Financial Flexibility and Capital Structure Decision*

by

Soku Byoun
Hankamer School of Business
Baylor University
One Bear Place 98004
Waco, TX 76798
Tel: (254) 710–7849
Fax: (710) 710-1092
Email: Soku_Byoun@Baylor.edu

March 2008
(Comments are welcome.)

*We would like to thank the GAMF. We appreciate the support for this project that was provided by the Hankamer School of Business at Baylor University.

Financial Flexibility and Capital Structure Decision

Abstract

We develop and test a financial flexibility hypothesis (FFH) which suggests that the demand for financial flexibility, characterized by future investment opportunities relative to expected future cash flows and financing constraints, is the main driver of firms' capital structure decisions. Consistent with the FFH, we find a inverted-U relationships between leverage ratio and some firm characteristics: small developing firms with negative or low earned capital/operating cash flows, no credit ratings, and no dividend payouts have lower leverage ratios, not because of internally generated funds but because they issue much more equity than debt to ease their lack of financial flexibility; medium growing firms with mediocre earned credit/operating cash flows, ample growth opportunities and credit ratings have high leverage ratios by issuing debt against large future expected cash flows; and large mature firms with high earned capital/operating cash flows, good credit ratings, and large dividend payouts have moderate leverage as they rely on internal funds and use only safe debt in order to preserve financial flexibility. The FFH explains several capital structure "puzzles" raised in the literature and can be a prominently alternative to existing ones. It also provides important implications for other financial decisions such as dividend and cash holding policies.

JEL Classification: G32

Keywords: Financial Flexibility; Trade-off theory; Pecking-order theory

"Change is the law of life. And those who look only to the past or present are certain to miss the future."— John F. Kennedy

I. Introduction

Despite managers' contention that financial flexibility is an important factor in their decision-making process,[1] the capital structure literature has to date remained aloof to recognize financial flexibility as a potentially important factor in explaining firms' capital structure decisions. Frank and Goyal (2005) reason, "the stress on financial flexibility is interesting, but potentially open to a variety of interpretations. In our view the survey evidence is of interest, but it is best regarded as being interesting and suggestive, rather than providing definitive tests." In addition to considerable ambiguity in the use of the term, judgments about financial flexibility are subjective and informal. Accordingly, dealing with financial flexibility may be criticized as being less than practical and based on speculation on the ability of a firm to respond to hypothetical future events. It is therefore not surprising that there is relatively little systematic study of financial flexibility in the capital structure literature.[2]

This study develops and tests a hypothesis for the effect of financial flexibility on firms' capital structure decisions. By taking firms' financial choices in consideration of financial flexibility, the study explains some of the unexplained empirical regularities: why the pecking order theory of financing appears to break down for small risky firms but works well for large firms (Frank and Goyal (2003)); why firms issue too much equity (Frank and Goyal, 2003) at the wrong times (Fama and French (2002) Fama and French (2005), and Leary and

[1] The survey results of Graham and Harvey (2001), Bancel and Mittoo (2004), and Brounen et al. (2004) show that corporate managers explicitly express that they are mostly concerned about "financial flexibility" in their capital structure decisions.

[2] In contrast, a branch of real options literature has been developed to deal with "investment flexibility." Gamba and Triantis (2007) note that most real options models are designed to measure the value of "investment flexibility" under the assumption of perfect "financial flexibility."

Roberts (2005)); and why there is a *negative* relationship between firm size and leverage ratio for a sample of firms with credit ratings (Faulkender and Petersen (2006)).

We define financial flexibility as *a firm's capacity to mobilize its financial resources in order to take preventive and exploitive actions in response to uncertain future contingencies in a timely manner to maximize the firm value.* Exploitive actions are especially important for growing firms to focus financial resources in order to rapidly capitalize on new opportunities. Accordingly, when firms make today's financing decisions, financial constraints that they may face in the future become a very important consideration. According to this view, the optimal capital structure from the static point of view may not be "optimal" once financial flexibility, i.e., the interplay between today's financial decisions and future financial options is taken into account. Thus, our study is also distinguished from most previous studies that focus on how current or past shocks affect firms' financial decisions.

If capital markets are perfect, then there will be no need for financial flexibility. But when market frictions constrain firms from accessing the capital markets, decisions are typically made not only in response to certain conditions or events but also in an attempt to deal with uncertain future contingencies. When expectations are not met, or when events occur that have not been anticipated, a firm may require financial flexibility *ex post*. Actions taken ahead of time, even in the absence of a specific need, can create options that can be used at a later stage. Thus, financially flexible positions are desirable not because they provide safe stores of value, but because they preserve valuable options to deal with future contingencies.

There is a "life-cycle" effect in the progress of financial flexibility, which we consider in three stages. Firms in the development stage do not have sufficient funds from their operations to adequately fund the initial development, which leads to a continuing need of external capital. Thus, they have the greatest need of financial flexibility to exploit their future opportunities. These developing firms characterized by low/negative earned capital, low/negative operating cash flows, no dividend payouts and no credit ratings are expected to issue more equity to raise cash and ease their lack of and need for financial flexibility, and hence maintain lower leverage and large cash holdings. Firms in the growth stage

begin generating positive earnings and expect a large increase in future earnings. But they are still in great need of external capital to fund their growth options. Accordingly, they rely on debt financing to fund their growth options as they have access to debt capital (as indicated by credit ratings) and expect to repay their debt with growing future earnings. Thus, firms in the growth stage tend to have high leverage ratios. Firms in the maturity stage generate large cash flows from assets in place and mainly rely on self-financing for their investment needs. They prefer maintaining moderate debt levels using only safe debt while paying large dividends in order to reduce free cash flows because they desire financial flexibility for deteriorating future earnings and new business strategies. This implies that firms in the maturity stage maintain moderate leverage ratios.

Based on the framework of the life cycle of financial progress, we propose and test the following financial flexibility hypothesis (FFH): *small developing firms characterized by low or negative earned capital, low expected cash growth, higher cash holdings, no dividend payouts and no credit ratings are in the most need of financial flexibility and hence issue more equity and maintain lower leverage ratios. Growing firms characterized by mediocre earned capital, high expected cash growth, low cash holdings, low dividend payouts and low credit ratings issue debt and hence maintain high leverage ratios. Large mature firms characterized by large earned capital, low expected cash growth, moderate cash holdings, high dividend payouts and good credit ratings issue only safe debt and maintain moderate leverage ratios.*

The important implication of the the FFH is that there is a *inverted-U* relationships between leverage ratio and the life cycle of financial flexibility progress. Consistent with the predictions of the FFH, we find that small developing firms with low or negative earned capital/operating cash flows build up cash through equity financing in order to meet the need for financial flexibility and maintain lower leverage ratios than medium growth firms with mediocre earned capital/operating cash flow to value ratios. Large mature firms with large earned capital/large operating cash flows also maintain lower leverage ratios through internally generated equity financing than medium growth firms. There are also negative relationships between credit rating and leverage ratio and between leverage ratio and dividend payout. We also find that small firms with low earned capital/operating cash flows

hold more cash than other firms.

Our results from the fixed effects regressions further show that there is an overall strong inverted-U relationships between leverage ratio and firm size and between leverage ratios and earned capital/operating cash flows. The regression results further confirm the negative relationship of leverage ratio with cash holdings, long-term credit rating, and dividend payout, but developing firms with no ratings and no dividend payout also have lower leverage ratios than firms with ratings and dividend payouts, respectively, consistent with the FFH. These new findings are important since previous studies overlooked the roles of these variables and their non-linear relationship with leverage ratio. The non-linear relationships between leverage ratio and firm size/earned capital/operating cash flows are further confirmed in regressions when we divide the sample between rated and unrated or dividend-paying and non-paying firms. Overall, the results provide strong evidence for the FFH.

Our study brings new evidence to bear on an important issue in the capital structure literature. The literature has wrestled with the problem of sorting out the effects of adverse selection costs of asymmetric information on capital structure.[3] On the one hand, the literature finds that larger firms appear to provide a better fit for the pecking order theory (Shyam-Sunder and Myers (1999) and Frank and Goyal (2003)) despite the fact that large firms are less subject to information asymmetry than small firms. Our finding suggests that large mature firms prefer using internal funds to preserve financial flexibility, while small developing firms issue equity and increase cash holdings despite having low leverage in order to cope with their lack of financial flexibility. Lemmon and Zender (2004) argue that equity issuers are prevented from issuing debt because of concerns over financial distress or financial slack for future investment and that one must account for the value of maintaining financial slack for future investment and to avoid financial distress in testing the pecking order theory. This justification is essentially in the same vein as our financial flexibility

[3] For example, see Myers and Majluf (1984), Viswanath (1993), Chang and Dasgupta (2003), and Lemmon and Zender (2004) under the pecking order framework, and Frank and Goyal (2003), Fama and French (2002), Barclay and Smith (2005), Leary and Roberts (2005), Leary and Roberts (2005a), Strebulaev (2006) and Byoun (2007) under the tradeoff framework.

hypothesis which it may be applied to the firms in the development stage. Further, Fama and French (2002) and Leary and Roberts (2005a) show that firms are more likely to use external equity as investment increases and/or cash flow decreases but the majority of equity financings occur when firms still have sufficient debt capacity to fill their investment needs. Their findings are also consistent with the FFH, since these firms issue equity due to lack of financial flexibility, the capacity to deal with future contingencies.

According to the pecking order theory, firms should finance new investments with the least information sensitive alternatives, i.e., first with retained earnings, then with safe debt followed by risky debt, and finally, under duress, with equity. Our findings suggest that the external financing hierarchy suggested by the pecking order theory is reversed due to the concern for financial flexibility. In conclusion, asymmetric information falls short of providing a plausible explanation for motivation behind firms' external financing decisions. A more comprehensive explanation should include the benefits and costs of financial flexibility, which may require a substantial alteration to the traditional capital structure theories.

The rest of the paper proceeds as follows: Section II provides a literature review and discusses the concept of financial flexibility. Section III develops the financial flexibility hypothesis. Section IV describes the data. Section V provides univariate results and Section VI multivariate results. Section VII contains concluding remarks.

II. A Literature Review and the Concept of Financial Flexibility

Financial flexibility is desired in order to handle uncertainties and variations in both internal and external financial environments. It is distinguished from but can include "financial slack" suggested by the pecking order theory which firms, facing an adverse selection problem, desire in order to avoid the need for external funds in the future. Thus, finding that managers value financial flexibility is not sufficient to prove that the pecking-order model is the true description of capital structure choice (Opler et al., 1999). Graham and Harvey (2001) make this point explicit:

> The most important item affecting corporate debt decisions is management's desire for "financial flexibility,"... However, the importance of flexibility in the survey responses is not related to informational asymmetry (size or dividend payout) or growth options in the manner suggested by the pecking-order theory. In fact, flexibility is statistically more important for dividend-paying firms, opposite the theoretical prediction (if dividend-paying firms have relatively little informational asymmetry). Therefore, a deeper investigation indicates that the desire for financial flexibility is not driven by the factors behind the pecking-order theory.

Graham and Harvey (2001) see financial flexibility as "preserving debt capacity to make future expansions and acquisitions" or "minimizing interest obligations, so that they do not need to shrink their business in case of an economic down turn." Gamba and Triantis (2006) define financial flexibility as "the ability of a firm to access and restructure its financing with low transaction costs." They further elaborate by adding that "financially flexible firms are able to avoid financial distress in the face of negative shocks, and to fund investment at low cost when profitable opportunities arise." Donaldson (1969) uses "financial mobility" to describe "the capacity to redirect the use of financial resources in a manner consistent with the evolving goals of management as it responds to new information about the company and its environment." Donaldson particularly relates financial mobility to capital structure decisions where the goal is to find the optimal mix of financing sources.

Heath (1978) focuses on cash flows to describe a financially flexible firm that can take corrective action that will eliminate an excess of required cash payments over expected cash receipts quickly and with minor adverse effect on its present and future earnings or on the market value of its stock. The American Institute of Certified Public Accountants (AICPA, 1993) adopts Heath's view by defining financial flexibility as "the ability to take action that will eliminate an excess of required and expected cash payments over expected resources." The Financial Accounting Standards Board's (FASB) defines financial flexibility as "the ability of an entity to take effective actions to alter amounts and timing of cash flows so it can respond to unexpected needs and opportunities."

The various definitions of flexibility as addressed in the literatures recognizes the "reactive" or "preventive" nature of flexibility, while failing to include the "exploitive" nature of flexibility for uncertain competitiveness or opportunities. The combination of preventive and exploitive nature of flexibility is more evident in Volberda (1998) who views flexibility in two different perspectives: internal flexibility as the firm's capacity to adapt to the demands of the environment, while external flexibility as the firm's capacity to influence their environment and thereby reduce their vulnerability.

The basic form of financial flexibility may be described in terms of the amount or the number of financial resources available in the future. However, many of the actions taken today for the future can be very costly. Thus, it would be fundamentally inappropriate for a firm to maximize financial flexibility. Eventually, maximizing the firm value should be the ultimate goal of optimizing financial flexibility. Accordingly, we define financial flexibility as *a firm's capacity to mobilize its financial resources in order to take preventive and exploitive actions in response to uncertain future contingencies in a timely manner to maximize the firm value.*

The important question in this study is how a firm's demand for financial flexibility to cope with future contingencies affect its financial decisions today. It is apparent that certain aspects of financial flexibility have been noted and implicitly addressed in the capital structure literature. For example, Donaldson (1969) observes that managers do not follow the optimizing principle proposed by the trade-off theory of optimal capital structure. Instead he finds that managers concentrate on the amount of debt not in use. Goldstein, Ju, and Leland (2001) note that a firm with low leverage today preserves the subsequent option to increase leverage. Byoun (2008) finds evidence that firms preserve borrowing capacity to finance future investment or growth opportunities. Graham (2000) shows that firms preserve debt capacity to make future expansions and acquisitions. DeAngelo, DeAngelo and Stulz (2007) document evidence that firms issue stock to cope with "liquidity squeeze," a near-term need for cash. McLean (2007) shows that firms keep equity issuance proceeds as cash for "precautionary motives." Motyka, Leuca, and Fawson (2005) also find that financial institutions hold excess liquidity to cope with the unpredictable nature of loss (infrequent

but high impact risk) in order to achieve a competitive advantage for aggressive pricing and better margins. DeAngelo and DeAngelo (2006) argues that firms maintain low leverage and high dividend payouts in "normal" periods to preserve the firm's option to borrow or issue equity in the future "abnormal" periods characterized by earnings shortfalls and/or high investment opportunities.

III. The Life-cycle of Financial Flexibility and Hypothesis Development

In this section we develop a hypothesis on how a firm's demand for financial flexibility affects its leverage decision. According to our definition of financial flexibility, firms with more growth opportunities relative to expected future cash flows have less financial flexibility than those with less investment opportunities relative to expected future cash flows. Also, firms with financial constraints have less financial flexibility than those without such constraints, ceteris paribus. This implies that a firm's desire to preserve flexible financial choices is affected by factors such as growth opportunities and market constraints in raising additional capital, as well as financial resources that will become available in the future. Accordingly, we consider a firm's mix of growth opportunities, expected cash flows, and financing constraints through the life-cycle stages of its financial progress as follows: (i) a *development* stage, where the firm expects large future investment opportunities but low expected earnings in the foreseeable future with greater financing constraints; (ii) a *growth* stage, where the firm possesses many growth options, begins generating earnings with large expected earnings in the foreseeable future, and faces less financing constraints; and (iii) a *maturity* stage, where the firm has declining growth opportunities, generates large current earnings from assets in place but expects declining earnings in the foreseeable future and faces little financing constraints.

The three life-cycle stages serve as reference points on the cross section of firms' demand for financial flexibility. We rely on several firm characteristics to identify a firm's position across the life cycle of financial flexibility. Firm age may be considered as a proxy for the life-cycle stages. However, when age is used as a life cycle proxy, an implicit assumption is that a firm moves sequentially through its life cycle (Dickinson (2007)). Yet, structural

changes can cause firms to move through the life cycle stages in a non-sequential manner: e.g., a firm in the mature stage can fall back to the growth stage in terms of its financial flexibility. In order to verify this assertion, we plot the relationship between leverage ratio and firm age (measured by the number of years existed in Compustat from 1950) in Figure 1. The figure suggests that the relationships between firm ages and leverage ratios are highly cyclical over the 1950–2008 period. Additionally, the life cycle is likely to differ from firm age because firms can go through the cycle at different rates. For these reasons, we do not use firm age and consider other proxies.

We first consider firm size (net sales and total assets). Small firms are more likely to be in the development stage with many unsubstantiated opportunities but with less available funds than large firms. Small firms are also likely to have more constraints in having access to capital markets, causing them to concern for financial flexibility to cope with future contingencies. Large firms are often better diversified than small firms and have the inherent capability to endure future contingencies because each line of business represents an open option. However, firm size alone may be an imperfect measure of the life cycle of financial flexibility. Accordingly, we consider other variables such as cash holdings, earned capital, operating cash flows, dividend payouts and long-term credit ratings.

Keynes (1934) describes the benefits of holding cash as the "transaction cost" motive and the "precautionary" motive. The "transaction cost" motive implies that by holding cash, a firm can save transaction costs to raise external capital or does not have to liquidate assets (Opler et. al. (1999)). The "precautionary" motive implies that cash holdings safeguard against the inability of constrained firms to obtain funds when valuable opportunities arise (Almeida, Campello and Weisbach (2004) and Faulkender and Wang (2006)) or when debt payment is due (Acharya, Davydenko and Strebulaev (2007) and Faulkender and Wang (2006)). But large cash holdings incur higher costs: in addition to the opportunity costs forgone, they are exposed to a risk of inefficient uses when the firm does not have enough investment opportunities (Jensen and Meckling (1976)). Thus, firms would balance the costs and benefits of holding cash. Since preserving financial flexibility through cash holdings is costly, firms will hold large cash only if it is desired in order to deal with future financial

obstacles or to capitalize on future opportunities. For firms in the development stage that have large future investment opportunities while having low internal funds and facing greater financing constraints, the marginal value of cash should be higher than for firms in the maturity stage that have less investment opportunities relative to internally generated funds and easy access to capital markets (Faulkender and Wang (2006)). Consistent with this argument, previous studies find that firms with stronger growth opportunities, riskier cash flows, and more limited access to capital markets hold more cash.[4] Accordingly, we use cash holdings as a proxy for firms' financial flexibility demand.

We use earned capital as a proportion of total assets as another proxy for the firm's financial flexibility life cycle. Earned capital is the accumulation of a firm's reinvested profits over time. DeAngelo, DeAngelo, and Stulz (2005, 2007) argue that the mix of earned and contributed capital proxies a firm's financial life-cycle stage; i.e., firms with low earned capital relative to contributed capital tend to be in the capital infusion stage (the development stage), whereas firms with greater earned capital tend to be more mature with ample cumulative profits that make them largely self-financing (the maturity stage).

We also consider operating cash flow as a proportion of the market value of assets (cash flow to value ratio) as a proxy for the financial flexibility life cycle. Firms in the development stage are likely to face negative or very low operating cash flows, while firms in the growth stage are likely to have mediocre operating cash flows and large market value of assets to reflect their growth opportunities, resulting in low cash flow to value ratios. On the other hand, firms in the maturity stage are likely to have high operating cash flow relative market value of assets (low cash flow to value ratio) due to diminishing growth opportunities.

We also use a firm's dividend payout as a proxy for its life-cycle stage. DeAngelo, DeAngelo, and Stulz (2007) argue that large dividend payouts are generally not feasible for firms in the development stage that have not attained high profitability and thus large dividend payouts serve as an empirical indicator of a mature firm. Also, firms that pay large dividends are expected to be more flexible than non-paying firms since they can

[4] See, among others, Opler at al (1999), Harford (1999) and Faulkender and Wang (2007), Bates, Kahle, and Stulz (2007), and McLean (2007)

generate funds at lower costs by reducing dividends when there are shortfalls in funds. (DeAngelo, DeAngelo, and Stulz (2007)). Additionally, Fazzari, Hubbard, and Petersen (1998) document that financially constrained firms like those in the development stage have significantly lower payout ratios.

Finally, we consider long-term credit ratings. Firms in the development stage have no reputation (credit ratings) while they build up better reputations as they progress into the growth and mature stages. Faulkender and Petersen (2006) and Almeida, Campello and Weisbach (2004) and Faulkender and Wang (2006) use credit ratings as a measure of financial constraints or accessibility to debt capital.

Overall, firms with a greater need for financial flexibility are characterized by small size, large cash holdings, no dividend payouts, low earned capital, low operating cash flows and no credit ratings. We now analyze a firm's capital structure decision in each of the life-cycle stages in relation to those proxy variables.

A. Development Stage

Firms in the development stage do not have sufficient funds from their operations to adequately fund the initial development, which leads to a continuing need for external capital. They are the least flexible with possibility of negative cash flows and many constraints in accessing capital markets. Thus, firms in the development stage are in the greatest need of financial flexibility in order to take the preventive actions when their expectations are not met and take the exploitive actions when opportunities arise.

For firms with little financial flexibility, facing shortfalls in cash flow over time, even a little debt may cause them to be in financial distress because debt financing incurs fixed payments. Thus, for a firm in the development stage with low expected cash flow growth and a high demand for additional capital, issuing risky debt implies further losing financial flexibility. The limitation on debt issuance that results from the risk of asset substitution (Jensen and Meckling (1976)) is more important for such firms. Firms lacking in investible funds for their profitable investments have little free cash flows, and thus reducing the benefit of debt that limits the scope of overinvestment and perquisites by managers (Jensen

(1986), Stulz (1990) and DeAngelo and DeAngelo (2006)). Hence debt is less helpful both in providing capital and in reducing the costs of free cash flow for firms in the development stage. Further, debt financing renders firms with little financial flexibility vulnerable to predatory strategies such as price wars by established firms to exhaust less financially flexible firms (Poitevin (1989)), thus further deteriorating financial flexibility. In addition, debt covenants often carry restrictions on financing and investment decisions that are especially onerous for firms with lack of financial flexibility.[5] Debt financing is also costly to the manager of a firm in the development stage because she surrenders all project choices to investors (Faulkender, Milbourn and Thakor (2007)). In addition, these firms are in the stage of reputation acquisition with little favorable track record (e.g., credit ratings) of borrowing (Diamond (1991)) and are most likely to be turned down for credit when they need it the most. Thus, the firms in the development stage, with lack of financial flexibility, will abstain from issuing risky debt.

External equity financing incurs higher issuing costs but provides greater financial flexibility than debt financing. Accordingly, firms in the development stage, with lack of financial flexibility, will prefer issuing equity to raise needed cash since issuing equity in the event of an unexpected poor outcome in the future will bear prohibitively high issuing costs.[6] Thus, we expect that firms in the development stage raise cash by issuing equity and maintain low leverage. This argument is consistent with DeAngelo and DeAngelo (2006) who argue

[5] Kaplan and Stromberg (2003) find that small growing firms face not only the different types of contracts but also significantly more restrictive agreements within the same debt financing contract than large firms. Billet, King and Mauer (2007) also report that firms with more growth options face more restrictive covenant protections.

[6] Consistent with this argument, firms appear issuing equity before declining earnings (McLaughlin, Safieddine, and Vasudevan (1996), Loughran and Ritter (1997) and Hansen and Crutchley (1990)) or facing cash shortfalls (DeAngelo, DeAngelo and Stulz (2007), Kim and Weisbach (2007) and McLean (2007)). Also, Pagano, Panetta, and Zingales (1998), Kim and Weisback (2007), and McLean (2007) show that firms with large growth options keep a relatively large portion of share issuance proceeds as cash. McLean (2007) reports that high precautionary-motive firms, which keep a large portion of issuance proceeds as cash, perform better post issuance than do low precautionary-motive firms. Lemmon and Zender (2004) also argue that firms constrained by their debt capacity use equity when raising external finance.

that firms develop potential sources of financial flexibility through cash accumulation and the preservation of debt capacity.[7] Bolton and Feixas (2000) also argue that small growing firms would like to reduce information dilution costs by funding their investments through a bank loan or a bond issue but are too risky to be able to obtain a bank loan or issue bonds. Thus, only option for these firms is equity financing, which incurs greater dilution costs but is feasible. Barclay, Smith and Morellec (2006) also argue that higher costs and lower benefits of debt for firms in the development stage cause a reduction in leverage. On the other hand, Boot and Thakor (1993) and Fulghieri and Lukin (2001) show that firms prefer to issue equity (the more informationally sensitive security) rather than debt (the less informationally sensitive security) to stimulate information production. De Meza and Webb (1987) also show that asymmetric information about firm risk makes equity (rather than debt) the optimal choice for external financing.

In short, firms in the development stage have little concern for agency costs of free cash flow while facing constraints in borrowing with lack of credit history. Thus, they accumulate cash through equity financing in order to increase financial flexibility for the future contingencies. Equity issues neither require collateral or restrictive covenants, nor accentuate moral hazard problems that are associated with leverage, nor raise the probability of financial distress. Thus, we propose that *small developing firms characterized by low/negative earned capital, low/negative operating cash flows, large cash holdings, no dividend payouts and no credit ratings issue more equity, and maintain lower leverage.*

B. Growth Stage

Firms in the growth stage begin generating positive cash flows from previous invest-

[7] Lines of credit may be considered another source of financial flexibility. However, Sufi (2007) shows that lines of credit are contingent on maintenance of cash flow-based covenants, implying that they represent a poor source of financial flexibility for firms with low operating cash flows. On the other hand, Lins, Servaes and Tufano (2007) argue that their survey results from a sample of relatively large firms suggest that lines of credit are more important for funding growth options in good time while cash is more important to insure against negative cash flow shocks.

ments. But they are still in great needs of external capital in order to exercise their substantiated growth options. They face less financing constraints than firms in the development stage since they have built up some reputations by approaching the capital markets. Thus, these firms have mediocre earned capital and was assigned to some credit ratings. They also expect large future cash flows from growing operations, which results in low cash flow to value rations. Large expected cash flow growth also allows the growing firms to use debt financing and maintain low cash holdings in order to finance their growth options with less concern for financial flexibility since their growing future earnings provide necessary flexibility. Thus, firms in the growth stage prefer to meet their capital needs through debt financing which incurs less issuing costs than equity financing. Some firms advancing toward the maturity stage may begin paying dividends. Thus, we propose that *medium firms with mediocre earned capital, mediocre operating cash flows relative to market value of assets, low cash holdings, low dividend payouts, and low credit ratings use debt financing and maintain high leverage ratios.*

C. Maturity Stage

Firms in the maturity stage are characterized by declining growth opportunities, large cash operating flows and little financing constraints. They generate large earnings from assets in place, which allows them to rely on self-financing for their current investment needs and hence accumulate large earned capital. The remaining cash flows are subject to the opportunity/agency costs of free cash flow (Jensen and Meckling (1976)). Increasing debt may mitigate the free cash flow problem, but using too much debt reduces financial flexibility for future uncertainties, especially when future earnings are expected to decline as the firm's competitive advantages erode over time. Accordingly, mature firms are likely to shift their focus from acquiring new financing to servicing debt and they prefer maintaining moderate debt level using only safe debt that can be comfortably repaid with declining future cash flows. Also, these mature firms must preserve financial flexibility for future strategies such as differentiating products or expanding into other businesses. When facing

earnings shortfalls, these mature firms will reduce cash holdings and dividends and increase leverage ratios.

Dividend payouts reduce the agency costs of free cash flow (Easterbrook (1984)) without deteriorating financial flexibility. Also, dividends can be reduced to generate funds when there are shortfalls in earnings. Consistent with this argument, Grullon, Michaely and Swaminathan (2002) find that firms anticipating declining investment opportunities are likely to increase dividends. Thus, firms in the maturity stage are likely to preserve financial flexibility through moderate leverage ratios while limiting agency costs on free cash flows through large dividend payouts (DeAngelo, DeAngelo, and Stulz (2005), and DeAngelo and DeAngelo (2006)). Moderate debt for firms in the maturity stage may forfeit the tax savings of debt financing, but the tax consideration can be secondary since these firms have other means of reducing taxes such as non-debt tax shields (DeAngelo and Masulis (1980)) and a whole array of non-debt tax shelter alternatives (Desai (2003), Desai and Dharmapala (2006), and Graham and Tucker (2006)).[8] Overall, we propose that *large mature firms with large earned capital, large operating cash flows relative to market value of assets, moderate cash holdings, high dividend payouts and good credit ratings maintain moderate leverage ratios.*

D. The Financial Flexibility Hypothesis

We summarize the above propositions from the life-cycle stages of financial flexibility as follows:

> **The Financial Flexibility Hypothesis** *Small developing firms with negative or low earned capital, negative or low operating cash flows, higher cash holdings, no dividend payouts and no credit ratings are in the most need of financial flexibility and hence issue more equity and maintain lower leverage ratios. Growing firms with mediocre earned capital, mediocre cash flow to*

[8] Consistent with this argument, Graham and Tucker (2005) find that firms engaging in tax shelter activities use less debt.

value ratios, low cash holdings, low dividend payouts and low credit ratings issue debt and hence maintain high leverage ratios. Large mature firms with large earned capital, large cash flow to value ratios, moderate cash holdings, large dividend payouts and high credit ratings mainly rely on internal equity and maintain moderate leverage ratios.

The novelty of the financial flexibility hypothesis (FFH) is its prediction of non-linear relationship between the life-cycle stages of financial flexibility and leverage ratios as depicted in Figure 1. Firms in the development stage are more likely to issue equity and firms in the growth stage are more likely to issue debt to meet their financing needs, while firms in the maturity stage are more likely to use internally generated funds with only safe debt to meet their financing needs, creating an overall inverted-U relationship between leverage ratio and the proxy variables of the financial flexibility life cycle. Accordingly, firm size, earned capital and operating cash flow to value ratio are expected to have inverted-U relationships with leverage ratio. Interestingly, Faulkender and Petersen (2006) report a negative relationship between leverage ratio and firm size when they consider a sample of firms with credit ratings, which is contrary to the general finding of a positive relationship between leverage ratio and firm size. According to our FFH, large mature firms characterized by good credit ratings are expected to have lower leverage ratios than medium growth firms characterized by low credit ratings. Thus, the negative relationship between leverage ratio and firm size, conditional on having credit ratings, is consistent with the FFH. The FFH also implies a negative relationship between credit rating and leverage ratio, but lower leverage ratios for non-rated firms than rated firms. The FFH also predicts negative relationships between leverage ratio and cash holding and between leverage ratio and dividend payout conditional on paying dividend, but lower leverage ratios for non-dividend paying firms than dividend paying firms.

The life-cycle pattern of financing based on the FFH contrasts to the financing pattern predicted by the pecking order theory (Myers (1984)). The pecking order theory predicts that firms will issue debt first and then outside equity under asymmetric information, whereas our FFH suggests that firms, when issuing external capital, issue outside

equity first before they issue debt because the benefits of preserving financial flexibility for the future contingencies outweigh the higher transaction/adverse selection costs of external equity. Also, from the perspective of the static trade-off theory, a firm in the development stage looks inconsiderate about its capital structure since it is still issuing equity with a low (below-target) debt ratio and ample cash holdings. Indeed, Loughran and Ritter (1997) demonstrate that firms issue equity even when they do not appear financially constrained. Leary and Roberts (2004) also show that most equity issuances occur when firms have sufficient debt capacity "without any apparent risk of entering financial distress from issuing debt," which lead them to conclude that the decision rule that firms use to access external capital markets is unclear. Welch (2004) also observes that firms do not use their issuing activities to counteract the external and large influences of stock returns on their capital structures. These "puzzles" may be explained not through the firm's reaction to the *past* and *current* financial conditions but through its financial flexibility concern to cope with *future* financial contingencies.

IV. Data

The initial sample consists of all available U.S. firms from the annual Compustat files for the period of 1971 to 2006. Following previous studies, we exclude financial firms and regulated utilities from the sample.[9] We also require firms to have positive total assets, book and market value of equity and net sales. These variables are used to deflate other variables and it is difficult to interpret the results when they have non-positive values. We also delete observations with leverage ratios less than zero or greater than one. Accordingly, we drop bout 8 % of firm-year observations in the sample that does not meet these requirements. After the initial requirements are applied, the sample consists of 135,583 firm-year observations.

[9] Financial firms are represented by SIC codes 6000-6799 and utilities by SIC codes 4800-4999. These firms have very different capital structures and their financing decisions may not convey the same information as non-financial and non-regulated firms. For example, a relatively high leverage ratio is normal for financial firms, but the same high leverage ratio for non-financial firms may indicate financial distress.

While Shyam-Sunder and Myers (1999) and Myers (1984) argue that there are rational reasons for managers to specify debt targets in terms of book values, Titman and Wessels (1988) and Welch (2004) are inclined toward the use of debt level measured at market value. Accordingly, we test our hypothesis using total debt and long-term debt ratios measured with both book and market value of total assets. The definitions of all the variables used in this study are provided in the Appendix.

V. Univariate Results

A. Firm Size, Credit Ratings and Leverage

In order to examine the relationship between firm size and leverage closely, we divide the sample into size deciles each year and report the leverage ratios measured in long-term and total debt to book/market value of assets.[10] We define firm size in three different ways: based on net sales, book value of total assets, market value of total assets. We compares the results based on net sales and the book value of total assets in Table I. Since they produce similar results, however, we report only the results based on net sales in the remaining tables.

Panel A of Table I shows that regardless of the various definitions of leverage ratios, there is a positive relationship between firm size based on net sales and leverage ratio except for the largest three size deciles. We also report the percentage of zero-debt firms in each size decile. Small firms are associated with more zero debt than large firms. Panel B of Table I show similar results across size deciles based on total assets.

Byoun (2007) suggests that zero-debt firms are constrained by debt market while less constrained by equity market. Thus, zero-debt firms lacking financial flexibility to issue debt prefer issuing equity to issuing debt. In order to examine whether the positive relationship between firm size and leverage ratio is driven by these zero-debt firms, we report the results excluding zero-debt firms in Panel C of Table I. The positive relationship between size and

[10] The results does not change when we exclude deferred taxes and investment tax credit or include convertible debt (item 79) in the definition of book equity as in Alti (2006) and Kayhan and Titman (2007).

leverage ratio are still reversed for the largest three size deciles. Thus, our results confirm that the positive relationship between firm size and leverage ratios generally holds but there is potentially a negative relationship toward the largest firms, consistent with the prediction of the FFH.

Table I

In Table II, we divide the sample into prior- and post-1985 subperiods. Since S&P credit rating information is available only from 1985, on the one hand, it allows us to examine the distribution of rated firms across size deciles for the later period. On the other hand, it allows us to examine if there is any discernible change in the relationship between firm size and leverage ratio over time. In Panel A of Table II, the positive relationship between firm size and leverage ratio holds only up to 7th deciles and the relationship becomes negative in the largest four deciles for the period of 1971-1984. In Panel B, the inverted-U relationship becomes less clear for the period of 1985-2006, but the largest size decile firms still have significantly lower leverage ratios than firms in the 8th and 9th size deciles. The results in Panel B also show that small firms rarely have long-term credit ratings and most ratings are concentrated in the largest four deciles with 78.4% of the firms rated in the largest size decile. The sample in Faulkender and Petersen (2006) includes firms with credit ratings that are mainly from the largest three size deciles for the period after 1985, which explains their finding of a negative relationship between leverage ratio and firm size.

Table II

In order to explicitly examine the implications of the FFH that there are negative relationships between firm size and leverage ratio and between credit rating and leverage ratio, conditional on having credit ratings, we examine firms' leverage ratios across S&P's long-term credit ratings in Table III. Consistent with the predictions of our hypothesis, the results show that firms with higher credit ratings are larger firms and have lower leverage

ratios. There is a very high correlation between credit rating and firm size. There is also a negative relationship between firm size and leverage ratio for firms with above B ratings, but unrated firms tend to be smaller and have lower leverage ratios on average than rated firms. Table III also shows that there is a positive and monotonic relationship between credit ratings and dividend payout, again consistent with the implication of the FFH.

Table III

B. Firm Size, Cash Holdings, Earned Capital, Dividend Payout, and External Financing Activities

The FFH suggests that the lower leverage for firms in the development stage results from external equity rather than accumulated internal equity (as suggested by the pecking order theory). In order to examine this implication, we report net long-term debt issue, net total debt issue, and net new equity issue as proportions of total assets across size deciles. We also examine the ratio of cash and marketable securities to total assets (cash holdings), earned capital, operating cash flow to value ratio, and dividend payouts.[11] The FFH implies that mature firms are more likely to pay dividend, while limiting debt financing. Thus, we expect an inverted-U relationship between firm size and debt financing, which in turn implies a similar inverted-U relationship between dividend payout and debt financing.

Table IV reports the results. The results in Panel A of Table IV show that small firms tend to hold more cash while having less earned capital and lower operating cash flows than large firms. In fact, the average earned capital and operating cash flows are negative for firms in smaller size deciles. Thus, small firms' growth is not likely to come mainly from internally generated equity. Indeed, small firms' long-term or total debt financing is minuscule compared to that of their equity financing. The firms in the smallest size deciles appear to borrow both debt and equity but with debt in much smaller portion of total assets compared to equity. On average firms in the first and second size deciles issue equity

[11] Including accounts receivable in addition to cash and marketable securities produces almost identical results.

for as much as 21.52% and 7.62% of total assets per year, respectively. Firms in the above 7th size deciles issue more debt than equity with firms in the 8th decile issuing most debt, thus confirming the inverted-U relationship between firm size and debt financing. Firms in the largest two size deciles actually reduce equity. There is also a positive, monotonic relationship between firm size and dividend payout.

Table IV

The results in Panel A of Table IV can be driven by IPO firms that are more likely to be in small size deciles. In order to examine the IPO effect, we identify the IPO date from Compustat and designate the first fiscal year ending after the IPO date as a IPO year. We also identify the first year appearing in the Compustat for those that do not have IPO dates but the Compustat begins its coverage during our sample period and treat it like the IPO year. The results excluding these IPO years are reported in Panel B. They show that the magnitude of external equity financing does not change much, suggesting that small firms equity financing is not mainly coming from IPOs.

It is also possible that the results could be driven by a few outliers especially in small size deciles. In order to address this concern we reproduce results with exclusion of the outliers of net equity financing variable at 1st and 99th percentiles. Again the results (not reported) show that small firms heavily rely on external equity with little debt. The pattern remains intact but only with less magnitudes when we exclude observations with greater cutoff percentiles of the equity financing variable.

Overall, equity issues are negatively associated with firm size and with earned capital, and positively with cash holding, while debt issues show inverted-U relationships with firm size, earned capital, operating cash flows and dividend payout. Thus, small firms have lower leverage ratios, not because of internally generated funds but because of additional external equity. Small firms appear to build up cash holdings through external equity in order to preserve financial flexibility, consistent with the FFH.

C. Leverage Ratios and Financing Activities for Positive and Negative Earned Capital Firms

Since firm size alone may not be a good proxy for the financial flexibility life cycle, we examine the leverage ratios for firms divided into negative and positive earned capital groups within each size decile. Small firms with negative earned capital are more likely to show the characteristics of firms in the development stage than large firms with positive earned capital, ceteris paribus.

Panel A of Table V shows cash holdings and leverage ratios for each group. The results show that firms with negative earned capital also face negative or low operating cash flows. Smaller firms (in size deciles below 6) with negative earned capital hold more cash than similar size firms with positive earned capital as a means of preserving financial flexibility. Most differences are statistically significant (not reported in the table). On the contrary, large firms with negative earned capital tend to carry less cash balances with higher leverage ratios than similar firms with positive earned capital. Large firms with negative earned capital appear to use preserved debt capacity and cash holdings to counteract negative earnings shocks.

The market value leverage ratios for firms with negative earned capital are always lower than book value leverage ratios because negative earned capital reduces the book value of total assets which is the denominator in the book leverage ratios. Since the portion of negative earned capital relative to total assets are significantly greater for small firms, firms with negative earned capital in the 1st to 4th size deciles have higher book leverage ratios but lower market-value leverage ratios than firms with positive earned capital in the same size deciles. For this reason, firms with negative earned capital have higher book leverage ratios despite their heavy reliance on equity financing as shown in Panel B. Accordingly, it is important to note that the higher book leverage ratios for small firms with large negative earned capital result not from debt issues but from negative earned capital. Also, the relationship between leverage ratio and earned captial within smaller size deciles (lower than decile 5) can be affected by whether the leverage is measured in book value or market value because of the significant number of small firms with negative earned capital.

Panel B of Table V further shows that firms with negative earned capital pay less dividend and issue substantially more equity than those with positive earned capital, especially for firms in the smaller size deciles. The results suggest that larger equity issues of small firms are driven by firms with negative earned capital as they issue equity to raise cash as a means of preserving financial flexibility. Firms with negative earned capital issue significantly less debt than firms with positive earned capital in most size deciles except for the largest size decile in which the difference is not significant for long term debt. Some firms with negative earned capital are even reducing debt (as suggested by negative signs) while issuing equity. Firms with negative earned capital in the larger deciles issue both debt and equity.

Consistent with the FFH, the results in Table V show that small firms with negative earned capital hold more cash and pay less dividends while issuing more equity than those with positive earned capital as a means of preserving financial flexibility. However, large firms with negative earned capital, while paying less dividends and issuing more equity, have less cash balances and higher leverage ratios than those with positive earned capital, suggesting that they are using up cash and preserved debt capacity at the time of earnings shortfalls, consistent with the FFH.

Table V

D. Leverage Ratios and Financing Activities across Earned Capital and Operating Cash Flow Deciles

To the extent that earned capital and operating cash flows serve as poxies for the financial flexibility life cycle, the FFH implies that firms with low earned capital or low operating cash flow to value ratios use equity financing, firms with mediocre earned capital or mediocre operating cash flow to value ratios use debt financing, and firms with large earned capital or operating cash flow to value ratios use internally generated equity financing with large dividend. In order to test this implication, we divide the sample into deciles based on earned capital and the three-year moving average of operating cash flow to value

ratio and examine firms' financing activities, dividend payouts and leverage ratios in Tables VI.

Table VI

Since results are similar between long-term debt and total debt, we report long-term debt book and market leverage ratios, net total debt issues, net new equity issues and dividend payouts for each earned capital decile in Panel A of Table VI. Firms with large negative earned capital in lower deciles issue much more equity than debt. Firms in 4-6th deciles issue the most debt and maintain high leverage ratios. Clearly, there is an inverted-U relationship between earned capital and leverage ratio, consistent with the predictions of the FFH. As we move from decile 7 to upper deciles, we observe that firms reduce both debt and equity financing while increasing dividends.

The results for deciles based on the three-year moving average of operating cash flow to value ratio in Panel B provide further evidence for the FFH. Firms with negative and low operating cash flows tend to issue much more equity relative to debt. Overall, equity issues for the firms in the higher deciles are much less than firms in the lower deciles, suggesting that firms with large operating cash flows rely more on internal funds and less on external funds. In fact, the firms in the largest two deciles reduce external equity capital. The results show the inverted-U relationship between operating cash flow to value ratio and leverage ratio, with the lower leverage ratio for firms in the 9th and 10th deciles than those in the 8th decile, consistent with the predictions of the FFH. There is also a inverted-U relationship between operating cash flow to value ratio and firm size. Overall, the results in Tables VI are very intriguing and surprisingly consistent with our FFH.

Table VI

V. Multivariate Analysis

In this section, we directly test the implications of the FFH with the following regression models:

$$\begin{aligned} LEV &= \alpha_0 + \alpha_1 EC \cdot D^{EC+} + \alpha_2 EC \cdot D^{EC+} + \alpha_3 Div + \alpha_4 D^{Div} + \alpha_5 Rating \\ &\quad + \alpha_6 D^{No} + \alpha_7 Cash + \alpha_8 Size + \alpha_9 Size^2 + Other\,Variables + \varepsilon, \end{aligned} \tag{1}$$

and

$$\begin{aligned} LEV &= \beta_0 + \beta_1 OCF \cdot D^{OCF+} + \beta_2 OCF \cdot D^{OCF-} + \beta_3 Div + \beta_4 D^{Div} + \beta_5 Rating \\ &\quad + \beta_6 D^{No} + \beta_7 Cash + \beta_8 Size + \beta_9 Size^2 + Other\,Variables + v, \end{aligned} \tag{2}$$

The detailed definition of each variable is provided in the Appendix. Due to the high correlation between industry-adjusted earned capital (EC) and industry adjusted three-year moving average operating cash flow to value ratio (OCF), we estimate the nonlinearity of these variables in separate regressions by allowing them to have different slopes for positive and negative values. We expect positive coefficient estimates for $EC \cdot D^{EC-}$ and $OCF \cdot D^{OCF-}$ and negative estimates for $EC \cdot D^{EC+}$ and $OCF \cdot D^{OCF+}$. Arguably, these are crude ways of defining the inflection point in the inverted-U relationship. However, they serve our purpose of testing for the existence of nonlinear relationships without identifying the exact inflection point.

Other variables of main interest in testing the implications of the FFH are firm size ($Size$) and its quadratic term ($Size^2$),[12] cash balance ($Cash$), and dividend payout (Div). We expect positive coefficient estimates on $Size$ and negative coefficient estimates on $Size^2$, if there is indeed a inverted-U relationship. We also expect negative coefficient estimates on $Cash$, Div and D^{Div} a dummy variable for non-dividend paying firms. We also include long-term credit rating ($Rating$) which is numbered 0 for non-rated firms and from 1 for

[12] We define firm size as the natural log of sales which we believe better proxies a firm's financial flexibility life cycle than total assets. When we try total assets as size, the results are similar except that the the coefficient estimates on the quadratic size terms are weaker in the presence of credit rating variables due to high correlation between credit rating and total assets. Whether we take the natural log or not does not change the results.

the lowest rating (below B) to 7 for the highest rating (AAA) as shown in Table III and a dummy variable for non-rated firms (D^{No}). We expect negative coefficient estimates on both of the rating variables. Since information on credit ratings is available only from 1985, the estimation of regressions including rating information is restricted to the sample of 1985-2006 period.

We also include other control variables from previous studies: market-to-book assets ratio (MB), research and development expenditures ($R\&D$) and a dummy variable equal to one for missing value for $R\&D$ variable (D^R), which are typically used in previous studies as measures of a firm's investment opportunities and are known to be negatively associated with leverage ratio. Other control variables include fixed assets (FA), Altman's Z-score (AZ), depreciation and amortization (Dep), marginal tax rate (Tax), and industry median debt ratio (Med). Following the common practice in handling the outliers in the literature, we estimate these regressions with winsorization of variables at 1st and 99th percentiles except for those that are bounded by 0 from below, in which case we winsorize only at 99th percentile.

Table VII

Panel A in Table VII reports two sets of estimation results for each dependent variable.[13] We generate standard errors clustered by both time and firm (per Petersen (2005)) to obtain t-statistics to gauge the significance of the coefficients. Consistent with the FFH, earned capital are negatively associated with leverage ratio across firms with above industry median earned capital ($EC \cdot D^{EC+}$) but it is positively associated with leverage ratio across firms with below industry median earned capital ($EC \cdot D^{EC-}$) except for the insignificant estimates when the dependent variable is the book value leverage ratio. Similar results are found with operating cash flow to value ratios. As noted from Table V, small firms

[13] We report the results only from fixed effects regressions but the results are similar when we estimate with the OLS or Fama-MacBeth regressions. For the fixed effects regression estimates, we require firms to have minimum three years of observations.

with large negative earned capital/operating cash flows have higher book leverage ratios than those with positive earned capital/operating cash flows despite their heavy reliance on equity financing. These outliers generate the weaker results when the dependent variable is book leverage ratios. When we estimate the models after dropping firms with earned capital less than -5 (not reported), the coefficient estimates on negative earned capital and negative operating cash flow become all positive and highly significant.

Dividend payout is negatively associated with leverage ratio in all regressions, suggesting that firms with high dividend payouts maintain lower leverage. This result is consistent with previous findings (Byoun (2008), Graham (2000), Frank and Goyal (2003), and Minton and Wruck (2001)). Mature firms with large cash flows seem paying more dividend while maintaining low leverage, consistent with the FFH. The negative coefficient estimates on the nondividend-payout dummy variable also suggest that non-dividend paying firms have on average lower leverage ratios than dividend paying firms, which reflects the inverted-U relationship predicted by the FFH. The negative coefficient estimates on cash holdings suggest that firms holding greater cash balances have lower leverage, consistent with the FFH. The coefficient estimates on firm size are significant and positive while the coefficient estimates on the quadratic size term are significant and negative in all regressions, indicating an inverted-U relationship between leverage ratio and firm size, consistent with the FFH. All other estimates are consistent with the results in previous studies.

We also estimate the regressions with long-term credit rating variable ($Rating$) and no-rating dummy variable (D^{No}) included for the period of 1985-2006 in Panel B of Table VII. The results are generally similar to those in Panel A, with the insignificant coefficient estimates on $EC \cdot D^{EC-}$ and $OCF \cdot D^{OCF-}$ when the dependent variable is the book value debt ratio. The negative coefficient estimates on both long-term rating and no-rating dummy variables suggest that growing firms characterized by low credit ratings use more debt than mature firms characterized by high credit ratings, while firms in the development state without credit ratings use less debt due to the lack of accessibility to the debt capital and concern for financial flexibility.

Overall, regression results in Table VII provide strong evidence of inverted-U relation-

ships between leverage ratio and some proxy variables of the financial flexibility life cycle, supporting the FFH. The results suggest that small firms and firms with low earned capital and low cash flow to value ratios have lower leverage ratios resulting from their concern for financial flexibility (issuing equity and building up cash holdings) and large firms and firms with large earned capital and cash flow to value ratios also have low leverage as they mostly rely on internal funds while using only safe debt. The credit ratings and dividend payouts are negatively related to leverage ratio but non-rated firms and non-dividend paying firm have lower leverage ratios, showing the inverted-U relationship as predicted by the FFH. These findings are very intriguing since previous studies have overlooked such relationships.

VII. Summary and Conclusions

We develop the financial flexibility hypothesize (FFH) that small developing firms with negative or low earned capital/operating cash flows, higher cash holdings, no dividend payouts and no credit ratings are in the most need of financial flexibility and hence issue more equity and maintain lower leverage ratios. Growing firms with mediocre earned capital/cash flow to value ratios, low cash holdings, low dividend payouts and low credit ratings issue debt and hence maintain high leverage ratios. Large mature firms with large earned capital, large cash flow to value ratios, moderate cash holdings, large dividend payouts and high credit ratings mainly rely on internal equity and safe debt, maintaining moderate leverage ratios.

Our results strongly support the FFH. Overall, small firms have lower leverage ratios, not because of internally generated funds or additional debt financing but because of additional equity financing. Small firms also build up cash holdings in order to preserve financial flexibility through external equity. Our results also suggest that firms with low earned capital and low cash flow to value ratios have lower leverage ratios resulting from their concern for financial flexibility (issuing equity and building up cash holdings) and firms with large earned capital and cash flow to value ratios also have low leverage as they mostly rely on internal funds while using only safe debt, confirming the inverted-U relationship predicted by the FFH. The results further provide evidence for inverted-U relationships of

leverage ratio with credit ratings and dividend payout, as predicted by the FFH.

Our findings can be explained by neither the pecking order theory and the tradeoff theory—the pecking order may be reversed for small firms that prefer external equity to debt financing while the tradeoff theory may miss out some important aspects of capital structure decisions. Accordingly, financial flexibility hypothesis brings new insights into several unresolved issues in the capital structure literature. For example, why do larger firms appear to provide a better fit for the pecking order theory (Shyam-Sunder and Myers (1999) and Frank and Goyal (2003)) despite the fact that large firms are less subject to information asymmetry than small firms? Our finding suggests that large firms prefer using internal funds to preserve financial flexibility. On the other hand, small firms issue equity and increase cash holdings despite having low leverage in order to cope with the lack of financial flexibility, thus reversing the external financing hierarchy suggested by the pecking order theory. Our findings also answers why most equity issuances occur when firms have sufficient debt capacity (Fama and French (2002) and Leary and Roberts (2005a)), "without any apparent risk of entering financial distress from issuing debt."(Leary and Roberts (2004)) Our findings may also have bearings on Welch (2004) who observe that firms do not use their issuing activities to counteract the external and large influences of stock returns on their capital structures.

In conclusion, asymmetric information falls short of providing a plausible explanation for motivation behind firms' external financing decisions. The benefits and costs associated with financial flexibility influence firms' capital structure decisions—but not in the manner hypothesized by the traditional trade-off theory. Thus, a substantial alteration may be required to the tradeoff argument. Future study should address the crux of the financial flexibility, how uncertainty affects a firm's financial decisions.

Appendix. Variable Definitions

Total assets = Compustat item 6;

Net sales = item 12;

The number of shares outstanding = item 25;

Stock price at the end of the fiscal year =item 199;

Accounts receivable =item 2;

Net long-term debt issue = item 111 - item 114;

Net total debt issue = item 111 − item 114 − item 301 if item 318 = 1 and item 111 − item 114 + item 301, otherwise. Changes in current debt (item 301) represent an increase in working capital for format code 1 but a decrease in working capital for format codes;[14] 1 to 3, OCF equals item 123 + item 124 + item 125 + item 126 + item 106 + item 213 + item 217 + item 218. For firms reporting format code 7, OCF equals iitem 123 + item 124 + item 125 + item 126 + item 106 + item 213 + item 217 + item 314;[15]

[14]When we evaluate the Statement of Cash Flows or Changes in Financial Position for any company in Compustat, we first consider Format Code (item 318). This is important because the format code directs us to the data that are available for a particular company. Prior to the adoption of the Statement of Financial Accounting Standards (SFAS) #95 for U.S. companies and currently for foreign companies, the format code may have changed from one year to the next depending on the manner in which a company reported its data. Effective for fiscal years ending July 15, 1988, the SFAS #95 required U.S. companies to report the Statement of Cash Flows (format code = 7). Prior to the adoption of SFAS #95, companies had the option of reporting any one of the following: 1) Working Capital Statement; 2) Cash Statement by Source and Use of Funds; or 3) Cash Statement by Activity. These formats were specified beginning in 1971, which is the reason our sample period begins with this year. (See Compustat manual.)

[15]Following Frank and Goyal (2003), we treat missing values that are not reported or combined with other data items in the definition of OCF as zero.

Net equity issues = (item 108 − item 115) / Total assets;

AZ = Altman's Z-score modified by MacKie-Mason (1990): ($3.3EBIT$ (item 178) + sales (item 12) + 1.4 retained earnings (item 36) + 1.2 working capital (item 4 - item 5)) divided by total assets (item 6). Altman's Z-score measures the *ex ante* probability of distress (Graham (1996, 2000));

$Cash$ = Industry adjusted cash and marketable securities defined as (item 162 + item 193) divided by total assets minus its industry median based on two-digit SIC code;

Dep = depreciation and amortization (item 14) as a proportion of total assets. Firms with more depreciation expenses have less need for the interest deductions associated with debt financing;

DIV = common stock dividends (item 127) divided by total assets. DIV controls for possible trade-off between debt and dividend in reducing agency costs of free cash flow (Fama and French (2002));

D^{Div} = dummy variable equal to one if the firm has missing values for common stock dividends (item 127) and zero otherwise;

ΔE_{it} = net equity issues for firm i from time $t-1$ to t: item 108 − item 115;

FA = fixed assets (item 8) divided by total assets. Firms operating with greater tangible assets have a higher debt capacity;

IPO = dummy variable equal to one for IPO year and zero otherwise (Compustat Price, Dividends, and Earnings - Monthly Format);

$Size$ = log of total assets (item 6) as a measure of firm size. Larger firms tend to: have more leverage (perhaps because they are more transparent); have lower asset volatility; or naturally sell large enough debt issues so that the fixed costs of public borrowing are not prohibitive;[16]

[16]The results are not affected whether the size is defined in terms of market value of assets or of net sales (item 12).

MB = market-to-book ratio of assets. The market value of assets (MV) equals total assets (item 6) minus total equity (item 216) minus balance sheet deferred taxes and investment tax credit (item 35) plus the market value of common equity (price (item 199) times shares outstanding (item 54)) plus preferred stock liquidating value (item 10, replaced by the redemption value of preferred stock (item 56) when missing).[17] A higher MB is generally taken as a sign of more attractive future growth options, which a firm tends to protect by limiting its leverage;

Med = industry median debt ratio based on two-digit SIC (or Fama and French (2002) industry groupings). According to Frank and Goyal (2004), the industry median leverage is an important determinant of a firm's leverage ratio, acting as a proxy for several factors, including intangibility, regulation, stock variance, uniqueness, purchasing manager's sentiment index, etc.;

OCF = three-year moving average of operating income (item 13) divided by market value of total assets minus its industry median based on two-digit SIC code;

$Rating$ = numeritized long-term credit rating (item 280). If item 280 =2 (AAA), then $Rating = 7$. If item 280 = 4 (AA+), 5 (AA) or 6 (AA−), then $Rating = 6$. If item 280 = 7 (A+), 8 (A) or 9 (9A−), then $Rating = 5$. If item 280 = 10 (BBB+), 11 (BBB) or 12 (BBB−), then $Rating = 4$. If item 280 = 13 (BB+), 14 (BB) or 15 (BB−), then $Rating = 3$. If item 280 = 16 (B+), 17 (B) or 18 (B−), then $Rating = 2$. For all other ratings, $Rating = 1$. For unrated firms, $Rating = 0$.

D^{No} dummy variable equal to one if the firm has missing values long-term credit ratings (item 280) and zero otherwise;

EC = retained earnings (item 36) divided by total assets;

D^{EC+} = dummy variable equal to one for the firm with positive EC and zero otherwise;

[17]The results do not change when we exclude deferred taxes and investment tax credit or include convertible debt (item 79) in the definition of book equity (as in Alti (2006) and Kayhan and Titman (2006)).

D^{EC-} = dummy variable equal to one for the firm with negative EC and zero otherwise;

$R\&D$ = research and development expenditures (item 46) divided by net sales (item 12). RND can be taken as a proxy for future expected investment (Fama and French (2002));

D^{R} = dummy variable that equals one for firms with missing RND and zero otherwise;

Tax = marginal tax rate equal to the statutory tax rate if the firm reports no net operating loss carryforwards (item 52) with positive pretax return (item 170) and zero otherwise. The statutory taxes are 48% from 1971 to 1978, 46% from 1979 to 1986, 40% in 1987, 34% from 1988 to 1992, and 35% from 1993 to 2006. Plesko (2003) shows that this binary measure captures the marginal tax effects;

References

Acharya, Viral V., Sergei A. Davydenko and Ilya A. Strebulaev, 2007, Cash holdings and credit spreads, Stanford University working paper.

Ahmed, P., Hardaker, G., Carpenter, M., 1996), Integrated flexibility. a key to competition in a turbulent environment, *Long Range Planning* 29 (4), 562-571.

Agarwal, Prasun and Maureen O'Hara, 2007, Information Risk and Capital Structure, Cornell University working paper.

Almeida, Heitor and Murillo Campello, 2005, Firm financing-investment interactions: Evidence from debt and equity issues, New York University and University of Illinois Working paper.

Almeida, Heitor, Murillo Campello and Michael S. Weisbach, 2004, The cash flow sensitivity of cash, *Journal of Finance* 59, 1777-1804.

Alti, Aydogan, 2006, How persistent is the impact of market timing on capital structure, *Journal of Finance* 61, 1681-1710.

Altinkilic O. and R.S. Hansen, 2000, Are there economies of scale in underwriter fees? Evidence of rising external financing costs, *Review of Financial Studies* 13(1), 191–218.

American Institute of Certified Public Accountants, 1993, Exposure Draft: *Disclosure of certain significant risks and uncertainties and financial flexibility*, New York: the institute.

Baker, Malcolm and Jeffrey Wurgler, 2002, Market timing and capital structure, *Journal of Finance* 57, 1-32.

Barclay, Michael J. and Clifford W. Smith, 2005, The capital structure puzzle: The evidence revisited, *Journal of Applied Corporate Finance* 17(1), 8-17.

Barclay, Michael J., Clifford Smith, Jr. and Erwan Morellec, 2006, On the debt capacity of growth options, *Journal of Business* 79(1), 37-59.

Bancel F. and U.R. Mittoo, 2004 Cross-country determinants of capital structure choice: A survey of European firms, *Financial Management* 33, pp. 103-132.

Bernstein, L. A., 1993, *Financial Statement Analysis: Theory, Application, and Interpretation*, 5th ed. Boston, Mass., Irwin.

Billet, Matthew T., Tao-Hsien Dolly King, and David C. Mauer, 2007, Growth opportunities and the choice of leverage, debt maturity, and covenants, *Journal of Finance* 62(2), 697-730.

Bolton, Patrick and Xavier Feixas, 2000, Equity, bonds, and bank debt: Capital structure and financial market equilibrium under asymmetric information, *Journal of Political Economy* 108(2), 324-351.

Boot, Arnoud W. A., and Anjan V. Thakor, 1993, Security design, *Journal of Finance* 48, 1349-1378.

Brounen D., A. De Jong and C.G. Koedijk, Corporate finance in Europe: Confronting theory with practice, *Financial Management* 33, pp. 71-101.

Bueno-Campos, E., 1992, *Organizacin Flexible y Gestin del Cambio*, University Institute of Business Administration (IADE), Barcelona.

Byoun, Soku, 2008, How and When Do Firms Adjust Their Capital Structures toward Targets? *Journal of Finance*, Forthcoming.

Byoun, Soku, 2007, Why do some firms go debt-free? Baylor University Working Paper.

DeAngelo H. and L. DeAngelo, 2006, Capital Structure, Payout Policy, and Financial Flexibility, University of Southern California working paper.

DeAngelo, Harry, Linda DeAngelo, and Ren M. Stulz, 2005, Dividend Policy and the Earned/Contributed Capital Mix: A Test of the Lifecycle Theory, *Journal of Financial Economics*.

DeAngelo, Harry, Linda DeAngelo and Rene M. Stulz, 2007, Fundamentals, market timing, and seasoned equity offering, National Bureau of Economics Research working paper 13285.

DeAngelo H. and R. Masulis, 1980, Optimal capital structure under corporate and personal taxation, *Journal of Financial Economics* 8, 3-29.

De Meza, David, and David C. Webb, 1987, Too much investment: A problem of asymmetric information, *Quarterly Journal of Economics* 102, 281-292.

Desai, Mihir A., 2003, The divergence between book and tax income, *Tax Policy and the Economy* (17), edited by James Poterba. MIT Press, 169-206.

Desai, Mihir A. and Dhammika Dharmapala, 2006, Corporate tax avoidance and high powered incentives, *Journal of Financial Economics* 79 (1), 145-179.

Diamond, Douglas W, 1991, Monitoring and reputation: The choice between bank loans and directly placed debt, *Journal of Political Economy* 99 (4), 689-721.

Dickinson, Victoria, 2007, Cash Flow Patterns as a Proxy for Firm Life Cycle, University of Florida working paper.

Donaldson, Gordon, 1969, *Strategy for Financial Mobility*, Boston, Division of Research, Harvard Graduate School of Business Administration.

Easterbrook, Frank H., 1984, Two agency-cost explanations of dividends, *American Economic Review* 74, 650–659.

Evans, D. 1987, Tests of alternative theories of firm growth, *Journal of Political Economy* 95, 657-674.

Fama, E. F. and French, K. R., 2002, Testing trade-off and pecking order predictions about dividends and debt, *Review of Financial Studies* 15(1), 1–33.

Fama, Eugene F. and Kenneth R. French, 2005, Financing decisions: Who Issues Stock?, *Journal of Financial Economics* 76, 549–582.

Faulkender, Michael, Todd Milbourn and Anjan Thakor, 2007, Capital Structure and Dividend Policy: Two Sides of the Same Coin? Washington University in St. Louis working paper.

Faulkender, Michael, and Mitchell A. Petersen, 2006, Does the source of capital affect capital structure?, *Review of Financial Studies* 19, 45–79.

Faulkender, Michael and Rong Wang, 2006, Corporate financial policy and the value of cash, *Journal of Finance* 61, 1957-1990

Fazzari, Steven M., R. Glenn, Hubbard, and Bruce Petersen, 1998, Financing constraints and corporate investment, *Brooking Papers on Economic Activity* 1, 141-195.

Frank, M. Z. and Vidhan K. Goyal, 2003, Testing the pecking order theory of capital structure, *Journal of Financial Economics* 67(2), 217–248.

Frank, M. Z. and Vidhan K. Goyal, 2005, Trade-off and Pecking Order Theories of Debt, B. Espen Eckbo(ed.), *Handbook of Corporate Finance: Empirical Corporate Finance* (Handbooks in Finance Series, Elsevier/North-Holland), Chapter 7.

Fulghieri, Paolo, and Dmitry Lukin, 2001, Information production, dilution costs, and optimal security design, *Journal of Financial Economics* 61, 3-42.

Gamba, Andrea and Alexander J. Triantis, 2007, The value of financial flexibility, *Journal of Finance* forthcoming.

Goldstein, R. N. Ju, and H. Leland, 2001, An EBIT-based Model of Dynamic Capital Structure, *Journal of Business* 74, 483–512.

Graham, J. R., 2000, How big are the tax benefits of debt? *Journal of Finance* 55, 1901-1941.

Graham, John R. and Campbell R. Harvey, 2001, The theory and practice of corporate finance: evidence from the field, *Journal of Financial Economics* 61, 187-243.

Graham, J., and A. L. Tucker, 2006, Tax shelters and corporate debt policy, *Journal of Financial Economics* 81 (3), 563-594.

Granger, C.W.J. and Terasvirta, T., 1993, *Modelling Nonlinear Economic Relationships*, Oxford: Oxford University Press.

Grullon Gustavo, Roni Michaely and B. Swaminathan, 2002, Are dividend changes a sign of firm maturity? *The Journal of Business* 75, 387–424.

Hansen, R. and C. Crutchley, 1990. Corporate earnings and financings: An empirical analysis. *Journal of Business* 63, 347-371.

Harford, Jarrard, 1999, Corporate cash reserves and acquisitions, *Journal of Finance* 54, 1969-1997.

Heath, L.C, 1980, Is working capital really working? *Journal of Accountancy* 150 (2), 55-62.

Hitt, M., Keats, B., DeMarie, S., 1998, Navigating in the new competitive landscape: building strategic flexibility and competitive advantage in the 21st century, *Academy of Management Executive* 12 (4), 22-43.

Hovakimian, Armen, Tim C. Opler, and Sheridan Titman, 2001, The debt-equity choice: An analysis of issuing firms, *Journal of Financial and Quantitative Analysis* 36(1), 1–24.

Hovakimian, Armen, Gayane Hovakimian and Hassan Tehranian, 2004, Determinants of target capital structure: The case of dual debt and equity issues, *Journal of Financial Economics* 71, 517–540.

Jensen, M.C., 1986, Agency costs of free cash flow, corporate finance and takeovers, *American Economic Review* 76, 323-339.

Jensen, M.C. and W. Meckling, 1976, Theory of the firm: Managerial behavior, agency costs, and capital ttructure, *Journal of Financial Economics* 3, 305-360.

Jung, Kooyul, Yong-Cheol Kim, and Rene M. Stulz, 1996, Timing, investment opportunities, managerial discretion, and the security issue decision, *Journal of Financial Economics* 42, 159–185.

Kaplan, Steven N. and Per Stromberg, 2003, Financial contracting theory meets the real world: An empirical analysis of venture capital contracts, *Review of Economic Studies* 70, 281-315.

Kayhan, Ayla and Sheridan Titman, 2007, Firms' histories and their capital structures, *Journal of Financial Economics*, forthcoming.

Keynes, J.M., 1936, *The General Theory of Employment. In: Interest and Money*, Harcourt Brace, London.

Kim, Woojin and Michael Weisbach, 2007, Motivations for public equity offers: An international perspective, *Journal of Financial Economics*, Forthcoming.

Kisgen, Darren J., 2006, Credit Ratings and Capital Structure, *Journal of Finance* 61 (3), 1035-1072.

Koornhof, Carolina, 1998, Accounting Information on Flexibility, Doctoral Thesis, University of Pretoria.

Leary, Mark T., Micheal R. Roberts, 2004, Financial slack and tests of the pecking order's financing hierarchy, Duke University working paper.

Leary, Mark T. and Michael R. Roberts, 2005, Do firms rebalance their capital structures? *Journal of Finance* 60, 2575–2619.

Leary, Mark T. and Michael R. Roberts, 2005a, The Pecking Order, debt capacity, and information asymmetry, Duke University and University of Pennsylvania working paper.

Lemmon, Michael L. and Jaime F. Zender, 2004, Debt capacity and tests of capital structure theories. University of Utah and University of Colorado working paper.

Lins, V. Karl, Henri Servaes and Peter Tufano, 2007, What drives corporate liquidity? An international survey of strategic cash and lines of credit, Harvard University working paper.

Loughran, T. and J. Ritter, 1997. The operating performance of firms conducting seasoned equity offerings. *Journal of Finance* 52, 1823-1850.

McLaughlin, R., Safieddine, A., and G. Vasudevan, 1996. The operating performance of seasoned equity issuers: Free cash flow and post-issue performance, *Financial Management* 25, 41-53.

McLean, R. David, 2007, Share Issuance and Cash Holdings: Evidence of Market Timing or Precautionary Motives? University Alberta working paper.

Motyka, Robert, Alexander Leuca, and Jarom Fawson, 2005, Rethinking Capital Strategy, UBS Investment bank, February.

Myers, S.C., 1984, The Capital structure puzzle, *Journal of Finance* 39, 575–592.

Myers, S.C. and N.S. Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, 187–221.

Opler Tim, Lee Pinkowitz, ReneH Stulz and Rohan Williamson, 1999, The determinants and implications of corporate cash holding, *Journal of Financial Economics* 52, 3-46.

Pagano, Marco, Fabio Panetta, and Luigi Zingales, 1998, Why do companies go public? An empirical analysis, *Journal of Finance* 53, 27–64.

Petersen, Mitchell A., 2005, Estimating standard errors in finance panel data sets: Comparing approaches, Working paper, Northwestern University.

Poitevin, M., 1989, Financial signalling and the "deep-pocket" argument, *Rand Journal of Economics* 20, 26-40.

Rajan, R.G. and L. Zingales, 1995, What do we know about capital structure? Some evidence from international data, *Journal of Finance* 50, 1421–1460.

Sharpe, Steven A., 1994, Financial market imperfections, firm leverage, and the cyclicality of employment. *The American Economic Review* 84 (4), 1060-1074.

Shyam-Sunder, L. and S.C. Myers, 1999, Testing static trade-off against pecking order models of capital structure, *Journal of Financial Economics* 51, 219–244.

Stulz, Rene M., 1990. Managerial discretion and optimal financing policies, *Journal of Financial Economics* 26, 3–27.

Sufi, Amir, 2007, Bank lines of credit in corporate finance: An empirical analysis Forthcoming, *Review of Financial Studies*.

Titman, S. and R. Wessels, 1988, The determinants of capital structure choice, *Journal of Finance* 43, 1–19.

Volberda, Henk W. 1998, *Building the Flexible Firm: How to Remain Competitive*, Oxford, Oxford University Press.

Welch, Ivo, 2004, Capital structures and stock returns, *Journal of Political Economy* 112, 106–131.

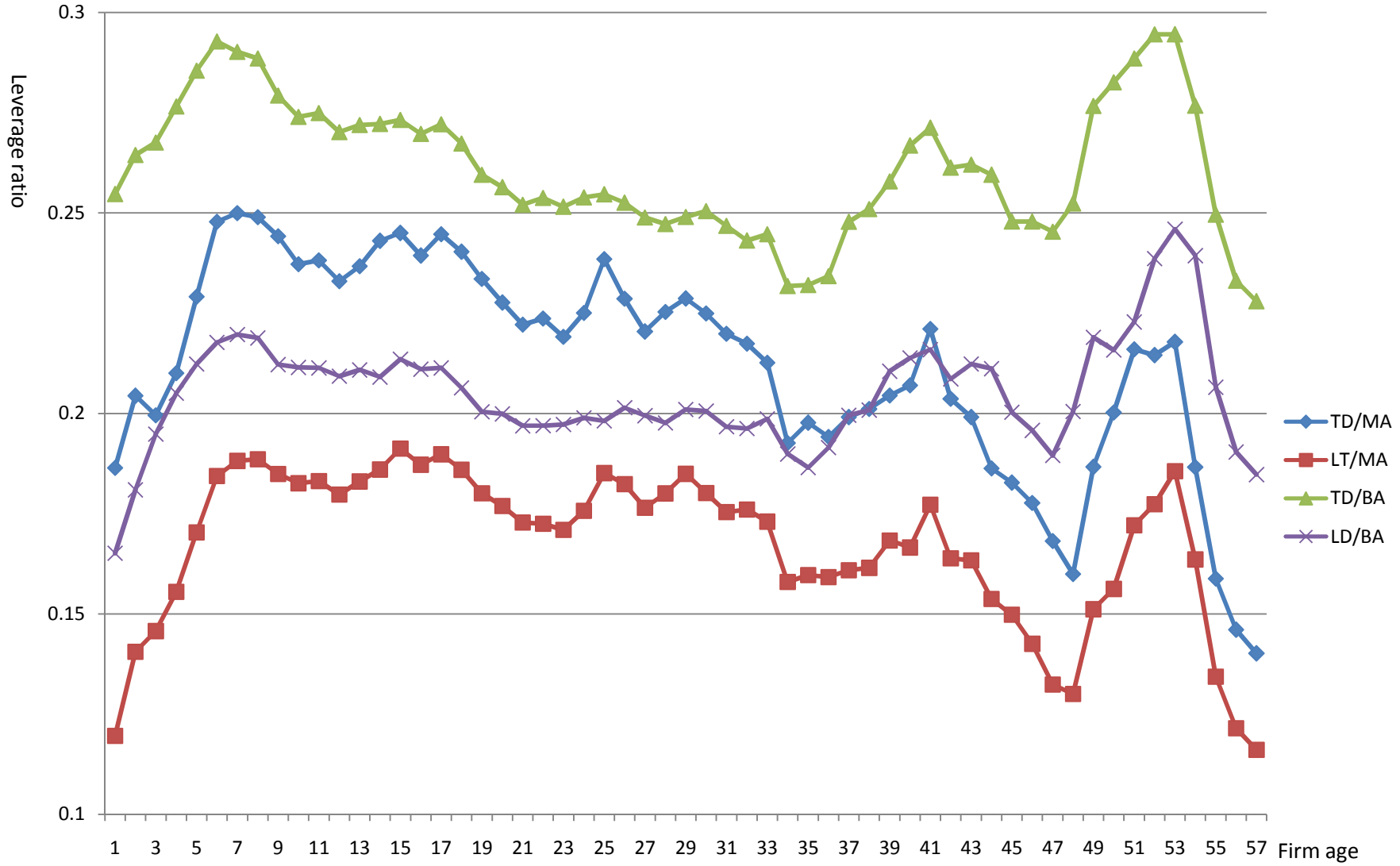
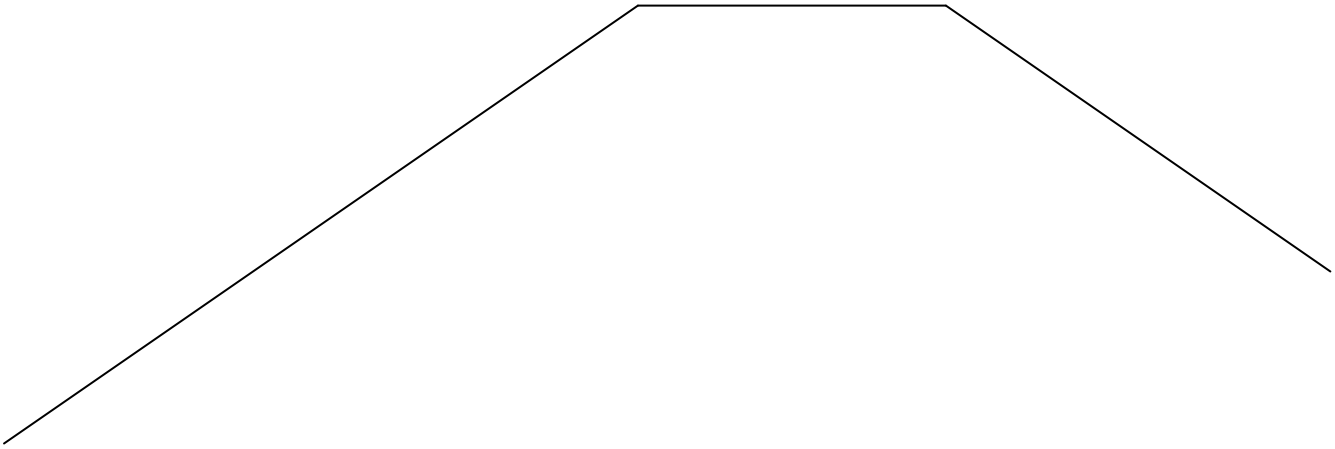


Figure 1. Leverage ratio over firm ages from 1950 to 2006.
TD = total debt, MA = market value of assets, LT= log-term debt, BA = book value of assets

Figure 2. The Predicted Relationship between Financial Flexibility Life Cycle and Leverage Ratio



[Development Stage]	[Growth Stage]	[Maturity Stage]
Firms in great need of external funds and flexibility for the future	**Firms in great need of external funds but with improving flexibility in the future**	**Firms with sufficient internal funds but in need of flexibility for the future**
• issue equity, hold large cash, pay no dividend	• issue debt, hold less cash, pay little dividend	• rely on self-financing with low debt, hold large cash, pay large dividend
• Small firms	• Medium firms	• Large firms
• With low earned capital	• With mediocre earned capital	• With large earned capital
• With negative operating cash flows	• With small operating cash flows to market value	• With large operating cash flows to market value
• With no credit ratings	• With low credit ratings	• With high credit ratings

Table I. Firm Size Deciles and Leverage Ratios

The data consists of 135,583 firm-year observations for the period 1971-2006. Observations with missing values in any of the reported variables are deleted. Size deciles are based on net sales/total assets. Book (Market) Long-term Debt is long-term debt over book (market) value of total assets and Book (Market) Total Debt is total debt over book (market) value of total assets. The market value of assets equals total assets minus total equity minus balance sheet deferred taxes and investment tax credit plus the market value of common equity plus preferred stock liquidating value. % of Firms with Zero Debt is the percentage of firms relative to the total number of firms in each size decile. A zero-debt firm is a firm with no debt.

A. Size deciles based on net sales for all firm-year observations (135,583)

Size Decile	Net Sales	Total Assets	Book Long-term Debt	Book Total Debt	Market Long-term Debt	Market Total Debt	% of Firms with Zero Debt
1	3.07	11.52	0.1114	0.2047	0.0704	0.1221	0.2294
2	11.05	18.46	0.1337	0.2254	0.1052	0.1740	0.1578
3	23.84	31.88	0.1382	0.2196	0.1182	0.1865	0.1487
4	44.82	53.78	0.1480	0.2252	0.1316	0.1996	0.1397
5	81.02	91.94	0.1690	0.2360	0.1528	0.2148	0.1228
6	144.79	154.21	0.1832	0.2435	0.1650	0.2210	0.0970
7	262.09	280.60	0.2047	0.2561	0.1809	0.2281	0.0809
8	512.91	538.00	0.2153	0.2627	0.1862	0.2285	0.0567
9	1245.92	1219.21	0.2197	0.2654	0.1861	0.2248	0.0358
10	10485.44	10666.33	0.2024	0.2557	0.1689	0.2112	0.0111

B. Size deciles based on total assets for all firm-year observations (135,583)

Size Decile	Net Sales	Total Assets	Book Long-term Debt	Book Total Debt	Market Long-term Debt	Market Total Debt	% of Firms with Zero Debt
1	5.62	4.09	0.1023	0.2135	0.0652	0.1275	0.1970
2	16.12	11.57	0.1240	0.2174	0.0979	0.1706	0.1605
3	31.50	23.41	0.1340	0.2159	0.1146	0.1850	0.1507
4	56.21	42.79	0.1445	0.2155	0.1307	0.1949	0.1499
5	99.41	74.31	0.1584	0.2203	0.1445	0.2020	0.1361
6	172.44	130.31	0.1825	0.2370	0.1618	0.2125	0.1080
7	304.66	234.80	0.2021	0.2511	0.1764	0.2211	0.0880
8	590.85	460.07	0.2303	0.2765	0.1970	0.2378	0.0473
9	1309.52	1150.95	0.2308	0.2762	0.1943	0.2331	0.0353
10	10228.96	10934.68	0.2169	0.2710	0.1828	0.2259	0.0075

C. Size deciles based on net sales for non-zero debt observations (120,936)

Size Decile	Net Sales	Total Assets	Book Long-term Debt	Book Total Debt	Market Long-term Debt	Market Total Debt
1	3.29	11.6	0.1446	0.2657	0.0913	0.1585
2	11.09	18.11	0.1588	0.2677	0.1249	0.2066
3	23.61	30.93	0.1623	0.2579	0.1389	0.2191
4	44.01	51.55	0.1721	0.2618	0.1530	0.2320
5	78.82	88.37	0.1927	0.2690	0.1742	0.2449
6	141.75	150.36	0.2029	0.2696	0.1827	0.2447
7	258.07	278.10	0.2227	0.2786	0.1969	0.2481
8	507.52	536.53	0.2283	0.2785	0.1974	0.2422
9	1240.87	1223.74	0.2278	0.2752	0.1930	0.2332
10	10518.55	10701.57	0.2047	0.2585	0.1708	0.2135

Table II. Firm Size Deciles and Leverage Ratios for Sub-periods Divided into Before and After 1985

The data consist of 135,583 firm-year observations for the period 1971-2006. Observations with missing values in any of the reported variables are deleted. Size deciles are based on net sales. Book /Market Long-term/Total Debt is long-term/total debt over book/market value of total assets. The market value of assets equals total assets minus total equity minus balance sheet deferred taxes and investment tax credit plus the market value of common equity plus preferred stock liquidating value. % of Firms with Zero Debt is the percentage of firms with no debt relative to the total number of firms in each size decile. % of Firms with Bond Rating is the percentage of firms with long-term credit ratings relative to the total number of firms in each size decile.

A. For 1971 – 1984 Period (40,166)

Size Decile	Net Sales	Total Assets	Book Long-term Debt	Book Total Debt	Market Long-term Debt	Market Total Debt	% of Firms with Zero Debt
1	5.34	7.97	0.1478	0.2402	0.1152	0.1850	0.1511
2	14.27	14.74	0.1727	0.2640	0.1640	0.2491	0.0884
3	25.73	23.89	0.1746	0.2550	0.1738	0.2544	0.0779
4	42.05	35.97	0.1909	0.2661	0.1931	0.2697	0.0558
5	65.86	54.86	0.1996	0.2710	0.2058	0.2807	0.0463
6	104.51	82.23	0.2008	0.2641	0.2047	0.2709	0.0351
7	170.67	138.39	0.2101	0.2663	0.2134	0.2712	0.0366
8	306.69	232.99	0.2011	0.2523	0.2042	0.2566	0.0299
9	713.41	529.01	0.2004	0.2498	0.2035	0.2527	0.0284
10	4814.41	3651.38	0.1948	0.2396	0.1984	0.2416	0.0022

B. For 1985 – 2005 Period (95,417)

Size Decile	Net Sales	Total Assets	Book Long-term Debt	Book Total Debt	Market Long-term Debt	Market Total Debt	% of Zero Debt	% of Credit Rating
1	2.12	13.02	0.0961	0.1898	0.0515	0.0956	0.2624	0.0018
2	9.69	20.03	0.1173	0.2092	0.0804	0.1424	0.1870	0.0017
3	23.05	35.24	0.1228	0.2047	0.0948	0.1579	0.1785	0.0056
4	45.98	61.27	0.1300	0.2080	0.1057	0.1701	0.1750	0.0142
5	87.39	107.54	0.1561	0.2213	0.1305	0.1870	0.1551	0.0369
6	161.76	184.52	0.1758	0.2348	0.1482	0.2000	0.1230	0.0780
7	300.57	340.47	0.2024	0.2518	0.1673	0.2099	0.0995	0.1557
8	599.69	666.37	0.2213	0.2671	0.1786	0.2166	0.0680	0.2872
9	1470.05	1509.72	0.2278	0.2719	0.1788	0.2131	0.0390	0.5244
10	12872.03	13618.49	0.2056	0.2624	0.1566	0.1984	0.0148	0.7840

Table III. Credit Ratings, Firm Size, and Leverage Ratios

The data consist of 135,583 firm-year observations for the period 1971-2006. Observations with missing values in any of the reported variables are deleted. Credit ratings are Standard and Poor's long-term credit ratings. Book /Market Long-term/Total Debt is long-term/total debt over book/market value of total assets. The market value of assets equals total assets minus total equity minus balance sheet deferred taxes and investment tax credit plus the market value of common equity plus preferred stock liquidating value. Dividend is cash dividend divided by total assets. N is the number of observations.

Credit Ratings	N	Net Sales	Total Assets	Book Long-term Debt	Book Total Debt	Market Long-term Debt	Market Total Debt	Dividend
Before 1985	43452	604.73	460.92	0.1877	0.2565	0.1838	0.2494	0.0130
0 (Unrated)	74106	449.14	420.40	0.1354	0.2058	0.1052	0.1577	0.0069
1 (Below B)	511	1298.86	1366.32	0.3373	0.4653	0.2981	0.4091	0.0023
2 (B)	3386	1248.95	1432.33	0.4253	0.4704	0.3537	0.3936	0.0047
3 (BB)	4545	2402.96	2418.54	0.3458	0.3810	0.2804	0.3103	0.0063
4 (BBB)	4638	6189.33	6648.74	0.2518	0.2920	0.1936	0.2252	0.0132
5 (A)	3555	10064.41	10950.54	0.1934	0.2483	0.1281	0.1649	0.0225
6 (AA)	1088	20845.55	19561.26	0.1313	0.1970	0.0773	0.1153	0.0318
7 (AAA)	302	36560.50	60295.74	0.0884	0.1726	0.0520	0.0998	0.0401

Table IV. Firm Size Deciles, Cash Holdings, Earned Capital, Operating Cash Flows, Dividend Payouts and External Financing Activities

The data consist of 135,583 firm-year observations for the period 1971-2006. Observations with missing values in any of the reported variables are deleted. Size deciles are based on net sales. All the variables are reported as a proportion of total book or market value of assets. OCF to Market Value is operating cash flow divided by market value of assets.

A. All firm-year observations

Size Decile	Cash and Equivalents	Earned Capital	OCF to Market Value	Net Long-term Debt Issue	Net Total Debt Issue	Net New Equity Issue	Dividend
1	0.4101	-3.6203	-0.3930	0.0149	0.0189	0.2152	0.0044
2	0.4046	-1.1385	-0.0317	0.0046	0.0052	0.0762	0.0050
3	0.3933	-0.4698	0.0502	0.0058	0.0063	0.0410	0.0060
4	0.3818	-0.1649	0.0890	0.0051	0.0066	0.0272	0.0063
5	0.3632	0.0259	0.1097	0.0072	0.0085	0.0227	0.0075
6	0.3420	0.1253	0.1283	0.0102	0.0120	0.0149	0.0091
7	0.3148	0.1831	0.1395	0.0120	0.0140	0.0101	0.0100
8	0.2902	0.2318	0.1486	0.0146	0.0150	0.0040	0.0132
9	0.2694	0.2534	0.1514	0.0138	0.0140	-0.0003	0.0156
10	0.2471	0.2718	0.1503	0.0103	0.0105	-0.0055	0.0193

B. Non-IPO firm-year observations (120,917**)**

Size Decile	Cash and Equivalents	Earned Capital	OCF to Market Value	Net Long-term Debt Issue	Net Total Debt Issue	Net New Equity Issue	Dividend
1	0.4110	-4.0343	-0.3603	0.0106	0.0120	0.2080	0.0048
2	0.4042	-1.2390	-0.0262	0.0018	0.0022	0.0730	0.0051
3	0.3910	-0.5143	0.0510	0.0031	0.0026	0.0388	0.0063
4	0.3771	-0.1815	0.0899	0.0025	0.0030	0.0236	0.0066
5	0.3592	0.0240	0.1092	0.0043	0.0050	0.0189	0.0078
6	0.3417	0.1291	0.1273	0.0077	0.0090	0.0124	0.0093
7	0.3149	0.1886	0.1386	0.0100	0.0117	0.0082	0.0101
8	0.2909	0.2367	0.1480	0.0136	0.0138	0.0028	0.0133
9	0.2696	0.2586	0.1516	0.0131	0.0134	-0.0009	0.0156
10	0.2465	0.2743	0.1506	0.0102	0.0105	-0.0059	0.0193

Table V
Leverage, Dividend and Financing Activities across Firm Size Deciles, Negative/Positive Earned Capital

The data consist of 135,583 firm-year observations for the period 1971-2006. Observations with missing values in any of the reported variables are deleted. Size deciles are based on net sales. Firms are divided into positive earned capital (PosEC) and negative earned capital (NegEC) groups within each size decile. All the variables are reported as a proportion of total assets except for OCF to Market Value which is operating cash flow divided by market value of assets.

A. Cash Holdings and Leverage

Size Decile	Earned Capital	OCF to Market Value	Cash and Equivalents	Book Long-term Debt	Book Total Debt	Market Long-term Debt	Market Total Debt
1(NegEC)	-4.8161	-0.1503	0.4201	0.1108	0.2153	0.0589	0.1092
1(PosEC)	0.3068	0.0812	0.3773	0.1133	0.1699	0.1081	0.1645
2(NegEC)	-2.1100	-0.0611	0.4261	0.1369	0.2453	0.0906	0.1609
2(PosEC)	0.3002	0.1053	0.3718	0.1291	0.1961	0.1267	0.1934
3(NegEC)	-1.3619	-0.0266	0.4178	0.1454	0.2493	0.1053	0.1811
3(PosEC)	0.3077	0.1108	0.3710	0.1319	0.1936	0.1295	0.1913
4(NegEC)	-0.9895	-0.0076	0.4083	0.1624	0.2669	0.1253	0.2066
4(PosEC)	0.3029	0.1121	0.3658	0.1398	0.2014	0.1352	0.1956
5(NegEC)	-0.6762	0.0172	0.3884	0.1952	0.2881	0.1533	0.2294
5(PosEC)	0.3006	0.1120	0.3528	0.1586	0.2153	0.1526	0.2090
6(NegEC)	-0.5636	0.0342	0.3326	0.2465	0.3441	0.1993	0.2819
6(PosEC)	0.3124	0.1138	0.3447	0.1659	0.2159	0.1555	0.2043
7(NegEC)	-0.4469	0.0499	0.2918	0.3042	0.3874	0.2441	0.3152
7(PosEC)	0.3178	0.1145	0.3202	0.1827	0.2271	0.1670	0.2089
8(NegEC)	-0.3759	0.0630	0.2772	0.3264	0.4011	0.2564	0.3189
8(PosEC)	0.3244	0.1156	0.2923	0.1975	0.2404	0.1748	0.2139
9(NegEC)	-0.2911	0.0702	0.2505	0.3437	0.4094	0.2768	0.3312
9(PosEC)	0.3208	0.1145	0.2720	0.2037	0.2468	0.1744	0.2111
10(NegEC)	-0.2115	0.0743	0.2258	0.3244	0.3786	0.2600	0.3033
10(PosEC)	0.3133	0.1120	0.2491	0.1913	0.2445	0.1606	0.2028

B. External Financing Activities

Size Decile	Earned Capital	Net Long-term Debt Issue	Net Total Debt Issue	Net New Equity Issue	Dividend	Number of Observations
1(NegEC)	-4.8161	0.0160	0.0213	0.2781	0.0028	10411
1(PosEC)	0.3068	0.0114	0.0110	0.0082	0.0096	3166
2(NegEC)	-2.1100	0.0018	0.0050	0.1197	0.0025	8097
2(PosEC)	0.3002	0.0088	0.0054	0.0117	0.0085	5456
3(NegEC)	-1.3619	0.0009	0.0009	0.0731	0.0030	6326
3(PosEC)	0.3077	0.0102	0.0110	0.0129	0.0087	7236
4(NegEC)	-0.9895	-0.0045	-0.0051	0.0535	0.0029	4928
4(PosEC)	0.3029	0.0105	0.0134	0.0122	0.0082	8628
5(NegEC)	-0.6762	-0.0048	-0.0043	0.0455	0.0042	3846
5(PosEC)	0.3006	0.0120	0.0135	0.0137	0.0089	9708
6(NegEC)	-0.5636	-0.0062	-0.0029	0.0322	0.0030	2920
6(PosEC)	0.3124	0.0147	0.0161	0.0102	0.0107	10641
7(NegEC)	-0.4469	-0.0038	-0.0009	0.0241	0.0045	2450
7(PosEC)	0.3178	0.0155	0.0173	0.0070	0.0112	11112
8(NegEC)	-0.3759	0.0034	0.0016	0.0132	0.0086	1881
8(PosEC)	0.3244	0.0164	0.0172	0.0025	0.0139	11674
9(NegEC)	-0.2911	0.0043	0.0021	0.0093	0.0100	1550
9(PosEC)	0.3208	0.0151	0.0155	-0.0016	0.0164	12011
10(NegEC)	-0.2115	0.0081	0.0050	0.0037	0.0108	1132
10(PosEC)	0.3133	0.0105	0.0109	-0.0063	0.0201	12410
						135583

Table VI
Leverage Ratios and External Financing Activities across Earned Capital and Operating Cash Flow Deciles

The data consist of 135,583 firm-year observations for the period 1971-2006. Observations with missing values in any of the reported variables are deleted. Earned capital represent retained earnings divided by total assets. Operating cash flow is the operating profit before depreciation divided by market value of total assets. Moving average OCF is three-year moving average of operating cash flow. Book /Market Long-term/Total Debt is long-term/total debt over book/market value of total assets. The market value of assets equals total assets minus total equity minus balance sheet deferred taxes and investment tax credit plus the market value of common equity plus preferred stock liquidating value. All other variables are reported as a proportion of book value of total assets.

A. Earned Capital Deciles

Earned Capital Decile	Earned Capital	Net Sales	Total Assets	Book Long-term Debt	Market Long-term Debt	Net Total Debt Issue	Net New Equity Issue	Dividend
1	-5.1391	42.53	36.38	0.1552	0.0978	0.0015	0.2193	0.0029
2	-0.8731	145.17	131.87	0.1839	0.1454	0.0081	0.0851	0.0028
3	-0.2676	348.58	317.34	0.2136	0.1833	0.0106	0.0464	0.0043
4	-0.0200	735.86	730.51	0.2311	0.2070	0.0189	0.0297	0.0061
5	0.1004	1267.14	1512.02	0.2237	0.2040	0.0217	0.0231	0.0062
6	0.1824	1925.94	2296.76	0.2066	0.1866	0.0191	0.0158	0.0076
7	0.2578	2252.73	2389.76	0.1837	0.1652	0.0116	0.0089	0.0096
8	0.3403	2307.41	2217.42	0.1535	0.1359	0.0071	0.0022	0.0125
9	0.4473	2396.81	2144.68	0.1131	0.0943	0.0020	-0.0047	0.0169
10	0.6568	1326.63	1235.24	0.0558	0.0421	-0.0021	-0.0193	0.0259

B. Three-Year Moving Average Operating Cash Flow Deciles (131,240 obs)

Operating Cash Flow Decile	Moving Average OCF	Net Sales	Total Assets	Book Long-term Debt	Market Long-term Debt	Net Total Debt Issue	Net New Equity Issue	Dividend
1	-0.1583	87.46	77.82	0.1269	0.0915	0.0099	0.1714	0.0039
2	-0.0169	177.26	167.35	0.1508	0.1132	0.0112	0.0970	0.0040
3	0.0307	477.87	445.66	0.1610	0.1308	0.0090	0.0524	0.0047
4	0.0605	1000.19	1276.94	0.1666	0.1392	0.0107	0.0276	0.0069
5	0.0807	1856.77	2267.36	0.1747	0.1488	0.0098	0.0157	0.0102
6	0.0969	2199.67	2251.74	0.1868	0.1594	0.0118	0.0082	0.0124
7	0.1120	2057.37	2053.24	0.1969	0.1708	0.0110	0.0042	0.0137
8	0.1280	1982.72	1852.41	0.2035	0.1800	0.0106	0.0006	0.0142
9	0.1481	1800.18	1644.21	0.1946	0.1789	0.0082	-0.0024	0.0146
10	0.1995	1444.55	1272.38	0.1705	0.1645	0.0008	-0.0024	0.0137

Table VII

Fixed Effects Regression Estimation on Determinants of Leverage Ratio

The sample consists of firm-year observations with relevant Compustat data from 1971 to 2006 (1985 to 2006). The dependent variable is the total/long-term debt (*TD/LD*) divided by book/market value of assets (*BA/MA*). The variables are as follows: Earned capital divided by total assets minus its industry median (*EC*); dummy variable equal to one if the firm has positive *EC* and zero otherwise (D^{EC+}); dummy variable equal to one if the firm has negative *EC* and zero otherwise (D^{EC-}); three year moving average of operating cash flows divided by market value of total assets minus its industry median (*OCF*) ; dummy variable equal to one if the firm has positive *OCF* and zero otherwise (D^{OCF+}) ; dummy variable equal to one if the firm has negative *OCF* and zero otherwise (D^{OCF-}); common stock cash dividends divided by total assets (*DIV*); dummy variable equal to one if the dividend payout information is missing (D^{DIV}) ; cash and equivalents divided by total assets (Cash); book value of total assets divided by 10,000 (*Size*); numerical credit rating given in Table III (*Rating*) ; dummy variable equal to one if the firm has no credit ration and zero otherwise (D^{No}); market-to-book ratio of assets (*MB*); research and development expenditures divided by total assets (*R&D*); a dummy variable for missing values in *R&D* (D^{R})*;* fixed assets divided by total assets (*FA*); Altman's z score (*AZ*); depreciation and amortization divided by total assets (*Dep*); marginal tax rate equal to the statutory tax rate if the firm reports no net operating loss carryforwards with positive pretax return and zero otherwise (*Tax*); and industry median (based on 2-digit SIC) debt ratio (*Med*). T-statistics are in the parentheses. Small and large firms are grouped based on median firm size each year.

A. **For 1971-2006 Period (123,881 firm-year observations)**

Independent Variable	*LD / BA*		*LD /MA*		*TD /BA*		*TD / MA*	
$EC.D^{EC+}$	-0.1331		-0.1095		-0.1825		-0.1524	
	-48.85		-47.30		-61.17		-60.65	
$EC.D^{EC-}$	0.0001		0.0037		0.0005		0.0081	
	0.27		8.61		0.92		17.07	
$OCF.D^{OCF+}$		-0.1646		-0.0841		-0.3346		-0.2296
		-12.39		-7.44		-22.89		-18.58
$OCF.D^{OCF-}$		0.0288		0.0549		-0.0306		0.0136
		4.16		9.29		-4.01		2.11
Div	-1.2325	-1.4416	-1.2836	-1.4781	-1.3735	-1.6460	-1.4748	-1.7423
	-27.77	-32.35	-33.90	-38.89	-28.20	-33.52	-35.85	-41.92
D^{Div}	-0.0065	-0.0073	-0.0091	-0.0097	-0.0021	-0.0040	-0.0058	-0.0072
	-4.73	-5.26	-7.84	-8.19	-1.41	-2.60	-4.54	-5.59
Cash	-0.1047	-0.1046	-0.0753	-0.0756	-0.1608	-0.1606	-0.1143	-0.1154
	-36.60	-36.24	-30.92	-30.76	-51.12	-50.41	-43.17	-42.93
Size	0.0238	0.0230	0.0198	0.0185	0.0332	0.0340	0.0287	0.0287
	25.01	23.65	24.47	22.37	31.85	31.72	32.62	31.70
$Size^2$	-0.0003	-0.0008	-0.0002	-0.0006	-0.0015	-0.0022	-0.0011	-0.0016
	-3.49	-8.41	-2.48	-6.86	-13.77	-20.04	-11.77	-17.40
MB	-0.0037	-0.0040	-0.0142	-0.0145	-0.0044	-0.0048	-0.0208	-0.0216
	-12.44	-13.20	-55.07	-55.99	-13.35	-14.48	-74.18	-75.79
R&D	-0.0141	-0.0153	-0.0061	-0.0095	-0.0065	-0.0094	-0.0153	-0.0231
	-3.91	-4.21	-1.98	-3.07	-1.63	-2.34	-4.56	-6.82
D^R	0.0031	0.0027	0.0008	0.0005	0.0042	0.0038	0.0016	0.0013
	2.06	1.79	0.61	0.37	2.52	2.28	1.17	0.89
FA	0.1652	0.1713	0.1555	0.1627	0.1365	0.1455	0.1325	0.1439
	40.00	41.11	44.25	45.94	30.06	31.64	34.65	37.11
AZ	-0.0045	-0.0050	-0.0043	-0.0037	-0.0095	-0.0097	-0.0084	-0.0063
	-19.91	-30.38	-22.28	-26.72	-38.34	-53.52	-39.96	-41.33
Dep	-0.2010	-0.1780	-0.1922	-0.1888	0.0764	0.1053	-0.0572	-0.0616
	-13.38	-11.74	-15.01	-14.61	4.64	6.30	-4.11	-4.36
Tax	-0.0648	-0.0632	-0.0656	-0.0679	-0.0993	-0.0916	-0.1062	-0.1050
	-27.33	-26.17	-32.25	-32.76	-38.33	-34.54	-48.19	-46.49
Med	0.3861	0.4402	0.5551	0.5902	0.4644	0.5131	0.6043	0.6343
	37.60	42.81	68.01	71.90	48.52	53.26	90.82	94.06
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted-R^2	0.6468	0.6409	0.6857	0.6826	0.6888	0.6766	0.7330	0.7258

B. F**or 1985-2006 Period (87,155 firm-year observations)**

	TD / BA		*TD /MA*		*LD /BA*		*LD / MA*	
$EC.D^{EC+}$	-0.1098		-0.0838		-0.1534		-0.1230	
	-34.68		-32.70		-44.00		-44.35	
$EC.D^{EC-}$	-0.0005		0.0031		0.0007		0.0076	
	-0.84		6.62		1.09		14.80	
$OCF.D^{OCF+}$		-0.1235		-0.0060		-0.3226		-0.1603
		-7.11		-0.43		-16.84		-10.46
$OCF.D^{OCF-}$		0.0242		0.0393		-0.0049		0.0172
		2.98		5.98		-0.54		2.40
Rating	-0.0319	-0.0346	-0.0309	-0.0330	-0.0295	-0.0331	-0.0298	-0.0326
	-25.50	-27.57	-30.47	-32.40	-21.47	-23.89	-27.14	-29.41
D^{No}	-0.1929	-0.2031	-0.1676	-0.1756	-0.1743	-0.1881	-0.1537	-0.1650
	-44.84	-46.99	-48.03	-50.11	-36.83	-39.42	-40.69	-43.22
Div	-0.6386	-0.7396	-0.6728	-0.7699	-0.7229	-0.8626	-0.7851	-0.9343
	-11.47	-13.22	-14.90	-16.98	-11.80	-13.97	-16.07	-18.92
D^{Div}	-0.0044	-0.0044	-0.0067	-0.0067	0.0015	0.0013	-0.0019	-0.0023
	-2.49	-2.44	-4.67	-4.62	0.79	0.66	-1.25	-1.47
Cash	-0.0920	-0.0916	-0.0636	-0.0643	-0.1380	-0.1378	-0.0907	-0.0925
	-29.15	-28.83	-24.85	-25.00	-39.67	-39.27	-32.73	-33.00
Size	0.0236	0.0232	0.0169	0.0160	0.0347	0.0354	0.0267	0.0267
	20.93	20.15	18.46	17.11	27.91	27.86	26.97	26.28
$Size^2$	-0.0011	-0.0015	-0.0004	-0.0008	-0.0019	-0.0025	-0.0010	-0.0015
	-8.29	-11.68	-3.90	-7.30	-13.13	-17.11	-8.53	-12.85
MB	-0.0040	-0.0040	-0.0126	-0.0127	-0.0043	-0.0045	-0.0186	-0.0191
	-12.02	-11.82	-46.67	-46.92	-11.86	-12.09	-63.42	-64.37
R&D	-0.0089	-0.0096	-0.0031	-0.0053	0.0013	-0.0009	-0.0113	-0.0168
	-2.38	-2.56	-1.02	-1.75	0.32	-0.21	-3.45	-5.06
D^R	0.0057	0.0054	0.0036	0.0033	0.0131	0.0131	0.0097	0.0096
	2.58	2.43	2.03	1.82	5.42	5.36	5.00	4.88
FA	0.1469	0.1517	0.1309	0.1363	0.1375	0.1445	0.1288	0.1382
	29.26	30.03	32.18	33.31	24.85	25.88	29.24	31.00
AZ	-0.0038	-0.0044	-0.0035	-0.0029	-0.0092	-0.0093	-0.0077	-0.0053
	-13.51	-23.41	-15.44	-18.75	-29.88	-44.71	-31.21	-32.11
Dep	-0.1789	-0.1547	-0.1650	-0.1621	0.1150	0.1497	-0.0154	-0.0147
	-10.72	-9.18	-12.18	-11.87	6.26	8.05	-1.05	-0.99
Tax	-0.0452	-0.0478	-0.0537	-0.0595	-0.0848	-0.0841	-0.0967	-0.1010
	-13.42	-13.98	-19.66	-21.47	-22.81	-22.24	-32.69	-33.45
Med	0.4281	0.4569	0.5872	0.6030	0.4871	0.5224	0.5968	0.6105
	32.33	34.46	50.22	51.34	41.94	44.81	68.53	69.30
Fixed Effects	yes	yes	yes	yes	yes	yes	yes	yes
Adjusted-R2	0.6775	0.6739	0.7053	0.7038	0.7092	0.7017	0.7457	0.7413