) Scherr and Hulburt (2001) Daniesevska (2002) Heyman et al. (2003) Garcia-Teruel and Solano (2004)
Firm risk Kale et al. (1985)	The optimal debt maturity is negatively correlated with the volatility of the firm's value	Negative correlation between debt maturity and asset volatility Sarkar (1999)
Size Berger and Udell (1998)	The use of STD is greater for the SME	Negative correlation between size and STD Barclay and Smith (1995) Titman and Wessels (1988) Okzan (2000) Garcia-Teruel and Solano (2004) Billett et al. (2007) No correlation between size and debt maturity Stohs and Mauer (1996) Scherr and Hulburt (2001) Heyman et al. (2003) Positive correlation between size and STD Guesdes and Opler (1996) Bevan and Danbolt (2000)
Performance Datta et al. (2005)		Negative relationship between corporate performance and the LTD Datta et al. (2005)
Debt maturity and capital structure		
Financial structure Leland and Toft (1996) Direct effect Childs et al. (2005) Indirect effect	The liquidity risk can have an influence on debt maturity The decrease in debt maturity can alleviate the underinvestment problem and reduce the asset-substituting effect because the STD is re-evaluate more often	Positive relation between leverage and debt maturity Elyasiani et al. (2002) Mejri (2008) Negative relation between debt maturity and leverage Dennis et al. (2000) Billet et al. (2007)
Ownership structure Shares held by managers Berger et al. (1997)	There is a positive correlation between managerial ownership and LTD	Managerial stock ownership has an influence on debt maturity Datta et al., (2005)
Stulz (2000)	Debt is a means of pressure on managers in managerial firms	Managers with higher stock ownership choose a larger proportion of STD because STD allows more frequent monitoring Datta et al. (2005) Existence of non linear relationship between managerial ownership and STD (U curve) Marchica (2005)

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