Trying To Understand All-Equity Firms

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Abstract

This paper studies all equity firms and shows which are in US firms, the main drivers of zero-debt policy. I analyze 6763 U.S. listed companies in years 1987-2009, a total of 77442 firms year. I find that financial constrained firms show a higher probability to become unlevered. In the opposite side, firms producing high cash flow are also likely to become unlevered, paying their debt. Some firms create economies of scale in the use of funds, increasing the probability of become unlevered. The industry characteristics are also important to explain the zero-debt policy. However is the high perception of risk, the most important factor influencing this extreme behavior, which is consistent with trade-off theory.

Key words: all-equity firms; low leverage; capital structure; financial constraints; logistic regression

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I - Introduction

In the year 2005, 692 firms representing 20.2% of total firms with assets larger than $10m had zero outstanding debt, including both short and long-term debt, in their capital structure. In the same year, 49.8% or 1706 firms had negative debt, i.e. outstanding cash and short term investments was larger than total debt. Between 1987 and 2009, on average 14,1% of firms show no debt, 16.8% show zero long-term debt and 41% zero net debt. Looking to the evolution in Table 1, we see a stable rising trend with a maximum in 2005. This extreme debt aversion exists in all firm sizes being more frequent in smaller firms, it´s why Strebulaev and Yang (2006) call this, the puzzle of zero-leverage firms. We document the puzzle along various dimensions and put forward a number of reasonable explanations that can account for it.

This research confirms and is related to the stylized fact that on average firms have low leverage ratios, relative to what we would expect from various models of capital structure. For example, Graham (2000) considers that a typical firm could double tax benefits by issuing debt until the marginal tax benefit begins to decline. Being so significant the number of zero leverage firms, the low leverage puzzle cannot be explained before we can understand why so many firms eschew any kind of debt.

Many studies have examined changes in leverage, like Shyam-Sunder and Myers (1999) and Frank and Goyal (2003). Some studies examine changes in equity, like Fama and French (2005) and Leary and Roberts (2010). Frank and Goyal (2004) examine both changes in debt and changes in equity in a two-equation VAR System[1]. Changes in debt have played an important role in assessing the pecking order theory, because the financing deficit is supposed to drive debt according to this theory. Shyam-Sunder and Myers (1999) examine how debt responds to short-term variation in investment and earnings and have found strong support for this prediction. Frank and Goyal (2003) examine the broad applicability of the pecking order theory. Their evidence based on a large cross-section of US publicly traded firms over long time periods, shows that external financing is heavily used by some firms. On average net equity issue track the financing deficit more closely than do net debt issue. These facts do not match the claims of the pecking order theory. Greatest support for pecking order is found among large firms, which might be expected to face the least severe adverse selection problem since they receive much better coverage by equity analysts. Even here, the support for pecking order is declining over time and the support for pecking order among large firms is weaker in the 1990s.

[1] This is a very uncommon study using aggregate US data for 1952 to 2000 and based in a time series model.

Lemmon and Zender (2008) attempt to reconcile the findings presented by Fama and French (2002) and Frank and Goyal (2003), with those presented by Shyam-Sunder and Myers (1999). These authors use the idea of debt capacity as an important instrument to understand the rejections of the pecking order theory. Consideration of debt capacity suggests that, when constrained by debt capacity, they issue equity, when unconstrained they issue debt. In a certain way if debt capacity is defined as the point when adding more leverage reduces firm value, then debt capacity is similar to the concept of target leverage by the trade-off theory and thus, finding that firms use debt to fill the financing deficit when they are below their debt capacity may not sharply distinguish the two theories of capital structure. Lemmon and Zender (2008) find, as expected, that the coefficient on financing deficit in net debt regressions are significantly larger for firms with rated debt and smaller for firms with no rating. They also show that firms with no debt ratings are small high-growth firms and they use equity to finance their deficits. These results are consistent with those in Fama and French (2002) and Frank and Goyal (2003). However Frank and Goyal suggest that these firms face more asymmetric information problems and thus pecking order predicts that they should issue equity. Lemmon and Zender suggest that these firms are debt capacity constrained and therefore issue equity. Halov and Heider (2006) argue when there is greater asymmetric information about risk, debt has more severe adverse selection problems and firms would only issue equity. To test these arguments, Halov and Heider use asset volatility as a proxy for asymmetric information about risk. They show that as asset volatility increases, firms use more equity to finance their deficits.

Since at least Miller (1977), there has been some concern about seemingly low leverage of firms given the substantial tax benefits of debt. Graham (2000) finds that a significant number of Compustat firms are surprisingly conservative in their use of debt. These are generally large, profitable and liquid firms to which it is expect they face lower costs of financial distress. Almeida and Philippon (2007) point out that most debt conservatism calculations focus on expected costs of financial distress rather than the risk-adjusted costs of financial distress, thus distress risk premium can help explain why firms appear to use debt conservatively. Bankruptcy happens more commonly in bad times than in good times, so the lower debt levels can work like an insurance expense. Several recent papers attempt to reconcile the observed capital structures to those predicted by models. Minton and Wruck (2001) examine low leverage firms and find that the low leverage is largely transitory[2]. These firms appear to be stockpiling financial slack

[2] They define financial conservatism, as a persistent financial policy of low leverage in a five years period. A firm is classified as being financially conservative if its annual ratio of long- term debt, including the current portion, is in

or debt capacity, which is used later to make acquisitions and capital expenditures. Morellec (2004) presents a contingent claims model with manager-stockholder conflicts. The model can generate the low debt ratios observed in practice. In another paper, Ju et al. (2005) present a dynamic framework that provides estimates of optimal capital structures based on a calibrated contingent-claims model. They show that firms are not underlevered relative to the predictions of this model. Maximizing share value for a firm that is calibrated to be similar to the median Compustat firm results in an optimal debt-to-capital ratio of about 15%, which is below the median Compustat debt-to-capital value of about 23%. Their results contradict the view that firms are conservative in debt financing. Their results also show that moderate deviations of capital structure from optimal values have very small impact on firm value. In the presence of transaction costs, it may be optimal for firms to let their capital structure deviate from the target. Hennessy and Whited (2005) and Strebulaev (2007) also dispute the claim that firms are underlevered relative to the predictions of dynamic trade-off models. Their models also appear to be capable of accounting for observed corporate debt levels.

Agrawal and Nagarajan (1990) focused their attention on firms that use no long-term debt over a continuous five-year period[3], using equity ownership and executives data. The paper provides evidence that all-equity firms exhibit greater levels of managerial stockholdings, more extensive family relationships among top management, and higher liquidity positions than a matched sample of levered firms.

Gardner and Trzcinka (1992) provides evidence that the trade-off theory of capital structure can predict the behavior of all-equity firms, using data from 1964 through 1983, choosing firms that had no interest payments and no long term debt for at least one year in the twenty years covered by Compustat data base. Using a Logit function they tested whether the trade-off theory of capital structure can describe the debt policy of all-equity firms by relating the probability of borrowing to variables that should proxy for leverage-related costs and benefits. The independent variables used were: alternative tax shield, risk and what they call Myers growth option measure and earnings per share ratio as growth option 2. The results show that growth option (market value of assets to book value of assets) is consistently a significant predictor of the probability of corporate borrowing. They conclude that the incentive to under invest in the

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the bottom 20% of all firms for five consecutive years. The average debt ratio over total assets, of low leverage firms was 0.0276 against 0.2932 for control firms. Seventy percent of low leverage firms drop their conservative financial policy and almost 50% do so within five years.

[3] They have defined levered firms as firms which maintain a ratio of book value of long term debt to firm value (market value of equity plus book value of long-term debt) of at least 5%.

presence of risky debt appears to influence the borrowing activities of these firms. This finding is consistent with Bradley, Jarrel and Kim (1984). In addition, contrary to the Bradley, Jarrel and Kim results, firm risk is found to be positively related to the probability of a firm shifting from all-equity to debt. Nondebt tax shields are positive and significant in the five-year sub periods.

Strebulaev and Yang (2006) contrary to Gardner and Trzcinka (1992) have select only non-financial and no utilities US firms[4]. They found that zero-leverage firms are on average slightly smaller than their proxies. They have a higher market-to-book ratio, higher cash balance, profitability, higher tax bill, and conditional on paying dividends, they pay substantially larger dividend than their dividend-paying proxies, so that the total payout ratio is similar among the two groups.

The aim of this study is to extend previous studies in this topic, using a broad sample of non-financial and no utilities US firms. Our approach to discriminate levered firms against unlevered firms is based on Logit regressions, following Gardner and Trzcinka (1992), but using different variables and different models[5]. The variables considered are proxies for the following main factors: risk, financial constraints, cash flow production, growth opportunities, profitability, agency costs of debt, market timing and scale in the use of funds. At the same time, going beyond industry fixed effects, I try to capture the industry effect using some observed variables.

The results confirm the prediction about the negative relation between risk and leverage. Being the risk of assets a proxy for bankruptcy costs, my findings reconcile not only this negative relation but give an understanding that in certain circumstances, zero-debt policy can be optimal. Other things equal, and being the effect of risk reflected in the probability of shifting to unlevered position multiplied by three, we can understand why we find so many firms unlevered. This finding reconciles somehow with trade-off theory, but requires us to consider a detail; even without debt there are bankruptcy costs. Debt my increase costs of financial distress and the weight of bankruptcy costs can be in certain circumstances extremely important, offsetting entirely the benefits of tax shields. When trying to capture the industry effect one of the most important factor is also related with the agency cost of debt.

[4] They have constructed for each zero-leverage firm two reference sets of proxy firms that serve as control observations. Each set has up to four firm-observations in the same year and industry (as defined by the three-digit SIC code) which are closest in size.

[5] Gardner and Trzcinka (1992) use yearly regressions. We use panel data models.

On the other hand, results show two different types of unlevered firms: debt constrained firms and those that are more profitable and paying dividends, for which risk also discourage the use of debt. The last one, following a pecking order style, accumulating profits over financing needs, become unlevered paying existing debt.

From the demand side, the amount of funds used in the operation is also negatively related with the probability of become unlevered. At industry level, the measure that proxy for value added, also confirms this intuition and it is consistent with higher presence of unlevered firms in service industries when comparing with manufacturing. This also favors what I call pecking order style, with incidence not in positive components of financing deficit but in the investing needs.

This research offers some contributions to this puzzle but not a complete explanation. The nonuse of debt in capital structure can be a decision made by managers or an inevitability, depending on shareholders and other contingences. The all-equity capital structure can depend from company situation, managers' experience and mentality, shareholders preferences, agency conflicts (see Agrawal and Nagarajan 1990) and almost of this potential influences are not reflected in the financial statements or combined, at least at this magnitude with 77,442 firms year. When we remove firm fixed effects we get only those covariates that are common and we leave reflected in the firm dummy all other specific factors not observed. So to increase the explanatory power of my model, that is based on fixed effects, it will be necessary to joint observed variables related with managers, shareholders and agency conflicts.

The structure of the paper is as follows: the following section provides data description, measures and some detailed statistics, section III presents empirical tests and results, section IV robustness and additional tests and section V concludes.

II - Data and Methodology

A. Data and sample selection

In this study we use accounting information from Compustat Xpressfeed for US[6] publicly-traded companies, over the period 1987-2009. I collect market returns from CRSP US stock databases. I have used two other sources of data: Marginal Tax Rates[7], and Compustat

[6] Current ISO country code-incorporation equal to USA

[7] Data bases with marginal tax rates from 1980 to 2007, included in Compustat and accessed through Wharton Research Data Services (Wrds). These rates correspond to the non-parametric marginal tax rates developed by

Segments[8]. The periodicity is annual and each record represents a company fiscal year, which is an accounting period of twelve months. Fiscal years do not necessarily correspond to calendar years. As usual in this kind of studies, we exclude financial companies (SIC 6000-6999), utilities or regulated (SIC 4900-4999). We dropped non-US companies, non-publicly traded firms and subsidiaries (stock ownership codes 1, 2, 3 or 4) and kept only stock ownership 0, corresponding to publicly traded, including NYSE, ASE/AMEX/Alternex and NASDAQ. We also excluded all firm year with zero sales and zero total assets or missing values in these two variables. Based on average total assets by firm, I dropped all firms with total book assets lower than 10 million USD, following Strebulaev and Yang (2006). In order to ensure more stability to the sample, I require a minimum of three years in database, having excluded firms with ephemeral presence.

All nominal values are converted into year 2009 dollar values using CPI index from the Bureau of Labor Statistics of the United States Department of Labor. We have started in 1987 because we also require the observations to have Cash-Flow Statement information. Effective for fiscal years ending July 15, 1988 the SFAS #95 requires US companies to report the Statement of Cash Flow. Prior to adoption of SFAS #95, companies may have report other information formatting. In the paper "date t" always refers to fiscal year ***t*** and market value refers to common shares outstanding times price close annual fiscal year. We also require that debt in current liabilities reconcile with total current liabilities and long term debt and debt in current liabilities reconcile with total liabilities. This leaves us with an unbalanced panel of 77442 firm-year observations, from a minimum of 2636 in 1989 to a maximum of 4110 in 1996. To deal with outliers in variables used in regressions, we decide winsorize each tail at 0.5%. For instance, some variables that are ratios can assume in some cases a value that is several orders of magnitude too large to be plausibly correct.

B. Measures

I could use many concepts to qualify as unlevered or quasi unlevered firm. Nevertheless, I have chosen the zero net debt (ZNETD). The firm is classified as ZNETD if the amount of cash and short-term investments (CHE) is greater than the sum of short-term debt (DLC) with long-

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Professors Jennifer Blouin, John Core and Wayne Guay in the article: Have the Tax Benefits of Debt Been Overestimated?, Journal of Financial Economics, 2010, 98(2); 195-213.

[8] Independent database included in Compustat product, and accessed through Wharton Research Data Services (Wrds).

term debt (DLTT). Following Strebulaev and Yang (2006) the rationale for considering net debt is that, from certain standpoints (e.g. Trade-off theory), cash can be viewed as negative debt. These firms have on average a marginal debt presence in their capital structure and from an economic standpoint can still be thought of as averse to debt. At the same time, standard valuation models subtract the amount of cash in the firm´s Balance Sheet from the value of outstanding debt in order to determine the firm´s leverage. Despite the dominant practice of financial analysts in viewing cash as the "negative" of debt, as Acharya et al. (2007) show, firms may prefer higher cash to lower debt, depending of their needs to hedge future investments in a situation of financial constraint. There are surely several reasons to maintain this situation, flexibility (see Graham and Harvey, 2001), transaction motives, but firms in this situation still be thought as adverse to debt. Column 4 of Table I reports the fraction of ZNETD relative to the total size of the sample in each year and shows an average of 41% in this period, from a minimum of 29.6% in 1989 to a maximum 49.8% in 2005. In Table I there are alternative concepts of zero debt and we can see a rising trend from the first year of the sample. We can see also a maximum in 2005 following a decreasing period until a turning point in 2008. The evolution in 2007, 2008 and 2009 is partially artificial and caused by applying the sample selection criteria that imposes minimum three year presence. In consequence there are not new firms in the last three years. The new unlevered firms each year in the databases, represents almost 3% on average.

C. Factors and characteristics that can be used to explain zero-leverage behavior

Tax benefits

Theory predicts that firms with low marginal tax rate on their interest deductions are less likely to finance new investments with debt. MacKie-Mason (1990) comments that the reason why many studies fail to find plausible or significant tax effects on capital structure, is because the debt-equity ratios are the cumulative result of multiple and separate decisions and most tax shields have a negligible effect on the marginal tax rate for most firms. MacKie-Mason (1990) use tests based on incremental decisions and argue that tax shields matter only through their effect on the firms' marginal tax rate. On the other hand DeAngelo and Masulis (1980) have developed the idea that non-debt tax shields can also influence debt policy. Thus using only marginal tax rate we may lose some tax influence on debt policy, although tax loss carry

forwards and investment tax credits can be factors that are reflected in the marginal tax rates. MacKie-Mason (1990) found that firms with tax loss carry forwards are unlike to be able to use interest deductions. In contrast, firms with investment tax credits, are often profitable and paying taxes, so on average investment tax credits does not reduce the probability of a debt issue.

The marginal tax rate before interest deductions provide by Blouin et al. (2010) is used to measure tax effect on the probability of shifting to an unlevered capital structure[9]. These authors re-examine the claim that many corporations are underleveraged and that they fail to take full advantage of debt tax shields. They conclude that when expected distress costs and difficult-to-measure non-debt tax shields are also considered it appears plausible that most firms have tax-efficient capital structures.

Financial Constraints

Size is supposed to be negatively correlated with the probability of bankruptcy, see Ohlson (1980). Static trade-off theory is generally interpreted as predicting that large firms will have more debt since larger firms are more diversified and have lower default risk. Larger firms are also typically more mature firms. These firms have a reputation in debt markets and consequently face lower agency costs of debt. Hence the trade-off theory predicts that leverage and firm size should be positively related.

The pecking order theory is usually interpreted as predicting an inverse relation between leverage and firm size. The argument is that large firms have around longer and are better known. Thus, large firms face lower adverse selection and can more easily issue equity compared to small firms where adverse selection problems are severe. Cross sectional tests of the relation between leverage and firm size find the relation to be robustly positive. Rajan and Zingales (1995), follow this line of reasoning and argue that larger firms tend to disclose more information to outside investors than smaller ones.

Age share with size some of the above arguments, mainly the asymmetric information problem. Age and the size of assets show some correlation, meaning that older firms tend to be bigger. These to variables proxy also for risk and can be used like financial constraint criteria, as is done in Almeida et al. (2004), who defines the two groups of constrained and unconstrained

[9] Marginal tax rates are available until 2007. After 2007 they were complemented with average tax rate.

firms, based on asset size deciles. Also, Hadlock and Pierce (2010) have find size and age as particularly useful predictors of financial constraints levels, they consider these two variables as relatively exogenous firm characteristics. The only problem is some positive correlation between each other[10].

The natural logarithm of booked assets is used instead of an alternative measure also used for many authors, the natural logarithm of sales, in order to avoid some increased correlation among variables. Usually the natural logarithm of sales and total assets are highly correlated, in my sample the correlation coefficient is 0,8975. Using natural logarithm of total assets I'm assuming a nonlinear relation between size and the probability of become unlevered. For age[11] I use the number of years between the observation year and the first year the firm appears in Compustat file.

I use also a dummy to identify firms with negative EBITDA for the last two years. Being the unlevered status more a discrete than a continuous decision this variable is supposed to be correlated with financial distress. Firms exhibiting two years of negative EBITDA are supposed to have limited debt capacity. I follow Ohlson (1980) who have used last 2 years of negative net income, as covariate do forecast bankruptcy.

Another variable used is a dummy that define if a firm is a start-up. These firms can face severe agency costs of debt, independently of age. Firms classified in this category, are no necessarily firms in the first year. I define start-up as firms in the lowest quintile of sales over assets ratio, in their industry, by year. Like the previous dummy, can be considered an extreme situation, but what I want to explain is also an extreme debt aversion.

Profitability

Static trade-off theory predicts that profitable firms should have more debt. Expected bankruptcy costs are lower and interest tax shields are more valuable for profitable firms. Furthermore, firms that generate higher profits relative to investment, can benefit from the discipline that debt provides, in mitigating the free cash-flow problem (see Jensen,1986). According to the pecking order theory, with investments and dividends fixed, more profitable firms should become less levered over time. Titman and Wessels (1988) and others, find that

[10] In my data, the correlation coefficient between age and size of 0,48.
[11] Hadlock and Pierce (2010) use a similar measure: the number of years preceding, the observation year that the firm has a nonmissing stock price on the Compustat file.

firms with higher past profits tend to have lower debt ratios. This evidence is also consistent with tax, transaction cost and adverse selection arguments that imply that internally generated equity is less costly than equity capital raised externally. The empirical studies typically find a negative relation between profitability and leverage, consistent with the pecking order theory and inconsistent with the trade-off theory. Regarding the probability to become unlevered, I expect a mixed behavior.

In this study, profitability will be defined as earnings before interest and tax (EBIT) scaled by total assets, as in the majority of empirical studies. Looking at figure 2, graphically the relation with zero-debt policy approaches no to a U shape. Unprofitable segments of firms show a higher presence of all-equity firms as well the higher profitable ones, regardless their size or industry. In front of this situation we can ask, why so many unprofitable firms have been all-equity firms and why so many high profitable ones, have been also all-equity firms?

For the first question we can argue that unprofitable firms don't produce tax shields and have higher agency costs of debt, but even for some levels of positive Return on Investment (ROI), the presence of debt can reduce firm value. Considering Return on Equity (ROE) one of the most important and used highlights about firm performance, we can make the following decomposition:

$$ROE = \frac{NE}{E} = \frac{(EBIT - I)(1-t)}{E} \quad (1)$$

Where NE=net earnings, E=equity, t=income taxes and I=interest expenses

Being $ROI = \frac{EBIT}{V} \Leftrightarrow EBIT = ROI \times V$

Where V=Invested capital = (fixed assets + working capital), D=debt and r_D=average interest rate

If V=D+E

Then $EBIT = ROI \times (E + D)$ and $I = D \times r_D$

Replacing EBIT and I in Equation (1)

$$ROE = \frac{[ROI \times (E + D) - D \times r_D] \times (1-t)}{E} = \frac{(ROI \times E + ROI \times D - D \times r_D) \times (1-t)}{E} =$$

$$= \left[ROI \times \frac{D}{E} \times (ROI - r_D) \right] \times (1-t)$$

As we can see, the Return on Equity (ROE) and consequently firm value is influenced positively by debt as predicted by trade-off theory. The same positive relation we have with the profitability of assets in place (ROI) or operating performance. In the case of poor operating performance, in low levels of ROI, but positive, the spread (ROI-r_D) can be negative and discourage the use of debt, although there are tax savings. Thus we can conclude that managers of firms with low ROI, below cost of debt, have an incentive to keep away from debt. Regarding firms with negative ROI, their stockholders would have something to gain with debt, but debtholders realize that have huge agency costs because these firms don't generate enough cash-flow to pay interest and repay principal. Only when ROI is greater than r_D we expect that trade-off theory applies and tax shields can balance against bankruptcy costs.

Explanations to high frequency of all-equity firms in high levels of operating performance can be understandable using this factor, if these firms are so profitable, that shareholders have no other better alternatives to invest their funds.

I have given some intuition, to better understand the mixed relation we can find with profitability. Empirically it is difficult to test the spread (ROI- r_D) for the following reasons; the availability of debt cost by firm and the timing for these expectations. Alternatively I have included the EBIT as a covariate and a dummy that is highly correlated with high levels of profitability: dummy for positive financing deficit. At the same time I had already included a dummy for two years of negative EBITDA to control for the low levels of profitability. Profitability, using all of these features, works as a financial constraint and as source of free cash flow.

Asset structure

Tangibility is considered a relevant variable to explain cross sectional differences in leverage. The relation between tangibility and leverage should be positive. This prediction comes from Jensen and Meckling (1976) arguments. Tangible assets are easier to collateralize and they suffer a small loss of value when firms go into distress. Thus from a trade-off perspective, tangibility has an important effect on the costs of financial distress. In addition, tangibility makes it difficult for shareholders to substitute high-risk assets for low risk ones. Agency costs of debt are therefore lower for firms with more tangible assets. Under the pecking order we see opposite predictions. Harris and Raviv (1991) argue that the low information asymmetry associated with tangible assets makes equity less costly, resulting in a negative

relation between leverage and tangibility. This ambiguity under the pecking order theory stems from the fact that tangibility can be viewed as a proxy for different economic forces, allowing collateralization, helps the use of debt, reducing information asymmetry helps the use of equity. In most empirical studies the relation between debt and tangibility of assets is reliably positive: Friend and Lang (1988), Titman and Wessels (1988), Rajan and Zingales (1995), Huang and Song (2006) and Frank and Goyal (2009), among others. Tangibility of assets is typically measured by the ratio of fixed assets over total assets.

It's important to stress some crucial aspects to understand this variable in the context of all-equity firms: 1) the majority of this studies in capital structure drop all-equity firms in the sample selection, 2) some of them use averages along period, as dependent and independent variables, 3) some other are based on panel data samples but use pooled regressions even adjusting with clustered standard errors, or in alternative Fama Mcbeth approach. Assuming some stability in firm assets structure, the early findings and relation may not be valid in this kind of empirical study. If tangibility of assets doesn't change significantly in time series, it may not contribute to discriminate against levered and unlevered firms in a within regression.

The use of funds can determine financial needs and alternative sources; external or internal financing. The demand of funds comes from the investment side and working capital needs. Firms have different business structures, different strategies and positioning, are located in very specific industries. All of these characteristics imply a different asset structure. Firms located in service industries are likely to have lower components of working capital, especially funds invested in inventories and credit from suppliers. For these firms, people may be the most important asset. Conversely, in manufacturing industries, not only property plant and equipment, but also working capital, tend to be more valuable in terms of total book assets.

The needs of external finance will be determined mainly by new investments either in fixed assets either in working capital or even in intangible assets[12], together with the profit level. If the needs grow quickly, CFO's, according to the pecking order theory, will use internal finance first and in a second step if available, debt financing. The intangibles recognized as book assets, as far as I know, have not been used as covariate to explain leverage. Usually they are considered not having collateralization characteristics. So, follow agency theory it doesn't favor debt issue. Considering that ¾ of intangible assets in Compustat firms is goodwill, It's not clear

[12] Myers (1977) notes the difference between growth opportunities and intangibles assets recognized as book assets.

that there is no relation, between goodwill[13] and debt. On the other hand, the remaining components of intangibles can be among others; patents and other rights that may sign the beginning of the production phase of new products. In previous stages the firms have spent money in research and development and the future value of this growth options only could be recognize by the market value of stocks. When becomes possible to recognize some of these intangible assets, we are in a more advanced stage, and firms need funds to invest in the production. Even if the firm doesn't have activities of direct research and development and buy patents from other firm, these assets don't have more asymmetric information then fixed assets. They are also assets in place, thus it can make sense the intuition that it should be a positive relation between intangibles and leverage. Consequently, we should also expect a positive influence from intangibles recognized as book assets, in the probability of borrowing.

Volatility

Volatility or business risk is a proxy for the probability of financial distress. Many authors have suggested that firm's optimal debt is a decreasing function of the volatility of earnings, because firms with more volatile cash flows face higher expected costs of financial distress and should use less debt. Ross (1985) have used beta as a measure of risk and argue that there is a relationship between the capital structure of the firm and risk. This negative relation was found in the absence of any bankruptcy costs or any agency, asymmetric information or signaling effects. More volatile cash flows reduce the probability that tax shields will be fully utilized, thus higher risk should result and less debt, under the trade-off theory.

Another interpretation for risk, measured with standard deviation of stock prices, is based in the assumption that it is a positive function of the value of the growth option. Thus, the value of a call option over the firm's assets increases with risk. Following the predictions about growth opportunities we can argue that firms with higher value of growth option should have lower debt and thus a positive relationship with the probability of shifting to an unlevered capital structure.

Titman and Wessels (1988) argue that only the standard deviation of the percentage change in operating income can be a good proxy because is not affected by the firm's debt. Booth et al. (2001) and Huang and Song (2006) use standard deviation of earnings before interest and tax

[13] Goodwill comes mainly from mergers and acquisitions and we know that in some deals, new debt is issued to finance these restructuring operations.

scaled by total assets. In all-equity studies, Gardner and Trzcinka (1992) use the standard deviation of stock returns and beta. I don't agree with measures that can already include the effect of existing debt. I share with Titman and Wessels (1988) this concern and I have chosen the standard deviation of assets. First, I computed the standard deviation of stock returns using daily data from CRSP and after, following Hillegeist et al. (2004) I adjusted this measure for debt-equity ratio in the case of levered firms[14].

I use a second variable as a proxy for risk, following Wu et al. (2010); the number of segments each firm operates. According to Myers (1977) one alleged advantage of corporate diversification is that diversified firms can borrow more. More diversification may mean lower risk. Following portfolio theory, the combination of assets with less than perfectly correlated returns originates a lower volatility, than the weighted average variance of all assets, due to compensation effect. I use the Compustat segments and I have considered as new segment either a different business (product/service) or a different location (geographic criteria).

Investment Opportunities

The static trade-off theory predicts a negative relation between leverage and growth. Growth firms lose more of their value when they go into distress. Several agency theories also predict a negative relation between leverage and growth. For firms lacking investment opportunities, debt serves to limit the agency costs of managerial discretion as suggested by Jensen (1986) and Stulz (1990). Berger et al. (1997) also confirm that there is an association between managerial entrenchment and firm capital structure with results suggesting the disciplinary role of debt.

On the other hand, debt also has its own agency cost. As growth options increase, asset substitution problems also become more severe. In high growth firms, it is easier for stockholders to increase project risk and it is harder for debt holders do detect such changes. Thus debt is more costly for firms with high growth opportunities. For example, the underinvestment problem is more severe for growth firms leading these firms to prefer less debt. The underinvestment problem arises because firms with risky debt have an incentive to under invest in positive net present value projects since shareholders bear the entire cost of the project but receive only a fraction of the increase in firm value. In this case the discipline that debt provides is less valuable for firms with good growth opportunities. In summary, both trade-off

[14] Hillegeist et al. (2004) use the Black-Scholes option pricing model in forecasting the probability of bankruptcy.

and the agency theories are generally interpreted as predicting an inverse relation between the leverage ratio and growth opportunities. By contrast, the pecking order theory predicts that firms with more investments - holding profitability fixed - should accumulate more debt over time. Thus according to the pecking order theory, growth opportunities and leverage are expected to be positively related. In my opinion, firms with more investments might not be the same as firms with high growth opportunities. Investments are past while growth opportunities are future and were past investments, the basic reason for the rise of funds.

The relation between leverage and growth features is negative in many different cross-sectional studies including those by Bradley et al. (1984), Kim and Sorensen (1986), Smith and Watts (1992), Huang and Song (2006) and Frank and Goyal (2009). Other studies across countries such as Booth et al. (2001), Rajan and Zingales (1995) and Alves and Ferreira (2007) predominantly have arrived to the same findings.

In the capital structure literature, have been used several proxies for growth opportunities. Booth et al. (1988) use market-to-book ratio of equity[15]. Rajan and Zingales (1995) and Huang and Song (2006) use Tobin's Q. Others such Wald (1999) uses a 5-year average of sales growth, Titman and Wessels (1988) use capital expenditures over total assets as well as research and development scaled by sales. Gardner and Trzcinka (1992) use two measures for growth option as proxies for the agency costs of debt, the market value of assets to book value (growth option 1) as well the end-of-year earnings/price ratio (growth option 2). Kim and Sorensen (1986) have used another proxy, the EBITGROW[16] based in the argument that firms that experience high degrees of earnings growth are indeed more entrepreneurial in their investing opportunities. Kester (1986) have used as growth variable the compound average annual rate of growth in revenues[17]. I follow the arguments of those that consider Tobin's Q (market-to-book ratio of total assets) the best measure to proxy for future growth opportunities.

Market timing

Market timing is having a renewed surge of popularity in the academic literature. In surveys, such as those by Graham and Harvey (2001), managers continue to offer at least some

[15] If the market timing theory applies, a higher market-to-book ratio should reduce leverage as firms exploit equity mispricing through equity issuances. Furthermore, if we use a market-based leverage ratio, a mechanical negative relation may exist between leverage and market-to-book ratio.

[16] The geometric mean annual growth rate in EBIT during ten years

[17] Kester (1986) is one of the only studies to find a positive relation with debt. It can be a logic finding, taking in consideration the past growth experience of his proxy for growth opportunities and the arguments of pecking order theory.

support for the idea. In accordance with market timing behavior, firms tend to issue equity following a stock price run-up. Some studies that analyze long-run stock returns following corporate financing events have found evidence consistent with market timing[18]. Baker and Wurgler (2002) argue that capital structure is best understood as the cumulative effect of past attempts to time the market.

The main idea of market timing theory is that when they need financing, managers look at current conditions in both debt and equity markets choosing the more favorable. If neither market looks favorable, they may defer issuances. Conversely, if current market conditions look unusually favorable, managers will issue funds, even if the firm has no need for funds currently. The basic assumption of this theory, is that stock returns and debt market conditions play a central role in financial decisions and consequently on firms capital structure.

In this paper I don't want to confirm or not market timing theory. I use a dummy variable (Equity issues) in order to define if the firm has issued net equity and if equity issued is higher than debt issued in the same period. The aim of this dummy is to find if the shift in capital structure is the outcome of a managerial decision.

Managers overconfidence

Hovakimian et al. (2001) examine firm financing choices and find that more profitable firms have on average lower leverage ratios. In addition they find also that firms with higher current stock prices (relative to their past stock prices) are more likely to issue equity rather than debt and repurchase debt rather than equity. I use a variable that is not the same of Hovakimian (2001). The variable is the excess return during last two years, using CRSP value weighted index. One can expect that managers are convinced that unlevered capital structure is better remunerated by investors. So I will investigate if the abnormal return has any influence, and in what sense, on the probability of firms change to a zero-debt policy.

Industry factors

According to Frank and Goyal (2009), industry differences in leverage ratios have several possible meanings. The first is that managers may use industry benchmarks to decide about their own leverage level. Thus, following this line of reasoning some authors have used industry

[18] The evidence that equity issuers have low subsequent abnormal returns shows up in a number of studies (see, e.g. Loughan and Ritter (1995); Jegadeesh (2000)). Baker and Wurgler (2000) find low returns on the stock market following heavy aggregate stock issuance.

median leverage as a proxy for target capital structure. Hovakimian et al. (2001) provide evidence that the deviation of actual leverage from the industry mean is highly significant in firm's choice between debt and equity issues. Frank and Goyal (2009) have find evidence that median industry leverage is one of the most important factors, explaining the market leverage. In my study I have a dichotomous dependent variables, so I don't think that median industry leverage could be an acceptable factor to explain the probability of change from one extreme position to another[19].

Another interpretation is that industry effects reflect a set of correlated, but otherwise omitted factors. Hovakimian (2004) have included industry leverage as independent variable to control for omitted factors. Follow this way of thinking that industry factors are important to firm financial structure, some other researchers remove industry fixed effects by including dummy variables and using the remaining variation to test how firm characteristics affect financial policy. In both situations, these two approaches don't tell us how industry affects firm financial structure. It's why I follow Mackay and Phillips (2005) trying to find how important are industry factors to unlevered financial structures and what industry factors can influence the likelihood of a firm to become unlevered.

Usually one may think that the low leverage phenomenon appears associated with internet and computer business. Already Titman and Wessels (1988) have suggested that firms making products requiring the availability of specialized servicing and spare parts may recognize high bankruptcy costs. In consequence, firms operating in these industries should be more conservative in the use of debt. They have included a dummy variable to identify firms with SIC codes between 3400 and 4000 and got statistically significance, so have concluded for the evidence of this conjecture.

The level of R&D expenses can be considered as a firm characteristic. Titman and Wessels (1988) have used this variable as a proxy for uniqueness[20]. The idea is that firms that produce unique or specialized products probably suffer high bankruptcy costs. R&D expenses create intangible assets that are growth opportunities, in contrast with assets in place. Frank and Goyal

[19] The use of median industry, looking to this variable as a benchmark, makes sense when using leverage ratios as dependent variable and when we are looking for explanations to leverage adjustments.

[20] The uniqueness attribute is expected to be negatively related to the observed debt ratio because of its positive correlation with non-debt tax shields and its negative correlation with collateral value. Research and development and some selling expenses, such as advertising, can be considered capital goods that are immediately expensed and cannot be used as collateral.

(2009) have also used this variable at firm level without getting statistical relevance. Harris and Raviv (1991) have also documented a negative relation between leverage and R&D expenses. At industry level, we can lessen the effect of lack of data that exists in database, for which, usually the authors attempt to solve by putting zeros in the missing values. Calculating an average by industry by year, we can avoid the adverse effect of yearly changes in this kind of expenses. Since it is important to note that the R&D past expenses retain their effects in the present, even for those firms that have cut or reduce expenses in a particular year.

I define industry following Fama and French (1997) approach using four-digit SIC codes to assign firms to 48 industries. The four variables, industry R&D intensity, renewal ratio, value added and concentration, were computed using the 48 industries. All of this ratios were also computed year by year, despite their relatively little time variation. The computation was done before applying the sample selection criteria, namely size and permanence criteria.

Regarding the renewal ratio I can have some problems because I use the number of new firms by year by industry and the number of disappearing firms. All this information comes from Compustat file. We can always think that probably the appearance in file is slower that the disappearance, comparing with the real beginning or end of business. This ratio can proxy for future industry growth.

The variable, industry concentration is defined by the percentage of sales in industry and by year, that comes from the 30% of biggest corporations. It is a proxy for the competition intensity.

The variables that proxy for industry value added will differentiate industries with different prevailing activities, like: based on service; trading activities, manufacturing, etc. In any case this proxy have some imperfections because we don´t have available the raw material cost. This variable is related with the business demand side of funds and I expect a positive influence in the probability of shifting to an unlevered position.

Leverage and Macroeconomic Conditions

Gertler and Gilchrist (1993) show that subsequent to recessions induced by monetary contractions, aggregate net debt issues increase for large firms but remain stable for small firms. During expansions, stock prices go up and expected bankruptcy costs go down, taxable income goes up, and cash increases and thus firms borrow more during expansions, following tradeoff

theory. Conversely if pecking order holds, is not clear if leverage should decline or increase. During expansions, investment increases and financing debt may be higher, thus debt should increase, but in good times operating cash flow increases and internal equity should raise.

In this study I have always remove year effects, introducing year dummies, in order to eliminate the influence of macroeconomic conditions in the behavior of the independent variables. Proceeding this way we ensure that our conclusions are timeless.

D. Methodology

I test if all equity firms are constrained by debt capacity and facing this situation, they abstain from issuing debt for their capital structure. The variables used to test this hypothesis are: age, size, a dummy for negative EBITDA and a dummy defining if the firm is a start-up. Age, size and the dummy start-up, proxy mainly for asymmetric information. Asymmetric information problem can be more severe with debt in small and young firms. Size can also create barriers to debt issue, due to transaction costs. If the firm presents negative EBITDA, shows limited capacity to repay principal and interest to bondholders. Thus this low profitability situation can work also as a barrier to debt issue.

In the other hand, if the firm has a good operating performance and show a positive financing deficit[21], is likely to become unlevered due to the tendency of managers to maintain or delay the exit of funds, accelerating equity growth. In this situation is expected that managers pay existing debt, total or partially, reserving debt capacity.

The use of funds can determine financial needs and alternative sources, external or internal financing. The determinants of funds come from the investment side and working capital needs. Firms have different business structures, different strategies and positioning, are located in very specific industries and all of these characteristics implies a different asset structure. The needs of external finance will be determined mainly by new investments either in fixed assets or in working capital together with the profit level. If the needs grow quickly, CFO's, according to the pecking order theory, will use internal finance first and in a second step financial debt. In consequence, if the firm was not, becomes levered. So the rate of assets increase is crucial, because the firm even showing good performance can be obliged to use external finance. Conversely, firms working with low days sales outstanding (DSO), low levels of inventories

[21] Financing deficit = Operating activities, net cash-flow - Capital expenditures - Acquisitions

and not capital intensive, can increase their business having a lower impact in financing needs. Increasing business implies cash flow production and together creates favorable conditions to increase the likelihood of internal funds to be enough, reducing the demand of external financing.

If the needs of funds are offset by internal cash-flow and there are not any financing deficit, the CFO's in the first moment can distribute special dividends or not, but his problem, depending of business strategy, is always what to do with the excess cash. One possibility is to invest in short term or long term investments in a kind of reserve to bad times or for future investments, distribute some money to shareholders and maintaining some debt in capital structure. Another possibility is to cancel all its liabilities, whether to invest certain amounts in short or long term investments and to distribute some money for shareholders. In this situation the firm is also apparently wasting money, not using debt to minimize income taxes, but it can be understandable is the shareholders have not any better chance to invest their money.

The level of risk can also be an explanation to the absence of debt, since the presence of debt increases the bankruptcy costs. I follow somehow the idea that total risk has two components or two origins: assets and debt. If we start with a moderate risk of assets, the firm can use some debt in its capital structure, increasing its value with tax shields according to Modigliani and Miller and trade-off theory predictions. If firm increases the level of risk in its assets, the presence of debt may become not optimal and unwanted. In this study two variables are used as proxies for risk to test this hypothesis: standard deviation of assets and number of segments.

Other hypothesis can be posed to justify the unlevered capital structure: growth opportunities, market timing, marginal tax rates and managers overconfidence. Bankruptcy can be costly for these firms having future growth. On the other hand, we can argue that the unlevered position can be consequence of misevaluation and the attempt to time the market. Additionally, some firms cannot have tax incentives to use debt, or managers can perceive a positive feedback from the market. In the opposite situation we can argue that some strategic decisions like mergers and acquisitions can be the cause to relevant changes in capital structure.

A Logit regression model is used to examine the relationship between the probability of a firm's switch, **S**, from levered to unlevered, conditional on a vector of explanatory independent variables, **X**. This relationship can be expressed as:

$$\Pr\{s = 1|x\} = \frac{1}{1+e^{-(\alpha+\beta'x)}}$$

Where both **α** and **β′** are parameters estimated from the sample data. Firstly I try to find out which variables are statistically significant and what is its contribution to model's goodness of fit. In a second step I use together the relevant variables and X, is a vector of explanatory variables, include measures of profitability, risk, financial constraints, growth opportunities, taxes and others.

Regarding the data and econometric methods we have a sample of 77,442 firms year from 1987 to 2009. We have an unbalanced panel data with 23 years data but where the number of years by firm is variable, ranging from 3 to 23 years. Some of the firms don't change their situation, regarding their status in terms of leverage classification. Most of them show some consistence over time, leading us to the conclusion that there is some correlation in time series in the dependent variable. In this situation it makes sense to use the fixed-effects model to analyze and search the variables that can be important to estimate the probability that one firm become unlevered. We arrive to the same conclusion doing Hausman test which reject the random effects model. The panel data analysis makes possible to capture the variables behavior either in time series either in cross section. Among the three possible models, Pooled Regression, Random Effects and Fixed Effects model, we considered appropriate the Fixed Effects model[22]. Using the firm Fixed Effects in our Logit regression, almost 50% observations dropped because of all positive or all negative outcomes[23] which is understandable due to a certain persistence of leverage classification. Some firms during the period always have shown 0 or 1 in the dependent variable, maintaining their situation in terms of classification ZNETD or non ZNETD. Firms that have not changed their situation, becomes impossible to estimate the

[22] The Pooled Regression assumes either the intercept either the regressors don´t change among firms. The Fixed Effects model assumes that the regressors are constant across firms, but the intercepts are different for each one. In this case there are not time effects in the regression but only individual effects. These effects may be observable or not and are usually correlated with regressors, are endogenous to the model. The Random Effects model assumes that if there are effects that are not part of the model, these are exogenous and uncorrelated with the regressors. In order to choose between Random and Pooled we should use the Breusch and Pagan (1980) test and in case we reject Pooled we have to use Hausman (1978) test to choose between Random and Fixed Effects. In Logit models, using STATA and when we fit a random-effects model, the output includes the statistics labeled (rho) which is the proportion of the total variance contributed by the panel-level variance component. When rho is zero, the panel variance component is unimportant and the panel estimator is no different from the pooled estimator. It was not the case with our model.

[23] A standard Logit panel data package can be used with the dependent variable taking the value one if y_{it} switches from 0 to 1 and zero if y_{it} switches from 1 to 0.

specific intercept. This smaller sample, keeping only 47,554 observations is different because includes only firms that have switched status in some year during the period of time.

E. Summary Statistics

The zero net debt firms (ZNETD) are smaller and younger than levered firms (see Table II), have higher assets' volatility and are less diversified. On average ZNETD are less profitable, but show a higher Tobin's Q, more than 1 unit. The marginal tax rate is almost 30% in levered firms and near 24% in ZNETD. In figure 2 we can see why average profitability can appear with surprising values. Profitability seems to have a nonlinear relation with ZNETD status.

The incidence of equity issues is much higher in ZNETD, revealing some evidence that these firms use more often equity as source of external financing. On average ZNETD show in the last two years much higher abnormal returns, comparing with value weighted index, 24.8% against 6.8%.

In terms of assets' structure, levered firms have a higher percentage in all main asset categories: property, plant and equipment, intangibles, receivables and inventories. Conversely, ZNETD have a very high percentage of cash and short term investments in their assets, as Strebulaev and Yang (2006) also report. Already Faulkender (2002) have also documented that cash holdings decrease with size and can be related with financial distress, information asymmetry and agency costs.

The phenomenon's persistence of debt aversion is not so ephemeral as one might think, but has some transitory pattern. After five years, the results are in line with Minton and Wruck (2001) considering that our concept of ZNETD is similar to their low leverage firms. After ten years still holds in this situation 31% of firms that have choose to be a ZNETD at the beginning. This could mean that many firms in a certain year are constrained in their capital structure, result of limitations of various types to borrowings or they are in a waiting period, in which they are gaining debt capacity. However, ZNETD firms show greater stability in their condition, only 35% ceased to be after two years and 20.5% of these, have increased debt and become levered. A significant fraction of all-equity firms, more than 50% after ten years have disappeared from our sample for a wide variety of causes including: bankruptcy, mergers and acquisitions, inactivity, significant assets reduction below $10m.

III – Empirical Tests and Results

A. Searching for relevant factors

In our logit model ZNETD is the dependent variable assuming zero for levered and one for unlevered firm. When using the fixed-effects model, the need to estimate a firm dummy lead to the rejection of many observations. The remaining sample keeps only with those firms that in any year have change from levered to unlevered or the opposite. Thus all fixed-effects regressions have much less observations, about 30 000 observations and 3 200 firms less, having the advantage as stated in Petersen (2008) of presenting unbiased standard errors. The residuals may be also correlated across time. To avoid this problem we introduce dummies to control for year effects. Table III shows regressions with robust standard errors, controlling for correlation across firms and across time. In Table III we present twenty one variables that are defined in appendix A and can contribute to the probability of a firm become unlevered. I have run a univariate regression for each one separately. Each line in Table III represents a different regression with its pseudo R^2 and remaining information.

Volatility

Volatility[24] was used in previous studies in capital structure. Bradley (1984) has arrived to the conclusion that there is a negative relation with leverage. Titman and Wessels (1988) have included in their study a volatility measure that is the standard deviation of the percentage change in operating income and have also obtained a negative relation, although with coefficients not statistically significant at conventional significance levels. Friend and Lang (1988) have also concluded for a negative relation using as proxy for risk, the standard deviation of earnings. Kim and Sorensen (1986) have used a measure that is the coefficient of variation in EBIT as a proxy for business risk. Surprisingly they have observed a positive relation with leverage[25]. Kester (1986) have used as a proxy for the volatility or risk, the sum of square residuals obtained from regressions for each firm in the five preceding years. The results show a negative sign but the coefficients are not statistically significant. More recently, Frank and Goyal (2009) have used the variance of stock returns as explanatory variable to the leverage ratio in a wide sample of US firms, arriving to a contradictory conclusion. The results show a

[24] With quite different measures: Bradley for example has used a measure which name is variability in firm value. This measure is the standard deviation of the first difference in annual earnings scaled by the average value of the firm's total assets over the period.
[25] This study involves only 168 firms in three years.

negative correlation with leverage, but the percentage of regressions in which this factor has the negative sign is about 30%. I follow bankruptcy literature, mainly Hillegeist et al. (2004) in risk measure definition and the results confirm that more volatile assets increase the probability of a firm become unlevered. More assets volatility means more costs of financial distress which, according to trade-off theory discourages debt issues. Assets volatility has, in all regressions, a positive sign, being the most important factor, responsible for a pseudo R^2 about 6% in a univariate regression with firm fixed effects and time effects. These results are partially inconsistent with Gardner and Trzcinka (1992). They have obtained, using the standard deviation of stock returns and Beta in the same logit regression, opposite signs for these two variables[26]. They recognize that the two variables are collinear and when run separately they have a positive[27] sign in forecasting leverage.

My results show that unlevered firms recognize in risk and indirectly in the financial distress costs the main raison to avoid debt from their capital structure. This evidence is nothing new in the context of trade-off theory predictions. However makes clear that is not true the argument that this theory doesn't explain why some profitable firms have low debt or even has no debt. The second conclusion is that this special perception of risk and their effects in firm value can lead firms to this extreme debt aversion. This evidence comes from the interpretation of odds ratio for standard deviation of assets (1,032518). This means that for each 1% increase in volatility, the probability of become unlevered increases 3,2%, which means three times more. An increase about 31% volatility lead to 100% probability of become unlevered. It is important to stress that the coefficient in Table III come from a regression with firm fixed effects and year effects, which means that all other unobserved factors are taken in consideration. It is also exempt of time series dependence. Including additional variables in the regression (see Table V), the coefficient reduces but maintains the odds ratio close to 3%, leading to the conclusion that risk doesn't lose importance even in the presence of other variables. To confirm the contribution of each variable in interaction with others we lose 4,6% in pseudo R^2 when o drop in global regression the standard deviation of assets.

The number of segments is the second variable that proxies for risk. Its sign is negative and confirms the conjecture that diversification reduces risk. In the logit model, the presence of this variable reduces the probability of become unlevered. By adding new segments, firms reduce

[26] It's important to note that their measure of risk includes the effects of leverage, when firms are levered.
[27] In Gardner and Trzcinka the dependent variable is zero for unlevered and one for levered.

operating risk and create favorable conditions to debt issue. On the other hand, new business means additional financial needs. Following pecking order theory, we expect that firms issue debt first. One more segment decreases the probability of become unlevered by 5,7%.

Scale

The second most important variable is the ratio of sales over book assets, without cash and short term investments[28]. In table III, considering the univariate regression, with firm fixed effects and time effects, we got a pseudo R^2 of 4,2% which means 3,1% because time effect accounts for 1,1%. In table V, in interaction with other variables, the same importance can be extracted. This variable causes an increase in pseudo R^2 of 4,2%. Without this variable in regression we lose 3,22%. However the coefficient of this variable gains importance in interaction with other variables, showing always a positive sign and statistical significance at conventional levels. In a within firm regression we can interpret the coefficient of this variable as the impact in the probability of become unlevered by the ability to do more business with the same assets.

The quantity of business or the level of activity that a firm can reach with a certain quantity of assets, other things equal, is quite important in the probability of become unlevered. First the demand of funds, either capital expenditures or working capital, will be lower. Second, more business is usually correlated with increasing profitability. The two situations altogether will create favorable conditions to stay in the first step of pecking order theory, using only funds generated internally. This variable, proxies for the demand side of funds. When it increases, it means low demand and firms are likely to avoid any use of additional debt and even the progressively extinction of existing debt. The economic significance of the coefficient in univariate regression says that one rotation of assets, causes an increase in the probability of become unlevered over than 115%.

Positive financing deficit

Including a dummy for firm year with positive financing deficit[29] we can observe the impact in the probability of becoming unlevered induced by this high free cash flow level. The results show a positive sign either in the univariate regression or together with other variables. The

[28] In the definition of this variable we withdraw cash and short term investments. The zero net debt firms carry much higher amounts of cash that could distort the significance of this ratio.

[29] Kayhan and Titman (2007) use a similar variable in their model which tries to find explanations to changes in capital structure.

coefficient in Table III and Table V doesn't change too much. This variable belongs to the category of financial constraints, or rather their absence. The coefficient and sign corroborate also with the idea that the existence of positive financing deficit in a firm year increases the probability to become unlevered in the same year with a probability about 127%. This variable is approaching the balance between demand and funds supply. This variable shows some positive correlation with profitability. When included together with other variables, represents the marginal contribution to the probability of one firm that has a positive financial deficit. The variable is operating cash-flow net of investments in fixed assets and acquisitions. We have not included dividends because they are mathematically related with dependent variable, and I prefer to keep them exogenous.

This finding is not in accordance with Jensen (1986) predictions. Managers of some of these firms ignore the role of debt in motivating organization efficiency. However, my findings are consistent with pecking order suggestions; firms with positive free cash flow should reduce their leverage. Kayan and Titman (2007) have used a similar variable and have also arrived to the conclusion that their dummy for negative deficit (firms that raise external capital) is significant and has a positive sign in a regression for leverage increase.

Tobin's Q

Market-to-book is one of the most used variables, in capital structure studies. It proxies for growth opportunities. Some authors have used other measures but have arrived to the same conclusion. The sign obtained in all my regressions is positive and always statistically significant at conventional levels. It is consistent with previous studies in capital structure literature, using a similar measure Tobin's Q (market to book ratio of total assets) among others; Rajan and Zingales (1995), Booth et al. (2001) and Huang and Song (2006). Usually the coefficient obtained, regressing leverage in linear models, against market-to-book is negative. They are also in accordance with Gardner and Trzcinka (1992) in an all-equity firm research, supporting the arguments of Myers (1977) that bondholders lend less to firms with high growth options. Conversely, assets-in-place should be financed with more debt than growth opportunities.

It's important to stress that when taking out market-to-book in a global regression Table V, we lose much less in terms of pseudo R^2 than the specific R^2 in the univariate regression. There is some correlation with another variable that is the abnormal return. So we can conclude that

both variables capture partially the same effect. This effect is likely more related with market acceptance and positive recognition of conservative capital structures ratios. The economic significance of one unit increase in Tobin's Q ratio represents an increase in the probability of become unlevered about 32% in univariate regression.

Tangibility

In Table III, we can see the univariate regressions using assets structure: Intangibles/Total Assets, Property Plant and Equipment/Total Assets, Receivables/Total Assets, Inventories/Total Assets and Cash/Total Assets. They present the expected signs and a pseudo R^2 very high. This figures can lead to the conclusion that the probability of become unlevered is highly determined by the absence of fixed assets and intangibles[30]. This also implies that firms with low receivables and low inventories are more likely to be unlevered. This is understandable and is in line with the conclusions about economies of scale in the use of funds.

Cash represents an important fraction of assets in all-equity firms, (see Table II) also reported by Strebulaev (2006) but cash can't be considered the cause, the explanation, to the unlevered status. High levels of cash can be viewed as a characteristic of financially constrained firm, see Acharya et.al (2007). Cash is essential to operate without debt financing. So this apparent excess of cash over total assets is also consequence of firm decision or circumstances that lead to the no issuance of debt. I consider cash as the other face of the same coin. What I'm proposing to explain is what has contributed to this situation of absence of debt and high level of cash. It is important to stress also that cash is considered in the construction of dependent variable, that is: Short Term Debt plus Long Term Debt minus Cash and Short Term Investments.

Using variables related with asset structure in the context of all-equity firms, like Fixed Assets over Book Assets we can arrive to wrong conclusions as can be demonstrated in Table IV. When including Property Plant and Equipment/Total Book Assets, Intangibles/Total Book Assets, Receivables/Total Book Assets or Inventories/Total Book Assets, as regressors, using a within regression (fixed-effects), in the presence of Cash/Total Book Assets, we obtain surprising results. Including separately the four variables representing the asset structure (Fixed assets, Intangibles, Receivables, Inventories) together with Cash, we don't have any increase in

[30] Intangibles are dominated by goodwill coming from mergers and acquisitions, approximately 75%

the pseudo R^2. So, is the increasing denominator, influenced by cash that creates the negative sign in Table III regressions in this four variables and not the numerator evolution itself.

Asset structure in each of these four variables can be a source of explanation for different capital structure ratios, but their variation has not explanation power to the absence of debt. Even that the level of fixed assets can be correlated with leverage in cross section, in fixed effects regression, this variable does not influence the likelihood of a firm come to issue debt. In order to confirm these results, we have tried to use another variable, corrected for cash, which is tangibility without cash (Tang-assetsoutcash). Table III shows that to coefficient to this variable is not statistically significant at conventional levels. However this characteristic may be included in the firm dummy. In other words, if firms don't change significantly their asset structure, except cash, this variables don't contribute to the probability of become unlevered. So, it's why we can argue that Fixed Assets, Intangibles, Inventories and Receivables don't have implications in the probability of become unlevered. The apparent contribution is completely absorbed by the increasing presence of cash.

Rate of depreciation

Kim and Sorensen (1986) have used the average rate of depreciation in their study. I use the inverse (Inv-speeddep), on order to get a better economic interpretation to the coefficient. I arrive to the same conclusion: the increase in the average depreciation period decreases the probability of become unlevered. Long life assets preserve value and suffer less in case of financial distress, having lower agency costs. Each additional year in terms of average economic life, increases the probability of becoming levered almost 3%.

Equity Issues

The variable Equity issues, in the regression Table III, has a positive coefficient and a pseudo R^2 of 1,3%[31]. This is a dummy variable and its coefficient gives the impact in the likelihood, in case the firm has issued new equity and this increase was for higher values than debt increase. So, the variable tries to capture the change in firm status motivated by managers' decision. Considering that unlevered firms have higher Tobin's Q, this can corroborate with the arguments of Baker and Wurgler (2002). However I'm not saying that unlevered firms are, or

[31] It's a regression with year effects. Year effects have a pseudo R^2 of 1,1%.

have been attempting to time the equity market. The propose of this variable is to check if the shift from a levered capital structure is related with seasoned equity offerings (SEO's).

Without any relation with other variables we can conclude that the existence of a positive net equity issue (new shares minus share repurchase) in a firm year by an amount greater than the net debt increase, give us a percentage near 100% likelihood, that the firm will become unlevered. This change comes from a managerial decision, nor resulting from prior profitability, does neither dictate from financial constraints. Fama and French (2005) show that equity decisions often violate the pecking order and equity issuers are not typically under duress. Thus the changing to all-equity, can be consequence of an attempt to time the market, managers overconfidence and exceptional risk perception, or other motivation not observed.

In Table V, when we compare the goodness of fit including additional regressors, we are controlling for the other effects. In this situation I can say that the change in capital structure to all-equity, captured by this variable, is basically the attempt to time the market. The increase in pseudo R^2 resulting from the inclusion of this variable is very small, so that the explanatory power of this variable is unimportant.

Managers overconfidence

Hovakimian et al. (2001) examine firm financing choices and find that more profitable firms have on average lower leverage ratios. In addition they also find that firms with higher current stock prices (relative to their past stock prices) are more likely to issue equity rather than debt and repurchase debt rather than equity. I use a variable that is not the same of Hovakimian (2001). The variable is the excess return during last two years, comparing with value weighted index. However we can see some correlation with Tobin's Q, giving the idea that when firms realize better growth opportunities, also experience abnormal returns and both increase the probability of become unlevered. Hovakimian et al. (2001), find that high stock returns in the year of and the year before the transaction are associated with the issuance of equity, rather than debt and the retirement of debt rather the repurchase of equity. The univariate regression in Table III, show that the coefficient is statistically significant and the sign is in accordance with the predictions of previous studies. Although the pseudo R^2 is small, only 0,8% considering that year effects represent 1,1%. Without interference of any other effect we can say that market assigns value and send a positive sign to managers, creating an incentive to the low leverage policy. But it remains to investigate whether the presence of other factors the conclusion

remains valid. We can hypothesize that the excess return is correlated with other variables, more determinants to the change in capital structure. I think it can be the case, because in the global regression, the coefficient loose statistical significance at conventional levels.

Financial constraints

I use several variables in order to test my conjecture that all-equity firms can be facing financial constraints: age, natural logarithmic of booked assets, a dummy for two years of negative EBITDA and a dummy for start-up firms. The sign I obtain for log of assets is consistent with the financial constraint hypothesis. The negative sign for log of assets means that size can work as a barrier to the issuance of debt, due to asymmetric information or due to transaction costs. The increase in size decreases the probability of become unlevered. According to Hadlock and Pierce (2010) findings, if all-equity firms are financially constrained, I should obtain the same sign for age, but it was not the case.

The sign for age is positive, meaning that in a within regression, where there are only firms that have change from one status to the other, firms are likely to change from levered to unlevered, when they become older. Nevertheless, in my opinion, it does not mean that younger firms are likely to be levered. In a pooled and univariate regression[32], including firms that have not change their status of levered or unlevered[33], using clustered standard errors by firm, the sign is negative. This apparent inconsistency can be consequence of differences between the two samples, or can be an indication that not all equity firms are financially constrained. Younger firms can be constrained and face difficulties in the issuance of debt and some of them, maintain in the sample the all-equity status all the time. This is consistent with Hadlock and Pierce (2010) and with the results coming from my pooled regression. When I drop these firms always all-equity in sample, I keep with those firms that have change from one situation to another and the increase in age, following a pecking order style, can lead to the increase of equity, based on retained earnings of profitable firms.

In addition I define a dummy to identify firms with the current and previous year, with negative EBITDA, which can proxy for a limited ability to borrow. The sign is the expected and the coefficient is significant although the small pseudo R^2.

[32] Omitted by space limitations
[33] It means all sample.

Another variable is a dummy to define start-up firms which can face severe agency costs of debt combined with high growth opportunities. The positive sign obtained in regressions, confirms that this type of firms face great difficulties in access to debt and probably it's why these firms are sometimes candidates to venture capital operations. The odds ratio means that being start-up, the probability of living without debt is greater than 52%. Including this variable with the others in Table V, this likelihood increases.

Profitability

Harris and Raviv (1991) document some conflicting findings about the relation between profitability and leverage. This is not surprising, since there are conflicting theoretical predictions on the effects of profitability on leverage. Meyers and Majluf (1984) predict a negative relationship, because firms will prefer to finance with internal funds rather than debt. Jensen (1986) predicts a positive one if the market for corporate control is effective and forces firms to commit to paying out cash by levering up. If it is ineffective, however managers of profitable firms prefer to avoid the disciplinary role of debt, which would lead to a negative correlation between profitability and debt.

Profitable firms face lower expected costs of financial distress and on the supply side, suppliers should be more willing to lend to firms with better profitability, due to the strong correlation with cash-flow. On the other hand, following trade-off theory, profitable firms usually find interest tax shields more valuable. Thus from tax and bankruptcy cost perspectives the prediction is that profitable firms will use more debt. Early studies as Friend and Lang (1988), Kester[34] (1986), Titman and Wessels (1988) using similar measures, have found a negative relation with profitability and leverage. Rajan and Zingales (1995) also confirmed the negative relation with leverage, with the exception of Germany and France where this relation does not exist. Furthermore, the negative influence on leverage seems to be quite different among firms, becoming stronger as firm size increases. More recently Kayhan and Titman (2007) argue that leverage and profitability are negatively related because firms passively accumulate profits. Frank and Goyal (2009) have also confirmed the negative relation with leverage.

In some of mentioned studies, profitability and leverage are measured as sample averages. In other studies, profitability is a cumulative measure during a certain horizon of time. I use a

[34] Focusing in a particular year 1982

logit model where profitability is a contemporaneous variable that can influence positively the probability of shift from levered to unlevered. The influence of this variable is systematically positive and statistically significant, in line with capital structure studies. In terms of pseudo R^2, the explanatory power is relatively small. Even if is true that firms accumulate profits along their lives and in consequence, reduce leverage, the transition from levered status to unlevered, may not be only consequence of current year. The remaining question is which horizon should we measure or which is the most appropriate to capture the influence of past profitability. It's why I decide to maintain profitability as control variable and introduce others that can account for additional marginal effects. The change from levered to unlevered is probably more a discrete than a continuous decision. On the other hand, due to different effects of profitability, the influence in the likelihood may not be linear, but have a U shape as we can see in figure 2. Introducing variables such as, two years of negative EBITDA and a dummy for positive financing deficit, which are variables that depend largely form profitability, we can see the behavior of this firms concerning the probability of becoming unlevered.

Marginal tax

Huang and Song (2006), using the average tax rate to measure the tax effect on leverage, have concluded for a negative influence from tax.

My results show the same relationship, contrary to pioneering studies and theories of capital structure. There is a positive relation with the probability of becoming unlevered, meaning that a marginal tax rate increase does not influence firms to the use of debt. Conversely, firms that face higher marginal tax rates are likely to pay debt, retained internal funds or issue equity and become unlevered. The positive relation is not surprising, considering the same sign existing with profitability and the significant correlation between each other. The pseudo R^2 due to marginal tax rate is near 0,3% in Table III. Similar figure we obtain in regressions in Table V. These findings are consistent with the intuition that this variable is also capturing those firms that change from levered to unlevered consequence of profit accumulation, which don't care about taxes that are paying. On the other hand, tax shields are not an important factor to explain the shift from levered to unlevered situation.

This is not a surprise, as Graham (2000) had concluded; a typical firm could double tax benefits by issuing debt until the marginal tax benefit begins to decline. He also has observed that paradoxically, large, liquid, profitable firms with low expected distress costs use debt

conservatively. On the other hand, Blouin et al. (2010) had to consider distress costs and other variables to reconcile current capital structures.

Acquisitions

Mergers and acquisitions, in case of cash payment can create large financing needs, surpassing annual retained earnings. This kind of operations may be one of the several discrete situations responsible for debt issuance. The results support our conjecture and confirm the negative relation with the probability of becoming unlevered. The odds ratio (Table III) means that a firm that has payments in its cash flow statement due to acquisitions, is likely to decrease by 36% the probability of becoming unlevered. The pseudo R^2 for this variables in the univariate regression with fixed effects and time effects is small (0,5% if we don't consider time effects), which mean that acquisitions can be one cause among others, to the shift from unlevered to levered position.

Industry factors

This phenomenon of low leverage is quite general and exists in all industries. In Table VI, comparing regression 2 with regression 1 we see an increase of 2,6% in pseudo R2, due to industry fixed-effects. At the same time, the number of statistically significant dummies[35], at 5% tolerance level, is 25 out of 39.

In Table VI, regression 3, I have introduced five industry factors which give some contribution to the probability of capital structure change. It's important to stress that in the presence of these factors: industry concentration, R&D intensity, renewal ratio, value added, the number of statistically significant dummies have decreased to 13. When we removed industry dummies and we kept industry factors, in regression 4, the pseudo R^2 only has decreased by 0,23%. The above evolution in pseudo R^2 shows that these factors capture the main industry effect on the probability.

The coefficient for industry concentration is positive and statistically significant, which means that in industries dominated by big firms, the probability of becoming unlevered increases. This trend can be interpreted in two directions. First, small firms with low market share have more difficulties to issue debt. Second, following pecking order, big firms with large

[35] I have followed Fama and French (1997) using 48 industries

market share have more possibilities to accumulate profits and paying debt, although they may show lower asymmetric information problems.

The coefficient for R&D is the most important and its positive sign is consistent with previous studies, in capital structure literature[36].

In unreported data, the industry renewal ratio is statistically significant without removing year effects, and in this case its coefficient is negative. When we remove year effects (Table VI), it ceased to be significant and is not statistically different from zero. A high rate of new entrants and firms leaving in an industry may be an indication of instability and changeability. However can also be a sign of future market growth. Conversely, when this rate is low, may indicate industry consolidation if the ratio is determined by one of their plots; the number of firms leaving the industry. From one side it can influence positively the unlevered financial structure, from the other, can influence negatively.

The coefficient for industry value added is reliably positive, as expected. Industries with low capital intensive have less financing needs. Their business is not dependent from assets increase. Business is more dependent from labour force. The results confirm the evidence that service based industries, are likely to have more percentage of unlevered firms than manufacturing industries.

IV – Robustness check and additional tests

In previous section we found that a large number of variables, showing different influences, are statistically significant, such as some proxies for financial constraints, risk and others that show unlevered firms positively correlated with free cash-flow and profitability. This situation confirms my conjecture that some unlevered firms are under duress, more specifically facing debt constraints and others probably have chosen and accept this financial structure, convinced that running their business without debt or with low debt, is the best decision. I can test this hypothesis in another way, using a measure of financial frictions to separate this two hypothetically sub-samples. I follow Fama and French (2002) considering that non dividend

[36] This variable has been used in capital structure studies, as a firm characteristic, not at industry level, as far as I know. Harris and Raviv (1991), Titman and Wessels (1988) have documented this negative relation between leverage and R&D.

payers are financially constrained[37]. In Table VII, I run alternative logit regressions which dependent variable is one if the firm is unlevered and if it pays (not pays dividends). In each regression I have dropped the opposite sub-sample, i.e. in regression column 1 table VII, I have dropped unlevered firms that don't pay dividends.

The two regressions in Table VII, after splitting Zero Net Debt firms between payers and nonpayers, show interesting results, confirming the idea that among unlevered firms there are two different types. In the first regression, the coefficient for TwoNegEbitda is not statistically significant and the coefficient for Ln(assets) have changed its sign to positive. This is consistent with the intuition that dividend payers are not financially constrained. The positive sign for Ln(assets) show also that size is not a barrier to issue debt, but rather an effect that favors the profit accumulation. In line with this interpretation, is the increase for dividend payers, in the coefficient for the variable dummy positive financing deficit (PosFinDef). The coefficient for dummy acquisitions shows also differences that must be highlighted and consistent with the conjecture that nonpayers are under duress. Only in dividend payers, the coefficient is statistically significant and higher than in regressions Table V.

On the other hand, the associated probability with one year increase in the firm age, in the two regressions is quite different. This likelihood is 4% for payers, instead of 8% in the case of nonpayers, which is consistent with the intuition that the nonpayer status come before payer.

It is particularly interesting also, the behavior of Tobin's Q, showing its higher importance in the case of dividend payers. My interpretation is that, these firms are more stable and mature firms, where growth opportunities are more valuable. Conversely nonpayers, or some of them, have more incertitude in their future business. One unity increase in this variable, have an impact of 46% in the probability of become unlevered for payers and only an impact of 17% for nonpayers. The variable TwoExReturn arises for payers with negative sign, contrary with my expectations and showing that a poor evaluation of the market can contribute positively to the probability of change from levered to unlevered.

The increase in pseudo R^2 comparing Table VII with Table V is also consistent with the interpretation that these two sub-samples, payers and nonpayers, are more homogeneous. However, these two types of firms have in common, the high perception of risk that is the main

[37] Fazzari et al. (1988) among many others, in financial constraints literature have used a scheme ranking firms based on their payout ratio and assign to the financially constrained (unconstrained) group those firms that are in the bottom (top) three deciles of annual payout distribution.

cause of unlevered financial structure. The odds ratio continues to show similar influence in the probability; 2,7% and 2,9% for each 1% increase in volatility.

V - Conclusions

In order to estimate the likelihood of a company becoming unlevered, we use variables that support a set of simple ideas. The probability of borrowing increases if more money is needed for current operations or even for strategic decisions and decreases if firm produces free cash-flow. The probability of borrowing decreases if the firm is not in a position to issue debt, consequence of severe asymmetric information problems or high agency costs of debt. The absence of tax incentives or positive market signs can also influence positively this probability.

I have tested several variables in order to evaluate this influence on the probability of shifting from levered to unlevered capital structure in a firm fixed effects and year effects regression. Risk is the most important and reliable factor influencing the zero debt policy. I use two proxies: the assets volatility and the number of segments. Both are statistically significant and have the expected signs showing a pseudo R^2 over 6%. Based on odds ratio of standard deviation of assets, I can conclude that other variables at their means, 1% increase in volatility, increases the probability of shifting to unlevered position by 3%. Giving that average volatility in ZNETD firms is 28% higher than overall average and with 30% standard deviation, is understandable why we find many firms without debt. This finding can be reconciled with trade-off theory if we take in consideration that debt is not the unique source for bankruptcy costs. If more risk means more bankruptcy costs and if risk has two sources: assets volatility and debt, the use of debt only increases the existing risk. Thus, even with a zero debt policy, the risk of assets can create a level of bankruptcy costs that make sub-optimal any debt increase. In favor of this interpretation the evidence that marginal tax rate is not important to explain debt aversion, showing an opposite sign. This finding is in accordance with some arguments coming from pecking order theory, that tax shields are not one of the first order issues on capital structure decisions.

The second most important factor are the economies of scale in the use of funds, leading to the conclusion that firms which are able to improve their business with lower assets, are likely to become unlevered. This variable proxies for demand side of funds and is consistent with an

industry variable that proxies for value added. The statistical significance of these two variables corroborate with higher presence of ZNETD firms in service based industries.

Financial constraint is the third main important factor influencing zero debt policy. I use several measures in this category. Some of them try to find barriers to debt issuance: Ln(assets), Age, TwoNegEbitda and a dummy for start-up firms. The odds ratios in a global regression show very expressive probability influence: 90% when firm has TwoNegEbitda or 230% when it is a start-up. The Ln(assets) presents the expected sign, but Age showing a positive sign, is in accordance with the opposite reason that justify the shift to a zero debt policy; the financing surplus. In a global regression the marginal effect of having a positive financing deficit influences the probability of becoming unlevered by 104%. These findings also agree with the U shape we have obtained, when analyzing the percentage of ZNETD firms by profitability levels.

In order to analyze the industry influence in zero debt policy, I have computed regressions using the same factors removing industry effects and the signs and statistically significance have not change. The industry effect is comparatively less important that above factors, representing about 2,5% in pseudo R^2. The main industry effect was captured using observed industry variables.

Following the above findings about financial constraints, I should draw an additional conjecture that is: the ZNETD firms are not a homogenous sub-sample. From one side the constrained firms and in another side the unconstrained ones, although both are showing a zero debt policy. I have tested this hypothesis following Fama French (2002) dividing firms using dividend paying criteria. The results show the evidence that in dividend payers and nonpayers regressions those variables that proxy for financial constraints have different signs. More interesting is the conclusion that risk is the link between these two types of firms that may have substantial differences.

Frank and Goyal (2003) had already concluded that smaller firms did not seem to follow the Pecking Order theory in defining its capital structure. Now we can better understand why there are other reasons that influence debt equity choice. Should also be noted that since the 1980s and 1990s much more small businesses appeared publicly traded, comparing to previous years. We found that the phenomenon of unlevered firms has more expression in the deciles of smaller firms, not being such a unique event for these companies. It also reveals a tendency to

spread to larger sizes over the period and has also more expression in service industries and more connected to technological side. When we split the unlevered firms in two sub-samples we can understand why this phenomenon is not an exclusive characteristic of small firms.

We believe we have contributed with this study to a better understanding of unlevered firms and simultaneously helped clarify the ambiguity in the literature in terms of profitability predictions in capital structure. The Trade-off theory predicts profitable firms should be more highly levered to offset corporate taxes. Also, in many asymmetric information models, is predicted that profitable firms will have higher leverage, but Titman and Wessels (1988) and Fama and French (2002) show that this is not a common finding. Fama and French (2002) note that the negative relationship between profits and leverage as we have found in high profitable firms is consistent with the pecking order theory. But the pecking order is not the only possible interpretation of the relationship between profits and leverage as we have tried to demonstrate. Fisher et al. (1989) analyze the effect of having fixed costs associated with actively adjusting leverage. When a firm earns profits, debt gets paid off and leverage falls automatically. Only periodically will large readjustments be made in order to capture the tax benefits of leverage. Empirically, most of the data reflects the process of paying off the debt by using profits. We have shown that this relationship between leverage and profitability in a broad cross-section, instead of being linear and negative, may be non-linear, positive in lower profitability levels and negative in higher profitability levels.

Finally it's important to stress that other variables may also influence firms with similar characteristics in terms of the variables used, to choose different capital structures. From those, there are variables related to corporate capital structure, agency costs and ownership control. However we think that to articulate and treating this kind of variables in a sample as wide as that which we have used, becomes almost impossible.

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Appendix A -Variables Description

Variables	Category -Proxy	Definition	Expect. Sign
Dummy positive financing deficit: **PosFinDef**	Cash Flow production – financial constraint	***FD = oancf-capx-aqc*** (items from Cash Flow Statement) Oancf =Operating Activities – Net Cash Flow; Capx=Capital Expenditures Aqc=Acquisitions (1)If FD is positive (0) otherwise	+
Standard deviation of assets: **SD-assets**	Market Risk	σ_E =Standard deviation of stock based on daily returns from CRSP V_E = Current market value of equity X = Face value of debt Standard deviation of assets= σ_A $\boldsymbol{\sigma_A=\sigma_E.V_E/(V_E+X)}$	+
Number of segments	Risk	Number of business units by market or by product	-
2years excess returns: **TwoExReturn**	Managers Overconfidence	Difference between Daily returns with dividends and Value-weighted market portfolio (excluding American Depository Receipts (ADRs)) NYSE/AMEX/Nasdaq.	+
Tobin's Q	Growth opportunities	(Book assets + Market value of equity-Book value of equity) /Book assets	+
EBIT–to-assets	Profitability	Earnings Before Interest and Taxes/Book Assets	+/-
Age: years database	Financial Constraints	Based on first year firm appears in Compustat file	-
Dummy 2years negative Ebitda: **TwoNegEbitda**	Financial distress/Financial Constraints	Dummy (1) if firm has last two years of negative ***ebitda***, (0) otherwise.	+
Dummy Start-up: **Start-up**	Financial Constraints	Dummy (1) if firm belongs to the lowest quintile of (sales/total assets) in their industry by year. Industry defined by 2 digit SIC code.	+
Ln (assets)	Financial Constraints	Natural logarithm of book assets	-
Dummy acquisitions: **Acquisitions**	Special opportunity to issue debt	Dummy (1) if firm in current year spent money in acquisitions, over than 1% of their assets ***(aqc/at>1%)***, (0) otherwise, using data from Cash Flow Statement.	-
Equity issues	Market timing	Dummy (1) if firm issued equity in current year and equity issued>debt issued, (0) otherwise. Equity issued is net of stock repurchases and debt issued is long term and short term and net repayments. All data come from Cash Flow Statement.	+
Sale-assetsoutcash	Scale	Sales/(Total book assets without cash and short term investments)	+
Marginal tax rate	Tax shields	Marginal tax rates[38] and when missing, were replaced by the ratio Income taxes/Pretax income ***(txt/pi)***	-
PPE-to-assets	Agency costs of debt	Property plant and equipment/(Total book assets without cash and short term investments)	-
Inv-speeddep	Agency costs of debt - Type of fixed assets	Property plant and equipment/ Annual depreciation: ***ppent/(dp-am)***. If **am** is missing, change to zero.	+
Industry concentration	Industry competition	Percentage of sales in each industry by year that correspond to 30% of biggest firms.	+
Industry renewal ratio	Industry characteristics –future growth	(Number of first year firms + Number of last year firms) / total firms in industry year Compustat databases	+/-
Industry value added	Value added	***gp/sale*** average by industry, by year.	+
Industry R&D intensity	Financial distress costs	By industry, by year, total R&D expenses divided by sales. If R&D is missing, were replaced by zero.	+

[38] The Marginal Tax Rates database was created by Dr. Jennifer Blouin (The Wharton School), Dr. John Core (Massachusetts Institute of Technology), and Dr. Wayne Guay (The Wharton School) using Capital IQ Compustat data. These rates correspond to the non-parametric marginal tax rates developed in the article: *Have the Tax Benefits of Debt Been Overestimated?* Journal of Financial Economics 2010, 98(2); 195-213.

Appendix B – Cash Flow Definitions

The codes below come from Compustat file in Wrds datasets.

OPERATING ACTIVITIES		**Codes:**
Income Before Extraordinary Items		IBC
Extraordinary Items and Discontinued Operations		XIDOC
Depreciation and Amortization		DPC
Deferred Taxes		TXDC
Equity in Net Loss (Earnings)		ESUBC
Sale of PP&E and Investments - (Gain) Loss		SPPIV
Funds from Operations - Other	TXBCO+FOPOX	FOPO
Excess Tax Benefit of Stock Options - Cash Flow Operating		TXBCO
Funds from Operations - Other excluding Option Tax Benefit		FOPOX
Accounts Receivable - Decrease (Increase)		RECCH
Inventory - Decrease (Increase)		INVCH
Accounts Payable and Accrued Liabilities - Increase (Decrease)		APALCH
Income Taxes - Accrued - Increase (Decrease)		TXACH
Assets and Liabilities - Other (Net Change)		AOLOCH
Operating Activities - Net Cash Flow	IBC + DPC + XIDOC + TXDC + ESUBC + SPPIV + FOPO + RECCH + INVCH + APALCH + TXACH + AOLOCH=	OANCF

Figure 1-The two types of unlevered firms

All-equity firms are firms that follow a zero debt policy. In this figure all-equity firms are the ZNETD firms and levered firms the opposite. ZNETD firms are firms that have negative net debt in a given year, i.e., (DLC+DLTT-CHE≤0). The numbers 1,2,3, represent movements from one condition to the other, motivated for different raisons. The movement 1 can be consequence of removing financial constraints. The movement 2 can be consequence of good performance combined with the tendency of managers to maintain or delay the exit of funds and following a pecking order style, may lead to accelerate equity growth to total or partial debt extinction. This equity growth can be influenced positively by high efficiency in the use of funds as well as consequence of market timing. The movement 3 can represent in influence of some strategic moves like diversification and more specifically acquisitions. Movements 2 and 3 can be caused also by changes in risk perception and changes in costs of financial distress.

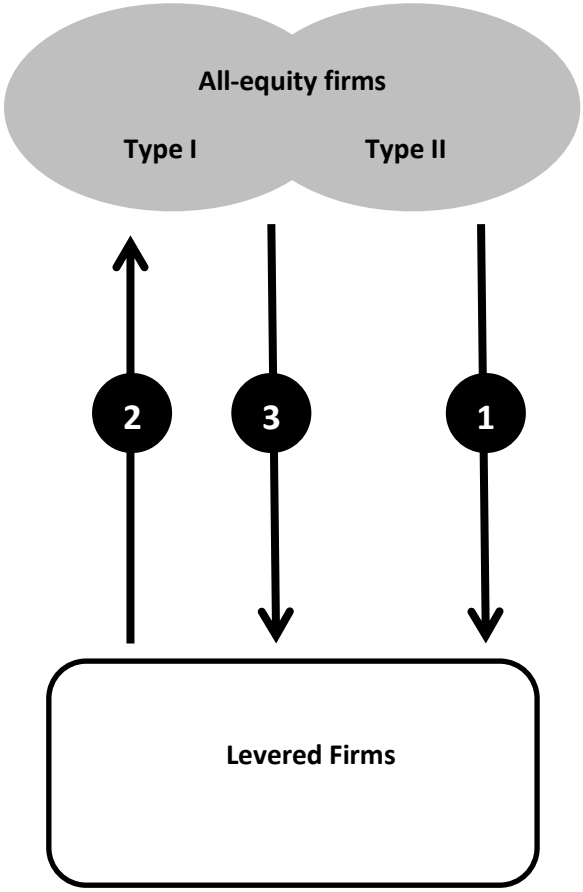

Figure 2 – ZNETD frequency and dividend payers by profitability vigintiles

In this figure, firms are distributed over 20 profitability vigintiles. In each vigintile is represented the percentage of ZNETD firms and the percentage dividend paying firms. ZNETD firms are firms that have no positive net debt in a given year, i.e., (DLC+DLTT-CHE≤0). Profitability is defined by EBIT over Total Book Assets. The profitability levels representing 20 equal number of firms are arbitrary.

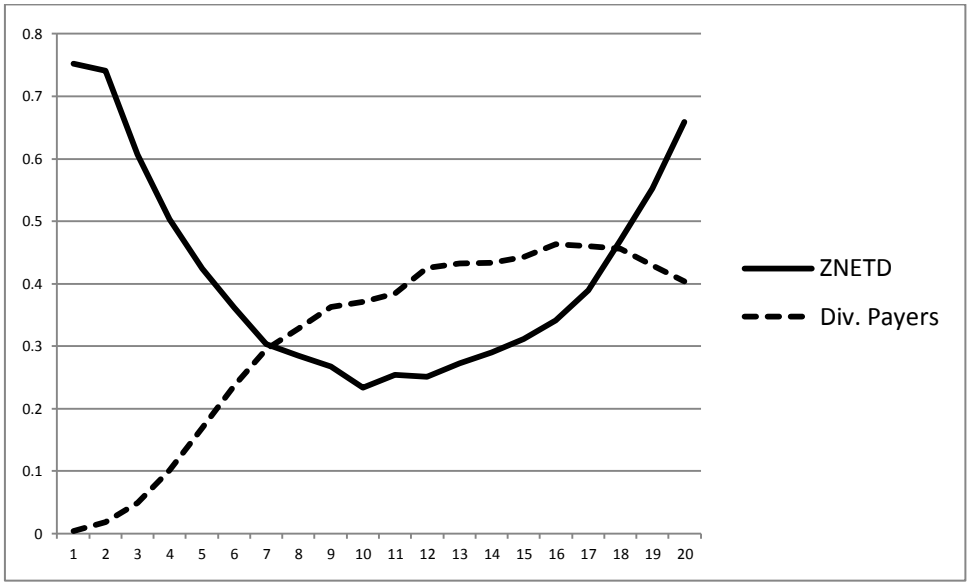

Table I - Frequency of Zero-Leverage Firms

ZD firms are firms that have zero long-term debt and short-term debt (DLC+DLTT=0). ZLTD firms are firms that have zero long-term debt (DLTT=0). ZNETD firms are firms that have negative net debt in a given year, i.e., (DLC+DLTT-CHE≤0). Columns 1 to 4 give the fraction of ZD, ZLTD and ZNETD firms relative to the total sample in each year. Column 5 presents the number N of firms of the whole sample in each year.

Fiscal Year	ZD	ZLTD	ZNETD	N
1987	7.1%	9.7%	31.0%	2700
1988	6.6%	9.2%	30.1%	2649
1989	7.5%	10.2%	29.6%	2636
1990	8.5%	11.0%	30.8%	2758
1991	9.4%	11.8%	34.2%	2957
1992	10.5%	13.3%	36.3%	3206
1993	11.8%	14.5%	37.8%	3395
1994	12.0%	14.7%	36.9%	3609
1995	12.5%	15.6%	37.8%	4018
1996	13.6%	16.5%	41.1%	4110
1997	14.3%	17.1%	42.3%	4040
1998	14.9%	18.2%	42.2%	4103
1999	14.4%	17.6%	41.8%	3872
2000	15.1%	18.1%	43.5%	3650
2001	16.0%	18.4%	44.7%	3475
2002	16.6%	19.1%	45.7%	3478
2003	18.4%	20.7%	47.8%	3475
2004	19.3%	21.3%	48.8%	3454
2005	20.2%	22.5%	49.8%	3426
2006	19.9%	22.1%	48.6%	3316
2007	19.1%	21.8%	48.1%	3186
2008	17.8%	21.3%	44.6%	3045
2009	19.3%	22.7%	49.0%	2884
Average	**14.1%**	**16.8%**	**41.0%**	
Total				**77442**

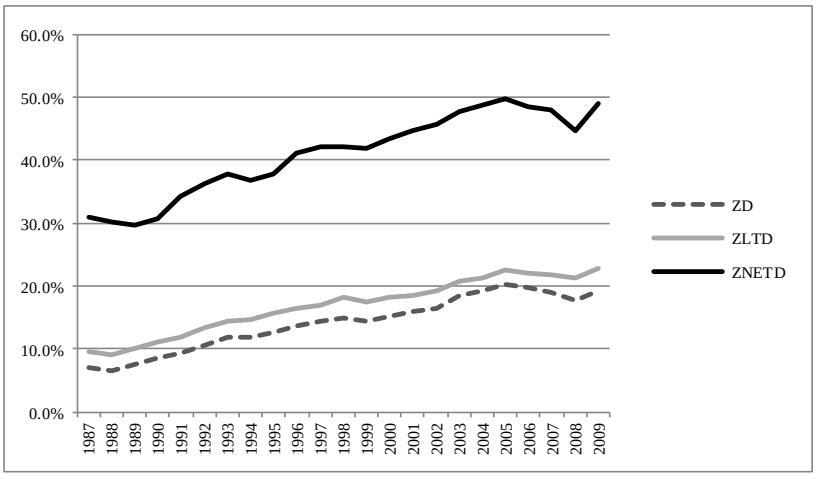

Table II – Summary statistics

This table shows summary statistics. ZNETD firms are firms that have negative net debt in a given year, i.e., (DLC+DLTT-CHE≤0). Data come from Compustat file from 1987 to 2009. Data was winsorized at 0,5% percentile each tail.

	NonZNETD			ZNETD			All Firms				
Variables	**Obs**	**Mean**	**Std. Dev.**	**Obs**	**Mean**	**Std. Dev.**	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
SD-assets	38053	34.973	21.405	28148	62.789	30.445	66201	46.800	29.096	5.355	177.717
Segments	45122	4.252	2.419	31749	3.723	2.144	76871	4.033	2.324	1	31
EBIT-to-assets	45421	0.058	0.176	32018	-0.011	0.287	77439	0.030	0.231	-1.711	0.463
Tobin's Q	41291	1.630	1.132	29670	2.738	2.362	70961	2.094	1.838	0.521	15.770
Ln(assets)	45423	6.095	1.997	32019	4.927	1.662	77442	5.612	1.952	-4.248	13.656
Age	45423	18.531	14.686	32019	12.969	10.993	77442	16.231	13.564	1	60
TwoNegEbitda	45423	0.047	0.212	32019	0.213	0.409	77442	0.116	0.320	0	1
Start-up	45423	0.180	0.384	32019	0.247	0.431	77442	0.208	0.406	0	1
PosFinDef	45423	0.421	0.494	32019	0.496	0.500	77442	0.452	0.498	0	1
Acquisitions	45423	0.284	0.451	32019	0.182	0.386	77442	0.242	0.428	0	1
Sale-assetsoutcash	45422	1.353	0.899	31957	1.688	1.089	77379	1.492	0.995	0.071	5.469
Equity issues	45423	0.139	0.346	32019	0.321	0.467	77442	0.214	0.410	0	1
Marginal tax rate	45419	0.297	0.105	32019	0.242	0.131	77438	0.274	0.120	0	0.51
TwoExReturn	37266	0.068	0.697	26069	0.248	0.838	63335	0.142	0.764	-1.951	3.164
PPE-to-assets	45302	0.353	0.241	31973	0.177	0.159	77275	0.280	0.228	0.003	0.924
RECEIV-to-assets	45099	0.180	0.135	31838	0.168	0.131	76937	0.175	0.133	0	0.718
INVENT-to-assets	44914	0.156	0.158	31766	0.103	0.121	76680	0.134	0.146	0	0.725
ITAN-to-assets	40073	0.147	0.184	28256	0.083	0.134	68329	0.121	0.168	0	0.765
CASH-to-assets	45423	0.060	0.081	31959	0.364	0.232	77382	0.186	0.220	0	0.929
Inv-speeddep	45181	8.292	5.858	31825	5.362	4.700	77006	7.081	5.599	0.649	36.087
Tang-assetsoutcash	45301	0.375	0.253	31942	0.283	0.213	77243	0.337	0.241	0	1

Table III – Core factor selection using ZNETD as dependent variable with firm fixed effects and time effects

This table shows line by line univariate regressions run using firm fixed effects and time effects. The logistic regression model for the dependent variable is zero for levered and one for ZNETD. ZNETD firms are firms that have negative net debt in a given year, i.e., (DLC+DLTT-CHE≤0). Data come from Compustat file from 1987 to 2009. Regressions were run using panel data models on the following independent variables that are defined in Appendix A. Odds ratio is calculated by EXP(Coef.) and (odds ratio -1) give us the percentage increase in the chance of a firm become unlevered (ZNETD), when the independent variable increases a unit comparing when it remains stable. Numbers in parenthesis indicate t-statistics. Pseudo R^2 is calculated using the difference for log likelihood (null). ***, ** and * mean statistically different from zero at 1%, 5% and 10% level, respectively.

	Coefficient Estimate	t-stat	obs	ll(null)	ll(model)	Own R^2	Odds Ratio
SD-assets	0.032***	(37.80)	36275	-15113.1	-14048.3	*0.070*	1.033
EBIT-to-assets	0.013***	(18.33)	47552	-19507.6	-19113.4	*0.020*	1.013
Segments	-0.058***	(-7.34)	47101	-19341.6	-19117.9	*0.012*	0.943
Tobin's Q	0.274***	(24.37)	40303	-16812.9	-16236.6	*0.034*	1.315
Tang-assetsoutcash	-0.018	(-0.16)	47264	-19404.8	-19183.5	*0.011*	0.982
Inv-speeddep	-0.028***	(-8.58)	47105	-19339.1	-19080	*0.013*	0.972
Age	0.024***	(5.98)	47554	-19507.9	-19293.1	*0.011*	1.024
Ln(assets)	-0.145***	(-8.94)	47554	-19507.9	-19252.7	*0.013*	0.865
TwoNegEbitda	0.440***	(9.17)	47554	-19507.9	-19250.8	*0.013*	1.553
Start-up	0.423***	(10.99)	47554	-19507.9	-19232.3	*0.014*	1.527
PosFinDef	0.822***	(30.96)	47554	-19507.9	-18797.1	*0.036*	2.275
Acquisitions	-0.448***	(-14.79)	47554	-19507.9	-19200.5	*0.016*	0.639
Sale-assetsoutcash	0.767***	(32.31)	47304	-19424.5	-18610.2	*0.042*	2.153
Equity issues	0.696***	(22.94)	47554	-19507.9	-19043.1	*0.024*	2.006
Marginal tax rate	1.606***	(11.54)	47551	-19507.9	-19225.3	*0.014*	4.983
TwoExReturn	0.399***	(22.83)	35167	-14651.3	-14378.6	*0.019*	1.490
INTAN-to-assets	-5.456***	(-39.61)	40731	-16736.2	-15602.1	*0.068*	0.004
PPE-to-assets	-7.113***	(-46.02)	47411	-19447.9	-17895.7	*0.080*	0.001
RECEIV-to-assets	-4.777***	(-29.07)	47173	-19367	-18686.9	*0.035*	0.008
INVENT-to-assets	-7.093***	(-32.96)	46913	-19266.1	-18423.7	*0.044*	0.001
CASH-to-assets	18.416***	(80.92)	47305	-19425.6	-11346.4	*0.416*	99533019

Table IV - Logit Regressions on zero net debt firms (ZNETD) using asset structure factors in fixed effects

This table shows the relative importance of tangibility of assets and other components of total assets in the presence of CASH. The logistic regression model for the dependent variable is zero for levered and one for ZNETD. ZNETD firms are firms that have negative net debt in a given year, i.e., (DLC+DLTT-CHE≤0). Data come from Compustat file from 1987 to 2009. Regressions were run using panel data models on the following independent variables: CASH-to-assets is cash and short term investments divided by total book assets, PPE-to-assets is property plant & equipment divided by total book assets, INTAN-to-assets is total intangibles divided by total book assets, RECEIV-to-assets is total receivables divided by total book assets, INVENT-to-assets is total inventories divided by total book assets. Variables have been included together with CASH and the results should be compared with univariate regression in Table III. Numbers in parenthesis indicate t-statistics. Pseudo R^2 is calculated using the difference for log likelihood (null). ***, ** and * mean statistically different from zero at 1%, 5% and 10% level, respectively.

Assets structure	(1)	(2)	(3)	(4)
CASH-to-assets	17.969***	17.812***	18.951***	18.676***
	(77.77)	(72.23)	(80.48)	(79.29)
PPE-to-assets	-1.935***			
	(-9.88)			
INTAN-to-assets		-1.325***		
		(-7.73)		
RECEIV-to-assets			2.479***	
			(11.11)	
INVENT-to-assets				1.096***
				(4.03)
Firm Fixed-effects	yes	yes	yes	yes
Year-effects	yes	yes	yes	yes
obs	47265	40665	47086	46810
groups	3549	3291	3545	3526
ll(null)	-19405.9	-16715.4	-19343.4	-19238.8
ll(model)	-11283.4	-9795.92	-11236.7	-11215.9
Pseudo R2	*0.419*	*0.414*	*0.419*	*0.417*

Table V – Logit Regressions on zero net debt firms (ZNETD) and partial contributions in fixed effects

This table shows the relative importance and the contribution of each factor when entering in the logistic regression. The logistic regression model for the dependent variable is zero for levered and one for ZNETD. ZNETD firms are firms that have negative net debt in a given year, i.e., (DLC+DLTT-CHE≤0). Data come from Compustat file from 1987 to 2009. Regressions were run using panel data models on the following independent variables that are defined in Appendix A. Variables have been included in regressions following their category and by descending order of importance in Table III. To double check the importance of each variable, regression 7 was run consecutively without (n-1) variables and calculated pseudo R2 difference. Doing Hausman test, Random Effects model was rejected and we have chosen Fixed Effects. Odds ratio is calculated by EXP(Coef.) and (odds ratio -1) give us the percentage increase in the chance of a firm become unlevered (ZNETD), when the independent variable increases a unit comparing when it remains stable. Numbers in parenthesis indicate t-statistics. Pseudo R^2 is calculated using the difference for log likelihood (null). ***, ** and * mean statistically different from zero at 1%, 5% and 10% level, respectively.

	Dependent Variable: Zero Net Debt (ZNETD)							Odds
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Ratio
SD-assets	0.033***	0.030***	0.030***	0.029***	0.030***	0.029***	0.030***	1.030
	(37.82)	(33.48)	(32.84)	(31.32)	(31.80)	(31.41)	(30.25)	
Segments	-0.089***	-0.067***	-0.060***	-0.062***	-0.056***	-0.057***	-0.063***	0.939
	(-9.46)	(-6.91)	(-6.09)	(-6.17)	(-5.58)	(-5.64)	(-6.11)	
Age		0.021***	0.019***	0.021***	0.028***	0.030***	0.047***	1.048
		(3.95)	(3.54)	(3.77)	(5.11)	(5.45)	(7.89)	
Ln(assets)		-0.364***	-0.093***	-0.023	-0.113***	-0.102***	-0.110***	0.896
		(-13.83)	(-3.32)	(-0.79)	(-3.83)	(-3.44)	(-3.40)	
TwoNegEbitda		-0.050	0.209***	0.187***	0.565***	0.553***	0.640***	1.896
		(-0.75)	(2.98)	(2.64)	(7.44)	(7.25)	(7.99)	
Start-up		0.581***	1.184***	1.170***	1.217***	1.218***	1.194***	3.300
		(11.70)	(21.92)	(21.40)	(22.14)	(22.10)	(20.76)	
PosFinDef		0.985***	0.770***	0.782***	0.738***	0.718***	0.712***	2.038
		(30.81)	(23.19)	(23.29)	(21.82)	(21.15)	(19.82)	
Sale-assetsoutcash			1.352***	1.294***	1.172***	1.178***	1.199***	3.317
			(33.09)	(30.97)	(27.88)	(27.95)	(26.93)	
Tobin's Q				0.244***	0.232***	0.222***	0.201***	1.223
				(17.53)	(16.98)	(16.24)	(12.93)	
Inv-speeddep				0.006	-0.002	-0.001	-0.005	
				(1.32)	(-0.34)	(-0.26)	(-0.95)	
EBIT-to-assets					1.852***	1.822***	1.564***	4.778
					(14.08)	(13.79)	(10.78)	
Equity issues						0.432***	0.391***	1.478
						(11.28)	(9.81)	
Acquisitions							-0.102**	0.903
							(-2.52)	
Marginal tax rate							2.468***	11.799
							(9.88)	
TwoExReturn							0.017	
							(0.70)	
Firm Fixed-effects	yes	yes	yes	yes	yes	yes	yes	
Year-effects	yes	yes	yes	yes	yes	yes	yes	
obs	36073	36073	35996	35811	35811	35811	33607	
groups	2674	2674	2670	2661	2661	2671	2479	
ll(null)	-15031.02	-15031.02	-15011.05	-14940.41	-14940.41	-14940.41	-13996.97	
ll(model)	-13924.88	-13290.79	-12584.25	-12350.53	-12251.81	-12187.76	-11413.44	
Pseudo R2	*7.36%*	*11.58%*	*16.17%*	*17.33%*	*18.00%*	*18.42%*	*18.46%*	
Pseudo R2 increase	*7.36%*	4.22%	4.59%	1.17%	0.66%	0.43%	0.03%	

Table VI - Logit Regressions on zero net debt firms (ZNETD) using industry effects

This table shows the relative importance and the contribution of industry factors. The logistic regression model for the dependent variable is zero for levered and one for ZNETD. ZNETD firms are firms that have negative net debt in a given year, i.e., (DLC+DLTT-CHE≤0). Data come from Compustat file from 1987 to 2009. Regressions were run using panel data models on the following independent variables that are defined in Appendix A. Numbers in parenthesis indicate t-statistics. Pseudo R^2 is calculated using the difference for log likelihood (null). ***, ** and * mean statistically different from zero at 1%, 5% and 10% level, respectively.

	Dependent Variable: Zero Net Debt (ZNETD)			
	(1)	(2)	(3)	(4)
SD-assets	0.041***	0.038***	0.041***	0.042***
	(42.37)	(39.86)	(39.77)	(39.85)
Segments	-0.052***	-0.062***	-0.074***	-0.072***
	(-5.37)	(-6.43)	(-7.40)	(-7.29)
Age	-0.035***	-0.020***	-0.020***	-0.021***
	(-10.06)	(-5.85)	(-5.85)	(-6.35)
Ln(assets)	-0.261***	-0.183***	-0.179***	-0.185***
	(-11.22)	(-7.83)	(-7.40)	(-7.73)
TwoNegEbitda	0.981***	0.872***	0.783***	0.797***
	(12.66)	(11.24)	(9.20)	(9.37)
Start-up	1.283***	1.358***	1.269***	1.275***
	(23.94)	(25.02)	(22.23)	(22.41)
PosFinDef	0.748***	0.744***	0.748***	0.748***
	(21.48)	(21.28)	(20.88)	(20.91)
Sale-assetsoutcash	0.898***	1.088***	1.098***	1.100***
	(26.44)	(30.25)	(30.37)	(30.96)
Tobin's Q	0.331***	0.280***	0.336***	0.338***
	(20.98)	(18.19)	(18.69)	(18.83)
Inv-speeddep	-0.053***	-0.027***	-0.037***	-0.038***
	(-11.40)	(-5.87)	(-7.22)	(-7.47)
EBIT-to-assets	1.906***	1.875***	1.917***	1.917***
	(13.79)	(13.61)	(11.23)	(11.24)
Equity issues	0.534***	0.500***	0.493***	0.491***
	(13.76)	(12.87)	(12.26)	(12.20)
Acquisitions	-0.119***	-0.149***	-0.143***	-0.136***
	(-3.08)	(-3.80)	(-3.59)	(-3.41)
Marginal tax rate	1.601***	2.003***	2.389***	2.360***
	(6.92)	(8.58)	(9.78)	(9.68)
TwoExReturn	-0.096***	-0.071***	-0.109***	-0.106***
	(-4.02)	(-2.98)	(-4.32)	(-4.20)
Industry concentration			0.046***	0.032***
			(4.32)	(3.75)
Industry R&D intensity			26.558***	27.503***
			(22.84)	(28.14)
Industry renewal ratio			-0.118	0.027
			(-0.21)	(0.05)
Industy value added			4.696***	4.051***
			(16.35)	(16.29)
Random-effects	yes	yes	yes	yes
Year-effects	yes	yes	yes	yes
Industry Fixed-effects	no	yes	yes	no
obs	61746	61746	59219	59219
groups	6353	6353	6247	6247
ll(null)	-25970.95	-25970.95	-24840.4	-24840.4
ll(model)	-21773.91	-21101.86	-20106.76	-20162.01
Pseudo R2	*16.16%*	*18.75%*	*19.06%*	*18.83%*

Table VII – Logit Regressions on zero net debt firms (ZNETD) dividend payers and nonpayers

This table shows different results to the same regression, dividing ZNETD firms in two sub-samples: ZNETD firms that pay dividends and ZNETD that don't pay dividends. In regression column l the dependent variable is zero for levered (NonZNETD) and one for ZNETD payers and in column 2 the dependent variable is zero for levered (NonZNETD) and one for ZNETD nonpayers. ZNETD firms are firms that have negative net debt in a given year, i.e., (DLC+DLTT-CHE≤0). Data come from Compustat file from 1987 to 2009. Regressions were run using panel data models on the following independent variables that are defined in Appendix A. Odds ratio is calculated by EXP(Coef.) and (odds ratio -1) give us the percentage increase in the chance of a firm become unlevered (ZNETD), when the independent variable increases a unit comparing when it remains stable. Numbers in parenthesis indicate t-statistics. Pseudo R^2 is calculated using the difference for log likelihood (null). ***, ** and * mean statistically different from zero at 1%, 5% and 10% level, respectively.

	Dividend Payers	Odds Ratio	Nonpayers	Odds Ratio
SD-assets	0.027***	1.027	0.029***	1.029
	(12.13)		(26.97)	
Segments	-0.081***	0.922	-0.050***	0.951
	(-4.60)		(-3.98)	
Age	0.040***	1.041	0.078***	1.081
	(4.24)		(10.11)	
Ln(assets)	0.201***	1.223	-0.288***	0.750
	(3.02)		(-7.69)	
TwoNegEbitda	-0.208		0.605***	1.831
	(-0.69)		(7.32)	
Start-up	0.848***	2.335	1.347***	3.846
	(7.58)		(20.23)	
PosFinDef	0.862***	2.368	0.629***	1.876
	(14.09)		(14.53)	
Sale-assetsoutcash	1.953***	7.050	0.994***	2.702
	(19.49)		(20.57)	
Tobin's Q	0.377***	1.458	0.160***	1.174
	(9.32)		(9.75)	
Inv-speeddep	0.005		-0.007	
	(0.44)		(-1.38)	
EBIT-to-assets	1.059**	2.883	1.544***	4.683
	(2.15)		(10.12)	
Equity issues	0.256***	1.292	0.472***	1.603
	(3.63)		(9.99)	
Acquisitions	-0.246***	0.782	-0.026	
	(-3.59)		(-0.53)	
Marginal tax rate	4.042***	56.940	2.536***	12.629
	(7.10)		(9.22)	
TwoExReturn	-0.095*	0.909	0.041	
	(-1.70)		(1.56)	
Firm Fixed-effects	yes		yes	
Year-effects	yes		yes	
obs	12895		23325	
groups	895		1951	
ll(null)	-5159.896		-9548.251	
ll(model)	-4078.778		-7678.006	
Pseudo R2	*20.95%*		*19.59%*	