Does Market Timing or Enhanced Pecking Order Determine Capital Structure?

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*Peter Högfeldt gratefully acknowledges the generosity of The Bank of Sweden Tercentenary Foundation and of The Foundation for Economics and Law. We are also grateful to Malcolm Baker, Mike Burkart, Jason Draho, and in particular Martin Holmén for help and comments.

Abstract

We explore the idea that a firm's financing behavior depends crucially on how its ownership structure affects the cost differential between internal and external equity. If ownership is dispersed, the cost differential is relatively small. By issuing public offers when market-to-book values are high, incumbent shareholders benefit if equity is mispriced. The *market timing theory* predicts that firms' lower leverage is mainly the cumulative result of successful market timings. But if ownership (capital) is separated from control (votes), agency costs due to widespread use of dual-class shares drive a wedge between the costs of internal and external equity as new external shareholders demand compensation. This generates an *enhanced pecking order*: new equity (rights issues or private placements) is issued only when internal equity and debt are insufficient while public offers are not used since compensating transfers from incumbents to external shareholders needed. The behavior of US IPO firms is consistent with the market timing theory (Baker and Wurgler (2002)) while the enhanced pecking order theory best explains how Swedish IPO firms behave and why market timing is not important. Our results challenge the generality of the market timing theory.

JEL classification: G32

Key words: *Capital structure, market timing, enhanced pecking order, dual-class shares, profitability, retained earnings, persistent effects, seasoned equity offerings, public offers, rights issues*

In a seminal paper, Baker and Wurgler (2002) show that *market timing*-- issuing equity when a firm has a high market valuation and repurchasing it at low valuation— is probably the single most important determinant of a firm's dynamic capital structure.[1] They find that the cumulative effect of the past market timing actions has not only a *temporary* effect on the firm's leverage but also a significant *persistent* effect that is stronger than for other well-known determinants like profitability, size or asset tangibility. Successful market timing, thus, best explains why in a cross-section of firms some have low leverage while leverage is high for unsuccessful market timers. But how general is the market timing theory? Are Baker's and Wurgler's results general or unique for the specific U.S. institutional setting?

To answer this question we explore the idea that a firm's financing behavior depends crucially on how its ownership structure affects the cost differential between internal and external equity. We identify two stylized scenarios. First, a *proactive* financing cycle for firms with *dispersed* ownership where management tries to time the primary equity market by issuing *public offers* (POs) when market-to-book values are high.[2] The cost differential is then relatively small since costs due to asymmetric information (adverse selection) tends to be smaller when market-to-book values are high. Market timing is particularly important if the high valuation is due to market mispricing since resources are then transferred from new outside shareholders at prices that favor incumbent shareholders. Offers are, thus, primarily related to external market conditions rather than to the deficit of internal funds. Since the cumulative effect of repeated and successful *proactive* financing is likely to have persistent effects if no rebalancing occurs, the *market timing theory* predicts that firms' lower leverage is mainly the result of successful market timings. Dispersed ownership, and strong preference for *public offers* with firm commitment that are not primarily determined by the deficit of internal funds are thus correlated according to this theory.

[1] Market timing has been shown to be empirically important in three parts of corporate finance. First, a number of studies, including Marsh (1982), Korajczyk, Lucas & McDonald (1991), Jung, Kim & Stulz (1996), show that firms have a tendency to issue equity instead of debt when their market value is high relative to both book value and past market values. On the other hand, firms tend to repurchase equity when their market valuations are low (Ikenberry, Lakonishok & Vermaelen (1995)). Second, investigations of stock returns that follow corporate financing decisions show that market timing is successful in general: equity issuers have low stock returns in Ritter (1991), Loughran & Ritter (1995), Speiss & Affleck-Graves (1995), and Brav & Gompers (1997), and high market-to-book issuers earn even lower returns. Equity repurchasers tend to have high stock returns in Ikenberry et al (1995), and low market-to-book repurchasers deliver even higher equity returns. Finally, two thirds of CFOs confirm that market valuation plays an important role in the decision process to issue equity according to Graham & Harvey (2001). However, these studies primarily focus on short-run effects of market timing and do not analyze dynamic capital structures.

[2] In a *public offer* (PO) new equity is issued to the general public without preference for incumbent shareholders. In a *rights issue* (RI) only incumbent shareholders take part on a pro rata basis; new outside shareholders participates only if they buy rights from incumbents. A *private placement* (PP) is a directed sale of securities to a specific group(s) of inside or new outside investors. A *directed issue* (DI) is a PP directed to target shareholders in a stock financed acquisition.

The second scenario identifies a *reactive financing cycle* when ownership (capital) and control (votes) are separated, e.g. via use of dual-class shares. The associated agency costs cause a discount on equity. Since new external shareholders demand compensation, the discount drives a wedge between the costs of *internal* and *external* equity. The transfer from incumbents to new external shareholders, thus, increases with the size of the discount and of the offer. Public offers are de facto prohibitively costly for incumbents because of their significantly larger size, much higher fixed flotation costs, and because they dilute control positions. Since rights issues (RIs) are directed to incumbents on a pro rata basis there are no direct transfers to external shareholders and no dilution; transfers in private placements (PPs) are also small. Internal equity (retained earnings) is, however, relatively inexpensive for the controlling owner since (s)he has command over the firm's whole cash flows and capital with a relatively small capital investment. *External* equity financing is, thus, primarily *reactive* since it is only used when *internal* funds are insufficient, which may coincide with low market-to-book values— *reversed market timing*--, and limited to rights issues and private placements.

We call this an *enhanced* pecking order theory since it is not asymmetric information (transaction costs) between management and new outside investors that is the causal factor but agency costs *intrinsic* to the ownership structure, see Harvey et al (2004), Holmén and Högfeldt (2004b) and Högfeldt et al (2005).[3] The theory strongly predicts that public offers (firm commitment) are absent and market timing limited, even reversed. Because of the limited use of primary equity markets, and stronger dependence on retained earnings (profits) and debt, leverage will generally be higher for IPO firms in countries where separation of ownership and control is more common.

We test the implications of the two theories on a relatively large sample of Swedish IPO firms. The Swedish institutional setting is particularly suitable since the typical firm's ownership structure is not dispersed as in the US but very concentrated; control of listed firms is most often separated from ownership through frequent use of dual-class shares in particular, not least among IPO firms, and of pyramiding; see Holmén and Högfeldt (2004a). But at the same time is the Sweden is rather typical of Continental Europe; see Agnblad et al (2001), Barca and Becht (2001) and Holmén and Högfeldt (2004b).

[3] While the negative effect of asymmetric information can be decreased, even if not eliminated, the agency costs are much more robust as they are not diminished unless they are eliminated by change of ownership structure. Another interesting implication (not tested here) is that such firms will have higher *investment-cash flow sensitivity* because of the cost differential between

Like in Continental Europe, public offers of firm commitment type are very rare and even missing among IPO firms as well as more generally, while rights issues are not uncommon and external financing is used when internal cash is inadequate as retained earnings is the preferred source of finance; see Eckbo and Masulis (1995), Cronqvist and Nilsson (2003) and Holmén and Högfeldt (2004a).

To enhance comparability with US IPOs, we follow Baker's and Wurgler's methodology. To test our basic idea that ownership structure is an important determinant of firms' choice between (i) internal and external financing, and between (ii) types of SEOs, we distinguish both between *types of controlling owner* (family, entrepreneurial, and institutional) and between *types of SEOs* (rights issues (RI), private placements (PP), directed issues (DI) and public offers (PO)). We, thus, extend Baker's and Wurgler's analysis to economies with concentrated ownership where timing may be important but for different reasons and the primary markets may work differently.[4] Is timing a general market behavior or does it primarily depend on firms' *ownership characteristics* that reflect specific institutional conditions?

Our results challenge the generality of the market timing theory since market timing is not as strong predictor of the cross-sectional variation in firm leverage over time for Swedish IPOs as for US IPOs. Successful market timing does not appear to be the main reason for low leverage. Since the decision to raise external capital for Swedish IPOs is much more related to the *deficit* of internal financing than to high market-to-book values, partial rebalancing naturally occurs after an infusion of external equity when retained earnings are restored and debt capacity is increased. The rebalancing is, thus, not necessarily to an optimal level of leverage as in the trade-off theory of capital structure.

Consistent with the enhanced pecking order theory, profitability (retained earnings), current level of market-to-book, rather than the historical weighted average of market-to-book as in the market timing theory, and depreciation expenses (non-debt tax shield) have significant effects on the firms' dynamic capital structures by lowering leverage, in particular market leverage. The dominance of rights issues and private placements but no public offers are also consistent with predictions of the theory and its basic idea that separation of ownership and control via frequent use of dual-class shares drives a significant wedge between costs of internal and external capital.

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internal and external capital. Wu and Wang (2005) develop a theoretical model that explores the link between private benefits and choice of SEO method. The implications are similar to our hypotheses but our focus is on impact of the cost differential on SEOs.

[4] Eckbo & Masulis (1995) note that the proportion POs has normally surpassed the proportion of PPs in the US, but volume of PPs reached the level of POs in the late 80s-- to separate the two may thus be important also there.

We find, however, a conspicuous market timing behavior for growth firms controlled and managed by the founder/entrepreneur that on average double their M/B values in the first 18 months after the IPO and undertake SEOs that raise several times more capital than in the IPO. However, the issues are not public offers directed to outside investors but rights issues (RIs) offered only to incumbent shareholders. Since there is *no* direct transfer to external shareholders, incumbents invest their own money in what seems to be highly speculative investments in order to exploit a perceived *market* mispricing of their *industry* rather than of their firm. The long-run performance for this group stands out as being among the worst (Holmén and Högfeldt 2004a). Market timing is, thus, not only less prevalent but also different since timing behavior is primarily explained by firms' ownership characteristics that affect their choice of SEO. It is not *genuine* market timing as for example when all types of IPO firms with different characteristics try to time the market by going public in a hot issue market; see Alti (2003).

We believe our results have more general implications. The systematic connection we establish between the separation of ownership and control, the reactive financing cycle (reversed or lack of market timing), and how the primary market works explains why such markets are less developed in Continental Europe and public offers are rare if not non-existent.[5] We conjecture that it explains the differences between Common and Civil Law countries better than the alternative mechanism based on disparity in legal protection of minority shareholders, in particular since the prevalence of separation of ownership and control differ systematically between the two legal regimes for political reasons. It seems questionable if the relatively small differences in minority protection can explain the substantial disparities between how primary markets and corporate financing work on the two sides of the North Atlantic; such differences seem starker than for the secondary markets. The reactive financing behavior may also explain why secondary equity markets tend to be less developed in Continental Europe.

We proceed in the next section by presenting alternative theories about the capital structure and derive implications from the enhanced pecking order theory, which are then tested in the subsequent

[5] A pertinent example of a *reactive* financing cycle for a very large firm is Ericsson's 30 Billion SEK Rights Issue in 2002; the largest SEO ever in Sweden. Because of the combined use of pyramiding and dual-class shares with a voting differential of 1/1000, the two major owners control 40% each of the votes by contributing only 1% of the capital. To finance very large and risky investments Ericsson could have done a proactive public offer earlier when its M/B was very high. Instead the firm relied very heavily on retained earnings and debt until it became financially distressed and was forced to raise more external capital but then its M/B was very low indeed. The heavy discount on Ericsson's equity and the owners' control preferences excluded both a large and well-timed public offer and a private placement; see Högfeldt et al (2005).

section that contains our empirical analysis. The penultimate section analyzes our results and put them in perspective before concluding.

1. Market Timing and the Capital Structure

Before developing implications of our enhanced pecking order theory, we present Baker's and Wurgler's (2002) market timing theory and relate it to the two leading alternatives: the *trade-off theory* (Modigliani and Miller (1963) and the *dynamic pecking order theory* Myers (1984).

The Market Timing Theory and Alternative Theories

Baker and Wurgler argue that there are two empirical reasons why a firm's dynamic capital structure is basically the outcome of managers' past attempts to time the primary market. First, Korajczyk et al (1991) report that firms are inclined to announce equity issues after information releases that may reduce *asymmetric information*, which is consistent with Bayless' and Chaplinsky's (1996) finding that equity issues cluster around periods of relatively smaller announcement effects. If temporary fluctuations in market-to-book (M/B) gauge variations in adverse selection, past variation in M/B may have permanent effects on capital structure when costs of deviating from an optimal leverage level are small compared to variation in issuing costs.

Second, persistent effects of market timing can also occur due to variation in *asset mispricing* over time generated by irrational investors. If managers try to exploit it by issuing equity when they believe equity is overvalued, and, either repurchase equity or issue debt, when they think it is undervalued, equity issues will be positively related to M/B, which is also empirically observed. Moreover, if there is no optimal capital structure, managers will not reverse these decisions when the firm is perceived to be correctly valued. Temporary fluctuations in the M/B will thus have long-lasting effects on leverage. The survey of Graham & Harvey (2001) show that CFOs admit that they try to time the equity market but are less concerned with asymmetric information. Since *abnormal returns* following equity issues and repurchases are much larger than the *announcement effects* of equity issues, the magnitude of exploitable equity mispricing is significantly larger than the impact of asymmetric information; see Loughran and Ritter (1995). The existence or perception of equity mispricing, thus, seems to be the main argument why market timing activities exist and are important.

The standard trade-off theories define an optimal leverage when market imperfections such as taxes, costs of financial distress and agency costs are important but are not directly related to market timing.[6] The benefits of debt include tax shield and reduction of free cash flow problems while the drawbacks of debt include cost of financial distress and agency costs due to conflicts between stockholders and bondholders. But in Myers (1977) *financial distress' theory* timing is important as M/B is linked to leverage. Firms with significant growth and investment opportunities may lose more than other firms as the debt overhang may hinder new external finance, which may cause an *underinvestment* problem. Firms with high M/B (proxy for growth opportunities) are, thus, likely to have less debt. But trade-off theories are inconsistent with *persistent* market timing effects since temporary impacts are rebalanced away as leverage is adjusted to the optimal level. Baker and Wurgler, however, find that the historical variation in M/B has a lasting effect that is robust after controlling for traditional variables that imply an optimal leverage like current M/B, profitability, and size.

In the *dynamic* pecking order theory is market timing pivotal since high growth firms try to reduce leverage preemptively in order to avoid raising equity as new investment opportunities arise in the future; see Myers (1984).[7] If the current M/B is perceived as a proxy for investment opportunities, the *contemporaneous* correlation between leverage and market-to-book will be *negative*. However, the theory then predicts a relationship between the debt-to-equity ratio and *future* investment opportunities, not with *past* investment opportunities gauged as the weighted average of historical M/B in Baker's and Wurgler's market timing theory. However, the standard pecking order theory predicts the opposite: in periods with good investment opportunities (high M/B) leverage will *rise* as more debt is used, and *not decrease* as the market timing theory predicts. But then higher M/B is not associated with more external equity but with more debt. Since the pecking order theory does not define an optimal leverage, market timing may have

[6] A tax-based optimal capital structure arises in Modigliani & Miller (1963) and Miller & Scholes (1978) as higher taxes on dividends imply more debt. DeAngelo & Masulis (1980) show that higher non-debt tax shields, e.g. larger depreciation expenses, imply less debt. Agency costs may imply more or less debt depending on the conflicting parties. Too high level of equity often creates free cash flow problems and conflicts between executives and shareholders; see Jensen (1986). More debt is warranted to discipline managers and prevent "empire building" activities. Too high debt level may worsen the conflict between managers and debtholders-- asset substitution; see Jensen and Meckling (1976)).

[7] In the standard pecking order theory firms find it difficult to raise external finance since it is costly due to asymmetric information: managers know more about the firm's prospects than investors do and outside investors are aware of this as outsiders discount the stock price whenever the firm issues equity instead of riskless debt; see Myers & Majluf (1984). As the costs of issuing new securities exceed other costs and benefits of debt and dividends, firms finance investments with retained earnings first, only then with safe debt followed by risky debt, and new equity is the very last choice. The cross-section of leverage thus arises not because of the trade-off model's costs and benefits of debt, but due to firms' net cash flows: cash earnings minus

persistent effects on leverage both because firms retain profits and since they are reluctant to rebalance after market timing financing activities to avoid issuing equity in the future.

The market timing theory, however, rests on some implicit assumptions that are important when we test the implications in another institutional environment. First, a pivotal condition is that incumbent shareholders benefit when transfer of capital from new external shareholders occurs at relatively favorable market conditions, e.g. when equity is perceived to be mispriced. This seems to rule out rights issues, and, in principle, also private placements. Second, the cost differential is in general small only when ownership is dispersed, and it tends to be particularly small when market-to-books values are high as asymmetric information costs are smallest then. Third, if external market timing as such is important, new equity issues are unrelated to the deficit of internal capital. Fourth, for market timing to be sufficiently profitable and cover transaction costs, offers have to be large, which makes *public offers* the natural choice.[8]

The Enhanced Pecking Order Theory

The basic idea is that a firm's financing behavior depends crucially on how its ownership structure affects the cost differential between internal and external capital. Market timing behavior will thus vary systematically between ownership and control structures.

A. If ownership (capital) and control (votes) are *separated*, the associated agency costs drive a wedge between the two costs of capital since new outside shareholders demand compensation while internal capital is relatively inexpensive for the controlling owner who governs over the firm's whole capital via a small capital investment. The main agency conflict is then not between management and shareholders as when ownership is dispersed but between controlling owners and other shareholders. Since control blocks are valued at a premium, controlling owners have strong incentives to avoid raising new equity in public offers of firm commitment type both because their larger size dilutes the value of control more, and since equity is discounted due to the agency costs; compensating transfers are thus needed from incumbents to new external shareholders. The pecking order is *enhanced* since the agency costs are *inherent* to a stronger control structure than when ownership is dispersed and not primarily tied

investment outlays. If there are no investment opportunities, firms retain earnings and build up internal funds to avoid raise external finance later. If an optimal level exists, cost of deviating is insignificant compared to the cost of raising capital externally.

[8] Eckbo & Masulis (1995) show that the rights method is practically non-existent in a sample of large, listed industrial US firms since 1980s as they prefer the more expensive firm commitment public offering method for both equity and debt. This "rights

to asymmetric information. The theory, thus, predicts that market timing á la Baker and Wurgler is *generally* much less important because of the absence of public offers.

Since market-to-book values (M/B) are systematically lower due to the discounted agency costs even if they vary over time, they are not a clean measure of future growth opportunities or of a market mispricing premium. The benefit of timing new issues to high M/B values is, thus, limited both at the IPO itself and when SEOs are undertaken. Infusions of new equity are neither strongly linked to future M/B values as in the dynamic pecking order theory nor to the weighted average of high M/B values in the past (M/B_{efwa}) as in the market timing theory. Since the enhanced pecking order theory predicts that public offers are absent and market timing limited, new equity issues are more closely tied to the deficit of internal cash flows than to the external primary market via the M/B-ratio. This has several implications.

First, new equity issues then also occur when M/B values are relatively low, i.e. market timing will tend to be *reversed* rather than *proactive* or *preemptive* as in the market timing and dynamic pecking order theories, respectively. Second, since firms tend to raise external equity only when internal cash flows are too low or debt capacity exhausted, partial *rebalancing* naturally occurs as debt capacity is increased and retained earnings (profits) rebound. But not to an optimal level of leverage as in the trade-off theory since there does not exist one in the pecking order theory. Equity issues, thus, have a permanent effect on firm leverage if investments do not increase immediately. Third, higher *profitability* (increased retained earnings) and higher *current* M/B (or lagged one period) have significant *negative* effects on leverage, primarily on *market* leverage, as equity is more valuable. The effects reinforce each other since higher market valuations and larger profits tend to coincide; e.g. in our sample, are high *current* M/B values positively correlated with high *current* profits; see Table 3. Fourth, two other variables associated with (higher) profitability are predicted to significantly lower leverage; *depreciation allowances* (non-debt tax shield) and *dividends* (alternative measure of profitability), typically paid by older IPO firms.

The theory also predicts that controlling owners prefer rights issues (RIs) to private placements (PPs), in particular if the offering is large, since the former do not dilute control as incumbent shareholders take part on a pro rata basis while the latter tend to dilute as they are directed to specific investors, often

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offer paradox" is however resolved by the simple observation that management de facto benefits from a more dispersed ownership via an underwritten public offer.

external ones. The owners also prefer *uninsured* offers to *insured* ones as they are cheaper.[9] Since such offers are not directed to unsophisticated external investors with limited or biased expectations about the firm, successful market timing is only possible (i) if *all* incumbents expect to gain in a RI or (ii) if *both* incumbents and special investors expect to profit from a PP.

The first situation most likely occurs when incumbents are *overoptimistic* as a group and perceive the industry as a whole rather than the firm as mispriced. For example, a fast growing firm with large capital needs, typically run by the founder, may repeatedly use large rights issues to (speculatively) exploit the mispricing when the firm's M/B is high. Baker's and Wurgler's variable M/B_{efwa} (weighted average of past M/B) will then pick this up as market timing. Since mutually beneficial private placements most likely occur when M/Bs are high but are smaller in size, the effect of timing market will be much smaller in the second situation.[10] Hence, the M/B_{efwa} will have a significant negative effect on leverage also when ownership and control are separated but primarily for founder-controlled firms doing repeated RIs.

In summary, when ownership and control typically are separated, the enhanced pecking order theory predicts that (i) Market timing is in general less important than for US IPOs as there will be no public offers due to compensation for agency costs to external shareholders; (ii) The decision to raise new external capital is closely related to the deficit of internal capital but not to high past or future M/B values; (iii) Profitability (retained earnings) and current M/B have significant negative effects particularly on *market* leverage; depreciation allowances and dividends will also lower leverage; and (iv) Market timing will be most conspicuous for founder-controlled firms that exclusively do repeated RIs.

B. But if ownership instead is *dispersed*, the wedge between costs of internal and external capital is smaller and depends mainly on time-varying costs of asymmetric information. By timely issuance of large public offers to new external shareholders when M/B values are high, the firms exploit potential mispricings in the market. Incumbents benefit since they at the margin *receive* transfers when new capital is acquired at relatively favorable market conditions. When ownership is dispersed, market timing is, thus,

[9] An uninsured rights issue is an equity offering where the firm directly (there is no underwriter involved) approaches its shareholders to subscribe for new shares-- there is no guarantee that the whole issue will be sold.

[10] Private placements are smaller and seem to occur either (i) when new equity from an outside investor is infused into a financially distressed firm or (ii) when new equity as well as product market know-how are transferred from another firm; see Cronqvist & Nilsson (2003). The new investors seem to have overcome adverse selection problems and have identified an upside potential for the firm that they invest in. Since PPs are often the first step in an acquisition process, and tend to occur when firms are optimistic about future prospects (high M/B for the imdustry), market timing is also important for PPs, in particular when another firm invests both capital and know-how. For a financially distressed firm the timing may, however, rather be reversed.

more prevalent and a pivotal determinant of firms' dynamic leverage if rebalancing is limited. Hence, the enhanced pecking order theory (dually) explains why the following characteristics are correlated: dispersed ownership, preference for public offers, small but varying cost differential between internal and external capital (primarily due to asymmetric information) and that external financing is unrelated to the deficit of internal capital but related to high M/B in the past.

By linking market timing to ownership structure, the enhanced theory in effect covers institutional settings when market timing is very important as well as when it is much less common and also different.

2. Empirical Analysis

Data

We test the implications of the market timing and enhanced pecking order theories on a sample of 215 Swedish IPOs between 1979 and 1997 (22 omissions due to lack of data and exclusion of firms in the banking and insurance industries) with 1072 firm year observations. Reliable accounting information on listed Swedish firms is consistently available since 1979. Since the analysis is performed in IPO time mode, not calendar time, each sub-sample of firms holds the number of years since the IPO constant: 200 at the first fiscal year end after the IPO, 186 at the end of IPO + 2 and so on down to 56 firms ten years after the IPO. The attrition is due to mergers, acquisitions, bankruptcies, delistings, and because the last year for our accounting data is 2000. Since we eliminate equity carve-outs and spin-offs, we have a clean sample of firms where an IPO is a natural stage in the firm's evolution.[11] Information about the IPO date allows us to examine the evolution of the capital structure from a fixed and natural starting point since the IPO itself is a pivotal financing decision related to the M/B.

Post-IPO price data as well as information about the SEOs (date, size, type) are collected from the Dextel Findata TRUST database. The necessary pre- and post-IPO accounting data are extracted from the firms' balance sheets and profit and loss statements in the FINLIS database. Sundqvist (1985-1993) and Sundin & Sundqvist (1994-2001) are the pivotal sources for ownership data. Missing ownership for the period 1979-1983 and accounting data are retrieved from a database kindly provided by Martin Holmén.

[11] Baker and Wurgler (2002) do not seem to differentiate between equity carve-outs, spin-offs and pure IPOs. To enhance comparability over time, we stop our data collection in mid-1997 and use a homogenous sample of IPOs listed on the SSE. During the years of the internet boom a number of new firms listed at other exchanges than SSE with lower listing requirements. After March 200 very few firms have been listed on the SSE.

Stylized Facts

For the same basic set of IPO firms, Holmén and Högfeldt (2004a) report the following stylized facts. (i) The typical firm is *privately* controlled by the founder or his family; (ii) Almost 90% of the privately controlled firms (2/3 of all IPOs) use dual-class shares and float only low voting B-shares (controlling owners hardly sell any of their own shares); (iii) Less than half of the institutionally controlled use dual-class shares and float a significantly larger share at the IPO; (iv) Private owners are typically in control five years after the IPO and their control blocks are intact-- never sold piecemeal in order to preserve control rents; (v) 60% of founder and family controlled firms return for SEOs; (vi) Only rights issues (RIs) and private placements (PPs) are used— no public offer (PO) with firm commitment observed; and (vii) RIs are significantly larger than PPs and are done within 18 months after the IPO.

Descriptive Statistics

Table 1 presents summary statistics on capital structure and financing behavior. Book equity is defined as total assets (item 28) minus total liabilities (item 31 plus item 45) plus convertible debt (item 39) minus minority interest (item 57) plus (1 - tax rate in the respective fiscal year) × (deferred taxes (item 43) plus reserves (item 53)). Book debt is total assets minus book equity. Book leverage is, thus, book debt divided by total assets. Market leverage is book debt over total assets minus book equity plus market equity. The smaller number of observations for the pre-IPO year is due to missing accounting data in the TRUST database. *D* is total debt while *A* denotes total assets; *D/A* thus measures leverage. Net equity issues *e/A* equal the change in book equity minus the change in retained earnings (item 62) divided by total assets. Newly retained earnings *ΔRE/A* are the change in retained earnings divided by assets. Net debt issues *d/A* are the residual change in assets (change in assets adjusted for both changes in retained earnings and net equity issues) divided by total assets.

We also split the sample into four groups depending on the identity of the owner in control: *blockholder* if (s)he controls at least 5% of the votes; *controlling owner* if (s)he has a voting power that exceeds the sum of all other blockholders' votes; *founder* if (s)he is also controlling owner and as *entrepreneurial* if the founder is also the CEO. If other members of the founder's family control the firm, we characterize it as *family controlled*, while it is simply *privately held* if controlled by individuals not

related to the family. The *owner in charge* category consists of firms where the blockholder is an individual who also acts as CEO. *Other* is the residual category that primarily includes institutionally controlled firms.

Moreover, firms are subdivided into three groups depending on the type of SEOs they conducted after the IPO: Group 1 [$RI = 1$] includes firms that raise new equity through Rights Issues (RI); Group 2 [$RI = 1 \wedge \forall(DI, PP) = 0$] contains firms that did RIs but no Private Placements (PPs), and the last group [$RI = 0 \wedge (DI \vee PP) = 1$] consists of firms that only did PPs or Directed Issues (DIs) but no RIs.

Panel A shows that book leverage declines significantly in the IPO year as all firms raise new equity. This general pattern is stable across subsamples in Panels B to I. But there is a partial rebalancing of the capital structure in the years right after the IPO as firms use the increased debt capacity. Not surprisingly, both book and market debt ratios rise after the IPO for 6-8 years, and market leverage increases by relatively more.[12] The average book (market) leverage after the IPO is +60 percent (+50 percent) for Swedish IPOs compared to +45 percent (around 40 percent) for US IPOs, which also issue much more equity at the IPO itself; see Baker and Wurgler (2002). The higher leverage and the smaller capital infusions at the IPO in Sweden are consistent with the pecking order theory.

Firms conducting RIs but no PPs (Panels G to I) differentiate themselves by having a market leverage that is significantly higher than in the IPO year. Firms doing RIs are, thus, either more active in the debt market or tend to have lower valuations, or invest more. We also infer that the annual change in assets is most heavily driven by net debt issues (70%) after the IPO that significantly surpass both net equity issues and newly retained earnings (30% together). For the US sample, Baker and Wurgler report 50% of the changes in assets come from net debt issues. The primary equity market is less important for Swedish IPO firms. To increase the firm's debt capacity rather than to enhance its ability to raise new external equity may be a more important reason for going public in Sweden.

Determinants of Annual Changes in Leverage

The first step in testing the implications of the market timing theory is to verify if Market-to-Book (M/B) has a significant and lasting net effect on the annual change in the debt-to-equity ratio. The second step is

to decompose the change in leverage into its constituent parts to determine if the net effect is really driven by net equity issues as market timing suggests. We use *asset tangibility*, *profitability*, and *firm size* as control variables since they are reported by Rajan and Zingales (1995) to be the other major determinants of firm leverage.

Market-to-book *M/B* is defined as total assets minus book equity plus market equity all divided by total assets. Since fixed assets often serve as collateral and may allow more debt financing, we proxy asset tangibility by net property, plant, and equipment (item 19) divided by total assets *PPE/A*. Profitability is a good proxy for availability of internal funds since more profitable firms are likely to be less indebted and since retained earnings give shareholders a tax benefit. Empirical evidence strongly supports a negative relation between profitability and leverage, although Jensen's (1986) free cash flow problem and related agency costs suggest the opposite. Profitability (*EBITDA/A*) is gauged as Earnings Before Interest, Taxes, and Depreciation (item 96) divided by total assets. Finally, the natural logarithm of net sales *S* (item 91) is used as proxy for firm size and expected to be positively correlated with leverage since large firms are less likely to experience financial distress; see Myers (1977).

Table 2, Panel A reports the results from regressing the annual changes in leverage on M/B lagged, the control variables and on lagged leverage in IPO time:[13]

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{t-1} = a + b\left(\frac{M}{B}\right)_{t-1} + c\left(\frac{PPE}{A}\right)_{t-1} + d\left(\frac{EBITDA}{A}\right)_{t-1} + e\log(S)_{t-1} + f\left(\frac{D}{A}\right)_{t-1} + \varepsilon_{t-1}$$

The results indeed suggest that the net effect of high M/B is to decrease leverage, i.e. firms with high valuations tend to decrease their leverage, but the coefficients are much smaller than for US IPOs; more than ten times smaller at the IPO and the year after. This is the first indication that timing issues to high M/B values is much less important. At this point we cannot discard the possibility that it is caused by either higher retained earnings or debt retirement. However, the effect fades away as firms mature. Asset tangibility is mostly insignificant but enters surprisingly with a negative sign. Profitability is not consistently significant but has the expected economic effect (negative sign). Like in Baker's and

[12] But firms that are still alive ten years after their IPO are significantly less levered than the sub-sample of firms at IPO + 8 years. The reversal is common across all sub-samples with different ownership characteristics and SEO types; probably because of the much smaller subsample sizes and survival bias.

[13] Since leverage is bounded between 0 and 1 for solvent firms, it can, independently of the values of the other variables, only change in one direction if close to the boundaries. To avoid misspecification we include lagged leverage (D/A) to control for this level effect. It is thus not surprising that its regression coefficient is negative.

Wurgler's much larger sample, the signs of the coefficients for firm size alternate and do not behave consistently. The strongest effect, however, occurs at the IPO and is significantly positive as expected.

We decompose the change in leverage into three parts: equity issues (*e/A*), retained earnings (Δ*RE/A*), and residual change in leverage, which comes from growth in total assets combined with equity and debt issues and newly retained earnings or

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{t-1} = -\left[\left(\frac{E}{A}\right)_t - \left(\frac{E}{A}\right)_{t-1}\right] = -\left(\frac{e_t}{A_t}\right) - \left(\frac{\Delta RE_t}{A_t}\right) - \left[E_{t-1}\left(\frac{1}{A_t} - \frac{1}{A_{t-1}}\right)\right].$$

The last three panels in Table 2 show the regression results for how each of the three components changes the leverage. As the market timing theory implies, Panel B shows that M/B has an effect on leverage through net equity issues: a higher market-to-book value implies larger net equity issues. But the coefficients are ten to twenty times smaller than for US IPOs. Panel C shows that market-to-book has a significant *positive* effect on leverage via retained earnings for two years after the IPO; i.e. firms retain less when M/B is high as they invest more. (Baker and Wurgler find no corresponding significant effects for M/B in their sample.) Hence, the effect of M/B on leverage does not only go through new equity issues as the market timing theory suggests. The results in Panel D imply that market-to-book is positively related to growth in assets, and increases the overall leverage but the coefficients are again ten or more times smaller than for the US IPOs, not even consistently positive and also less significant. Hence, the results show that Swedish IPO firms with high valuations tend to invest even more and make use of their debt capacity. Market timing is much less important.

Profitability has a very pronounced effect on changes in leverage through retained earnings. As expected in the Swedish institutional setting, this effect is relatively much stronger than the M/B effect on capital structure through net equity issues. The statistical and economical power of profitability in Panel C is very high; t-values of *EBITDA* sometimes even exceed those obtained by Baker and Wurgler even if our sample is much smaller. The net effect of profitability is to significantly reduce leverage via increased retained earnings; this effect is larger than for US IPOs. We also find that the larger the firm is, the smaller is the decline in leverage that is observed at the IPO (Panel A) since larger firms tend to issue relatively less equity (Panel B).

Determinants of Leverage

Our results so far show that market timing is much less important; M/B has only limited impact on changes in leverage in the short run mainly but not exclusively via new equity issues while profitability is a more important determinant than for US IPOs. But do the M/Bs also have a lasting impact or does the short-run effect disappear as the capital structure is rebalanced? To test for a persistent effect we first run simple univariate regressions of debt ratios on the previous control variables but add Baker's and Wurgler's new variable-- *external finance weighted-average M/B*-- that picks up information on the relevant past variation in market valuations:

$$\left(\frac{M}{B}\right)_{efwa,t-1} = \sum_{s=0}^{t-1} \frac{e_s + d_s}{\sum_{r=0}^{t-1} e_r + d_r} \cdot \left(\frac{M}{B}\right)_s$$

Summations start at the IPO year and the variable is higher for firms that issued either debt (*d*) or equity (*e*) when the M/B was high, and vice versa. The variable captures the timing dimension of external financing decisions as it gives more weight to M/B values when the decisions to issue were made and the larger the relative size of the issues was. The alternative to include a set of lagged M/B values with equal weights would ignore the strategic timing dimension.[14]

Figures 1 and 2 show the R^2 for a set of single-variable regressions on book and market leverage, respectively, run in IPO time:

$$\left(\frac{D}{A}\right)_{IPO+t} = a + bX_{t-1} + \varepsilon_t$$

X denotes our four control variables plus the control variables used in Fama and French (2002): dividends over book equity *D/BE*, market equity *D/ME* and a measure of depreciation expense (item 98 in TRUST) *Dp/A*, i.e. depreciation over total assets. Book dividends proxy for profitability, market dividends for investment opportunities, and depreciation for the non-debt tax shield. Weighted averages of historical values of each variable are constructed in a similar fashion to the M/B. The dashed lines in Figures 1a and 2a depict R^2 of X_{t-1} and the solid lines show R^2 of $X_{efwa,t-1}$ for M/B.

[14] The minimum weight is set to zero to eliminate negative weights. Otherwise the weights would not be increasing in the total amount of external finance raised in each period, and the weights would not naturally match with times when leverage is most likely to change. A zero weight simply means that the variable does not have any memory or information about the market valuation in that year.

A higher market-to-book reduces leverage as expected. The explanatory power of both the lagged value and the weighted average fluctuate considerably as firms mature but explain close to 10% of the cross-sectional variation in capital structure (book values). For market leverage, the explanatory power is significantly higher, approximately 30%. Since the dashed (t-1 values) and solid lines (historical weighted averages) for R^2 roughly track each other and both declines over time, past M/Bs are not more informative than currently lagged M/Bs and do not have a persistent effect, which is inconsistent with the market timing theory. But consistent with this theory, Baker and Wurgler find that the explanatory power of the weighted average of past M/Bs grows and surpasses that of lagged M/B values as firms become older.

The univariate setting shows that the explanatory power of both the M/B and M/B_{efwa} is relatively stronger and steadier than for other variables. Simple and weighted versions of asset tangibility show relatively little ability to forecast leverage although its coefficient is positive as expected. Correlations between leverage and the other variables are reported in Table 3. Profitability reduces leverage and seems to exhibit some statistical power in explaining leverage but unlike Baker and Wurgler we find no timing effect. For US IPOs the explanatory power of the weighted average of past profitability using the same relative weights as in M/B_{efwa} grows steadily over time and surpasses the importance of lagged profitability. Profits and M/B values, thus, both seem to be particularly high when US IPO firms raised external equity in the past but this is not the case in Sweden where timing is much less evident. Both measures of dividends enter with *negative* coefficients and have reasonable explanatory power when firms mature but have no timing effects. The same applies to depreciation that has a negative effect on leverage. The last three findings are expected since the variables are closely linked to profitability. But Baker and Wurgler do not find any significant effect of either dividends or depreciation on leverage.

Although our results indicate that average weighted market-to-book variable is not likely have as strong overall effect on leverage as in the US, multivariate regressions might show a different picture. Tables 4 and 5 report results from regressions of book and market leverage on the weighted average M/B, on our four previous control variables (Table 4) and on Fama's and French's alternative control variables (Table 5). The regression equation in Table 4 is

$$\left(\frac{D}{A}\right)_t = a + b\left(\frac{M}{B}\right)_{efwa,t-1} + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + f\log(S)_{t-1} + \varepsilon_t .$$

The M/B_{t-1} variable controls for *current* cross-sectional variation in market-to-book while M/B_{efwa} picks up the remaining influence of historical variation in market-to-book. The current variation in market-to-book may be related to future investment opportunities, not necessarily only to perceived equity mispricing. Gauging the past *within-firm* variation in market-to-book, M/B_{efwa} is expected to particularly pick up information about what may have been perceived *ex ante* as temporary market timing opportunities; declining market valuation *ex post* gauges mispricing after it has already happened.

Generally, Panels A and B in Table 4 show that independent variables do a much better job in explaining the cross-sectional variation in market leverage than in book leverage. But the overall picture is similar. The explanatory power of M/B_{efwa} is very low even if it increases marginally after the IPO. But the coefficients are very low indeed; -0.11 for our whole sample (book leverage) compared to -7.21 for the entire sample of US IPOs used by Baker and Wurgler. The variable is not only a weaker predictor of leverage than lagged M/B but in fact the weakest predictor of all explanatory variables. This is reinforced by the result of our pooled data regressions throughout 1979-1997, which have the highest statistical power. *Past within-firm variation* in market-to-book is, thus, less important in explaining the cross-sectional variation in firm leverage than *current* cross-firm variation in market-to-book; the opposite holds for US IPOs. The short run effect of market timing on the capital structure is not persistent as it does not accumulate after the IPO. Asset tangibility has a small and alternating effect on leverage.

Overall, lagged M/B and profitability are the best cross-sectional predictors of firm leverage followed by firm size. Since both variables reduce leverage, in particular market leverage, and are positively correlated (Table 3), firms do not increase investments commensurably in good times when both profits and valuations are relatively high. The results are consistent with the enhanced pecking order theory but not with market timing.

But are these results independent of *who* controls the firm or do different owner types make systematically different decisions? The bottom parts of Panels A and B in Table 4 present regression results for *each* sub-group of owner in control separately. Interestingly, we detect a significant variation in the magnitude of the coefficients for the weighted market-to-book variable M/B_{efwa} across owner types as well as across SEO types that is larger than for any other explanatory variable. M/B_{efwa} is, thus, a noisy variable due to the institutional setting in Sweden.

Panel A shows that the M/B_{efwa} is a significant or marginally significant variable for all owner type groups except for institutionally controlled firms. The explanatory power of the timing variable is the strongest of all variables for entrepreneur firms with the founder also acting as CEO; this holds for both book and market leverage. Firms controlled by owners that may enjoy private benefits of control, thus. seem to have the most pronounced timing behavior but Swedish managers and controlling owners do not (or can not) exploit market timing opportunities as aggressively as in the US. Profitability reduces the leverage most significantly for family firms run by the descendants to the founder. For market leverage, lagged M/B and profitability have much stronger and more significant effect than market timing.

The last three rows in Panel A show regression results for sub-groups of firms that make different types of SEOs after the IPO. Market timing as measured by M/B_{efwa} is the best predictor of capital structure for firms that raised new capital *exclusively* via private placements (last row) while current M/B is statistically insignificant for book leverage. Table 8 reveals that PPs tend to be done when current and lagged M/B values are high but that the size of the issue is very small, i.e. the actual timing effect is de facto small. Survivorship bias may drive the results since the sub-group contains financially distressed firms that succeeded because of capital infusions. The results for market leverage (Panel B) show that lagged M/B has the strongest and most significant *negative* effect on leverage irrespective of what type of SEOs firms do followed by profitability.[15]

Table 5 reports results when we also include the non-overlapping Fama and French (2002) control variables: EBIT (Earnings Before Interest and Taxes) and both book and market dividends as well as depreciation expense. The qualitative results for the weighted M/B are broadly consistent with those reported in Table 4; most pronounced timing effect for firms exclusively doing PPs and firms controlled by the founder/CEO. Two new variables reduce leverage significantly: *market dividend* and *depreciation*. If the market dividend proxies for investment opportunities or as an alternative profitability measure, the negative effect on leverage implies that firms invest less when future prospects are better; internal equity increases. Depreciation is the major non-debt tax shield that reduces the comparative advantage of debt in the capital structure. These two accounting measures have a much weaker effect for US IPOs where they

[15] Like the results on book leverage, the weighted M/B plays a relatively more important role for entrepreneurial firms but the explanatory power moves from the M/B_{efwa} to the current M/B for firms controlled by family and by blockholder. For firms exclusively doing PPs; the historical weighted averages again have the strongest impact current leverage. However, current market-to-book and profitability are much stronger predictors of leverage in this setting, except for founder controlled firms.

are dwarfed by the influence of the M/B_{efwa}; dividends are more frequently paid by Swedish IPO firms that are typically older and depreciation allowances are by tradition more generous.

Cross-sectional variation in leverage, thus, seems to be explained primarily by current financial and accounting characteristics rather than by past market valuations, and by profitability, which overall is more consistent with the enhanced pecking order theory than with market timing. Controlling owners in general do not have strong incentives to time the primary market for new outside equity but instead rely primarily on retained earnings. Firms rebalance the capital structure *reactively* rather than *proactively* when market valuations and profits increase since investments do not increase immediately but with a lag.

Determinants of Cumulative Changes in Leverage

The previous results show determinants of leverage at some point of time (static), but they do not directly capture what explains *change* in leverage over time (dynamics). Table 6 shows results from regressions of *cumulative* changes in leverage from the pre-IPO value using the Rajan and Zingales control variables:

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{pre-IPO} = a + b\left(\frac{M}{B}\right)_{efwa,t-1} + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + f\log(S)_{t-1} + g\left(\frac{D}{A}\right)_{pre-IPO} + \varepsilon_t$$

Since the change in leverage is gauged against its pre-IPO value, the dependent variable includes the effect of the IPO itself -- a crucial financing event. Due to paucity of pre-IPO financial statements in the TRUST database, the results in IPO time as firms mature are rather weak. But when we pool the data in Panel A for the book leverage regressions, the external finance weighted average of M/B (M/B_{efwa}) becomes the most important variable in explaining the change in firm leverage since before the IPO, and much larger and more significant than in the static regressions in Table 4. Raising equity at the IPO is, thus, a much more important financing event for Swedish IPO firms than issuing equity later in SEOs.

But the results are not uniform when we differentiate between types of owners and SEOs; the last 8 rows of Panel A in Table 6. Successful market timing in the past as gauged by M/B_{efwa} is the single most important determinant of the dynamic leverage for founder/CEO controlled (entrepreneur) firms and private firms (non-founder family controlled) but is much less important for institutionally and blockholder controlled firms as profitability and lagged market-to-book values become relatively more important. But market timing does not explain cumulative changes in capital structure of family firms run by the descendants very well. If we use market leverage instead (Panel B), M/B_{efwa} is still a valid

determinant of the cumulative changes. However, it is now dominated by the current M/B and profitability that are stronger predictors almost uniformly across owner types except for founder/CEO controlled firms.

The last three rows of Panel A show very interesting results for firms that have been active in the primary equity market after the IPO: all three sub-groups show clear cumulative effects on leverage from financing at high past market valuations including at the IPO itself. M/B_{efwa} is by far the most important determinant of cumulative changes. The effect is largest and most significant for the subgroup of firms that *only* did rights issues (penultimate row) but also significant for firms that only did private placements (PPs). This result is also pronounced when we analyze market leverage instead of book leverage in Panel B even if lagged M/B and profitability now become dominant. All coefficients are, however, many times smaller than for US IPOs. But why is market timing the pivotal determinant of the dynamic leverage for firms that only did RIs or only PPs?

Two pieces of information are especially helpful. First, Table 8 shows that a typical RI is two to three times larger than a typical PP or DI. Second, Figure 3 shows that there is a strong positive correlation between the size of the RI (in relation to total assets) and market-to-book (but no such correlation for PPs): A higher M/B at the time of the issue is associated with larger RIs. Timing combined with a larger issuing size may, thus, explain the strong effect of the weighted average M/B on cumulative changes in leverage for firms *only* doing RIs but not why timing is important for firms that only did PPs. This probably explains why we find an effect of market timing via M/B_{efwa} in our regressions for all IPOs.

Finally, Table 7 shows regression results with the cumulative changes in leverage since the pre-IPO year as the dependent variable but including the Fama and French set of control variables. The timing variable M/B_{efwa} still has significant explanatory power for book leverage (Panel A) but is less powerful than current (lagged) market-to-book, profitability and market dividends for market leverage (Panel B). Since the relative weights in M/B_{efwa} use *book values* of equity and debt, it is not surprising that it has a stronger impact on *book* leverage than on market leverage that also gauges other aspects of valuation than just book values, in particular when the IPO, the major timing event, is included.

The timing variable is again the most powerful for firms that are active in the equity market after the IPO, in particular for book leverage as expected, and for firms exclusively doing either RIs or PPs. Dividend and depreciation measures are highly significant and have much higher explanatory power than

in the US data. Overall, the evidence on the cumulative changes in leverage show that timing does not generally explain dynamic leverage across firms very well and does not have persistent effects except for two subsets of firms. The other determinants of capital structure show at least as strong effect as the historical market-to-book; different measures linked to profitability are the most important.

Summary

Our results show that market timing is not important for *all* Swedish IPO firms.[16] But for the +50% that do SEOs, the weighted average of historical market-to-book values (M/B_{efwa}) is a significant determinant of the cumulative changes in *book* leverage since the *pre-IPO* year (Panel A in Table 6). But when we use *market* leverage or *do not* include the IPO itself, which is an important financing event, but only gauge the pure effect of SEOs, the results are much weaker, often non-existent, and not persistent over time. The timing effect for firms doing SEOs is explained by the behavior of two subgroups. (i) Most strongly by founder-controlled firms repeatedly doing only large rights issues. (ii) Less strongly by firms only doing private placements. Market timing is not only less prevalent than for US IPO firms but also different as no public offers to new external shareholders are issued in Sweden. The ability of the market timing theory to explain the cross-sectional variation in leverage is, thus, much weaker than what is reported for US IPOs.

But even if high past M/Bs affect the annual changes in leverage through net equity issues in Table 3 (Panel B), it is dwarfed by the effect of profitability (via EBITDA or dividends) on leverage through retained earnings (Panel C), which is highly statistically and economically significant, in particular for market leverage. More generally, Tables 4-7 show that profitability, *current* market-to-book values, dividends (another measure of profitability) and depreciation expenses (unlike in the US) are stronger determinants of leverage, in particular of market leverage; our results are consistent with the *enhanced* pecking order theory. The fact that only about half of the IPO firms do SEOs but no public

[16] We checked for the potential multicollinearity between M/B_{efwa} and M/B (correlation matrix in Table 3) but it does not seem to be a problem; both variables are separately significant and the R^2 are not very high. We also tested for survivorship bias. For example, the pattern in Table 1 does not change if only firms that survived for 10 years are included (unreported). Moreover, the graphs in Figure 3 for correlations between issue type and market-to-book for the whole sample are qualitatively similar to the ones for the subsample of 10 years´ survivors. Our rersults could possibly be bisased since share repurchases did not become allowed until March, 2000 but share redemptions have been allowed much longer. But since relatively few firms, primarly large and old ones in banking, real estate and shiping, have done share repurchaes and even fewer newly listed ones, we don't think this is a real problem. That Swedish IPO firms are relatively older than US IPO firms could bias our result but the age difference has diminished over time. The median age is 18 years in our sample but the median age of the institutionally (privately) controlled firm is only 11 (23) years, which is closer to the median (average) age of US IPOs of 8 (18) years; see Field and Karpoff (2002). Holmén and Högfeldt (2004a) find that firm age has a signifcant negative impact both on the firm's market-to-book value and the probability that the firm will do a SEO.

offers is evidence of a strong pecking order where new equity is only issued when internal capital is deficient and debt capacity used. Equity issues seem primarily to be used to increase debt capacity.

3. Discussion

We claim that our results are not consistent with the market timing theory but in line with the implications of the enhanced pecking order theory. But is not the relatively fast rebalancing of leverage after infusions of new equity broadly consistent with the trade-off theory of capital structure as market timing has only a temporary effect on leverage? Moreover, variables that are normally used as empirical proxies for determinants of optimal leverage like tax variables (depreciation expenses as gauge of non-debt tax shields), current market-to-book, dividends (negatively related to distress costs) and profitability are significant in our regressions.[17] The rebalancing after the IPO to a higher level of leverage (Table 1) is broadly consistent with the trade-off theory as well as with the pecking order theory since a listing increases the firms' debt capacity. But since profitability is the most important determinant of leverage and positively related to current M/B, the rebalancing is more likely associated with the level of internal capital and debt as the pecking order theory assumes.[18] Since the trade-off theory does not consider how institutional factors like ownership structures via agency costs affect firm leverage, and choice of different SEO methods, it does not explain our strongest results like the very limited use of repeated SEOs, absence of public offers and preference for rights issues and private placements.[19]

Our finding that firms controlled and managed by the founder/entrepreneur is the only sub-sample of IPO firms where market timing consistently has a strong long-run effect on leverage at first seems to be consistent with Zwiebel's (1996) dynamic capital structure theory. High market-to-book values, which indicate good investment opportunities, favor equity financing but also allow the entrepreneur/CEO to

[17] Given the very large literature on how different taxes affect capital structure, it is surprising that the market timing theory seems mute on this point and empirical results show no apparent effects of taxes while we find strong effects of both dividends and depreciation on leverage. Since taxes, depreciation allowances and dividends affect the level of internal cash flows, it is logical that we find tax effects on leverage as the pecking order predicts. Lewellen and Lewellen (2004), however, identify an important positive tax effect on equity; retained earnings postpone dividend taxes. We have not considered this effect.

[18] Since Swedish IPO firms like German ones typically pay dividends but often temporarily eliminate or cut them depending on their profitability, dividends are related to the status of internal capital; see Goergen et al (2003). Moreover, depreciation allowances have for decades been used in Sweden as a political tool to stimulate investments of the largest and most well-established firms, which benefit the incumbent owners and reinforces their enhanced pecking order of financing. Since the allowances are considered to be generous, they affect the level of internal capital as well as debt capacity; it is, thus, no surprise that they have a significant effect on leverage. Since both dividends and depreciation allowances thus are related to the level of internal capital, the rebalancing effect is more consistent with the enhanced pecking order theory than with the trade-off theory.

[19] See Chen and Zhao (2004) for a discussion about different implications of profitability and M/B as determinants of leverage from the trade-off and pecking order theories; they find empirical support for the cost of capital theories like the pecking order.

become more entrenched. Instead of rebalancing capital structure by raising debt after the SEO, (s)he tries to lock in an extra cushion of equity capital to prevent running into financial distress later that could threaten her/his control position. But the control blocks of Swedish founders/entrepreneurs are not diluted by equity infusions since rights issues and not public offers are used, and the new equity is not used as a preemptive cushion but to finance investments and to raise more debt as the fast rebalancing shows.

Two types of critique may be voiced against Baker's and Wurgler's approach. The most common questions if their timing variable M/B_{efwa}, weighted average of historical market-to-book values, actually picks up *real* market timing behavior. Is the positive association between M/B valuations and equity issues not mainly a *characteristic* of firms with very good long-term growth prospects (high M/Bs) that raise more equity (lower leverage) to realize their growth potential rather than a result of market timing per se? If genuine growth firms' behavior is incorrectly classified as real market timing, the M/B_{efwa} is a noisy measure that makes it difficult to draw any strong conclusions about effect of timing on leverage.

Alti (2003) argues that a measure of *genuine* market timing should be independent of firms' individual characteristics since market timing is a *general* behavior that affects all types of firms. For U.S. IPOs that go public in *hot issue markets* he finds that their timing does not depend on their individual characteristics, and that they raise significantly more equity than firms that went public in cold markets. But this genuine timing effect has only a *temporary* effect on leverage, not a persistent one since the initially lower leverage is rebalanced away after two years as firms take on more debt.[20] That the timing effect is temporary rather than persistent over 10 years seems more in line with how we intuitively think about the impact of timing when markets are relatively efficient.[21]

Although we do not differentiate between hot and cold markets, we find the same pattern as Alti: (i) the IPO is the major timing event of equity financing for almost all firms except firms controlled and managed by the founder/CEO and only do large RIs later, and (ii) the initially lower leverage is rebalanced away within two to three years for *all* types of firms. The short-run effect of market-to-book on leverage after the IPO through net equity issues is also temporary (Table 2, Panel B); it does not accumulate over

[20] Baker and Wurgler report that 74% of the initial effect of M/B_{efwa} on capital structure of US firms still remains after ten years.

[21] Another reason why Baker's and Wurgler's variable, the weighted average of historical market-to-book values (M/B_{efwa}), may not be appropriate is that new equity gauges a change in a *stock* variable while for example past profitability is a *flow* variable (change in retained earnings would be a more appropriate stock variable). Repeated issues of new equity will, thus, naturally result in an accumulated (permanent) change in the stock of equity while no such effect occurs because of reinvested profits. The persistent effect of new equity issues may, thus, be biased when compared to the impact of profitability on leverage over time.

time. Timing of the IPO is, thus, important also for Swedish firms even if they due to control reasons on average only float 21% (primary offering) of the equity after the IPO compared to an average of 32% for US IPOs; see Holmén and Högfeldt (2004a). The fast rebalancing after equity issues as well as the debt capacity motive for going public are consistent with the enhanced pecking order theory; external financing is only used when internal capital and debt are inadequate to finance the firms' investments.

The second type of critique is more general as it questions if market-to-book (M/B) is a proper measure of future growth opportunities or a noisy signal that also picks up other aspects like agency costs. Using the offer price or the first day closing price to calculate two sets of initial market-to-book values, Holmén and Högfeldt (2004a) test how agency costs affect the market's valuation of growth expectations by distinguishing between how firms with different owners in control are valued at the IPO. The market values future growth opportunities of firms controlled and managed by the founder/ entrepreneur (but to a lesser extent also institutionally controlled) significantly higher than other privately controlled firms like 2nd generation family firms; median M/Bs for the two ownership groups are 2.5 and 1.6, respectively.[22] M/B is, thus, not a clean measure of firms' future growth potential, in particular when control is inherited.

The significantly lower M/Bs for family controlled firms explains not only why market timing is not important for them but also why the *current* M/B (enhanced pecking order theory) is a more important determinant of leverage than historical M/Bs (market timing theory) and future M/Bs (Myers' dynamic pecking order theory). Comparisons of corporate behaviors between Continental Europe and the US based on M/B values are, thus, be precarious if the institutional differences are not appropriately accounted for.

Since firms controlled by the founder/CEO repeatedly do large RIs later, their significantly higher market valuation (M/B) at the IPO gauges their higher growth expectations after controlling for agency costs. These firms do, therefore, most likely raise more capital to realize their growth potential since their M/Bs are high and growing after the IPO (at least for 18 months), not because they time the market per se. When we do observe the strongest indication of market timing behavior a la Baker and Wurgler, it is most

[22] They run cross-section regressions with book-to-market values as dependent variable and control for industry composition, firm and IPO size, age, the index level of the Stockholm Stock Exchange, "hot" (1982, 1983, 1984) and "cold" (1990, 1991, 1992) market dummies, leverage (insignificant), if the firm did a pre-IPO private placement, and a dummy (private non-founder) that equals one if the firm is privately controlled but not by the founder (CEO). Their interpret that *the significantly lower growth expectations of private non-founder (family of other) controlled firms imply that there are higher agency costs associated with very entrenched private owners since they do not contribute pivotal managerial capital like a founder (CEO). Unlike a founder (CEO), family-controlled firms seem to prefer future growth by stock-financed acquisitions to organic growth. The lower*

likely because firms are *genuine* growth firms (firm characteristic) that are currently unprofitable and not market timers per se. That they exclusively undertake RIs is further evidence that timing is more speculative in order to exploit a perceived *market* mispricing of their *industry* rather than of their firm; incumbents do not immediately gain by selling shares to new outside shareholders.[23]

Due to institutional differences in ownership structures between Sweden and the US, market timing is not only less prevalent among Swedish IPOs but their timing behaviors are also different and have only temporary effects on leverage as rebalancing is generally faster. Consistent with the *enhanced pecking order theory*, retained earnings is a more important source of financing than external equity after the IPO, and probability of raising external equity and debt is closely related to the deficit of internal funds and debt, which explains why rebalancing is relatively fast and market timing has only a temporary effect.

4. Conclusions

This paper challenges the generality of Baker's and Wurgler's market timing theory as market timing is much less prevalent among Swedish IPOs and has much less persistent effects on capital structure over time compared to US IPOs. The main reason for the discrepancy is the difference in ownership structures. Agency costs due to the widespread use of dual-class shares in Sweden, not only among IPO firms, drive a significant wedge between the costs of internal and external capital as new outside investors demand compensation. The significantly lower market-to-book values for firms with strong separation of ownership and control, in particular when control is inherited, reflect such agency costs. This generates an *enhanced* pecking order since new equity is raised only when internal capital and debt capacity are insufficient. Public offers are absent as their larger size dilute control more and are extra costly in terms of

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valuation reflects the additional risk of such a strategy. Even if the founder is also a very entrenched private owner, the market views him/her as pivotal for the success of a firm with high future growth opportunities; see Holmén and Högfeldt (2004a).

[23] The very poor long-run performance for this group of firms, mainly in the informational technology industry, is further evidence that their financing and investment behaviors are highly speculative; see Holmén and Högfeldt (2004a). The fact that profitability does not have significant impact of leverage for these firms is also indicative; see Table 7.We also identified a second group of IPO firms that exhibited a relatively strong effect of past market-to-book on leverage since they were active in the SEO market doing Private Placements (PPs) but not RIs. Since another large investor or firm invests capital and often know-how in these firms, they seem to have overcome adverse selection problems and identified an upside potential either as a separate firm or perhaps after a future takeover. But why do we observe the timing effect? If the PPs primarily occur when the firms are financially distressed and have low M/Bs, the timing effect would be *reversed* and inconsistent with our result. But Table 8 shows that firms doing PPs in fact have a higher average M/B than firms doing only RIs or DIs. Since profits and M/B are generally positively correlated in our sample, the PPs occur when market conditions and expectations are good *both* for the firm and the new investors; one-sided market timing by the firm is less likely when it takes two to tango in a PP. Moreover, the PPs are very small compared to e.g. RIs and not repeated. A single PP that is done when the firm's M/B is high will thus have a high relative weight in the M/B_{efwa} , which may explain the significant effect of this variable on firm leverage. Note, however, that then timing is better explained by the firms' characteristics than as a result of general market timing that affects all type of firms.

discounts. Since rights issues and private placements de facto eliminate large wealth transfers from new outside shareholders market timing is less important.

The larger wedge between costs of internal and external capital in Sweden, thus, explains why financing is more reactive and strongly linked to profitability via retained earnings and not proactively coinciding with high market-to-book values via frequent use of large public offers as in the US, where the wedge is smaller due to the dispersed ownership. Institutional differences in ownership structures do matter as they have predictable effects on firms' financing behavior. But the standard capital structure theories seem to ignore this, and so does the market timing theory.

The enhanced pecking order theory, however, explains *why* three key institutional factors in the US environment are correlated and define the pivotal differences versus Continental Europe. First, the prevalence of *dispersed ownership* with limited use of dual-class shares, cross-shareholdings and very few pyramids; see La Porta, Lopez-de-Silanes and Shleifer (1999) and Barca and Becht (2001). Second, strong preference for *public offers* (POs) with firm commitment but very few if any rights issues (RIs) among seasoned equity offerings (SEOs); see Eckbo and Masulis (1995). Third, firms' decisions to raise external finance are *unrelated* to the deficit of internal funds; see Helwege and Liang (1996).

More generally, the connection we have established between separation of ownership and control, a reactive financing cycle (reversed or lack of market timing) and characteristics of the primary market seems to be a simple and robust mechanism to explain differences also between Common and Civil Law countries. Systematic differences in ownership structures between countries belonging to the two legal regimes seem to be better explained by disparities in the use of devices to separate control from ownership than by the variation in the legal protection of minority shareholders; see Holmén and Högfeldt (2004a).

The relatively small differences in legal minority protection do not seem to explain the substantial disparities between how primary markets and corporate financing work on the two sides of the North Atlantic. Such differences like the very limited use, sometimes even conspicuous absence, of public offers in Continental Europe seem starker than between secondary markets. The reactive financing behavior may also explain why the secondary equity markets in general tend to be less developed in Continental Europe and have lower Tobin's q values. A deeper analysis of how the institutional characteristics of the primary and secondary markets interact is, thus, a suitable avenue for future work.

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Table 1. Summary statistics of capital structure and financing decisions.

Means and standard deviations of leverage and components of the change in assets. Book leverage is book debt divided by assets. Hereinafter, we drop all observations where this ratio is larger than one. Market leverage equals book debt over assets minus book equity plus market equity. Net equity issues [*e/A*] are defined as the change in book equity minus the change in retained earnings divided by assets. Newly retained earnings [*ΔRE/A*] are equal to the change in retained earnings divided by assets. Net debt issues [*d/A*] are the residual change in assets divided by assets. All panels show data in time relative to the IPO year for all firms with an available IPO date.

		Book leverage D/A_t %		Market leverage D/A_t %		d/A_t %		e/A_t %		$\Delta RE/A_t$ %	
Year	*N*	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Panel A: All Sample											
Pre-IPO	183	71.00	(16.56)	-	-	-	-	-	-	-	-
IPO	214	59.13	(19.03)	45.06	(22.61)	8.67	(19.60)	18.49	(18.72)	1.61	(8.56)
IPO+1	200	61.20	(18.52)	47.81	(21.86)	13.43	(18.47)	3.51	(9.89)	1.61	(4.81)
IPO+2	186	61.68	(18.43)	49.65	(23.67)	11.76	(19.09)	4.59	(11.24)	1.31	(5.53)
IPO+4	140	62.42	(17.70)	52.46	(20.05)	9.01	(17.55)	2.23	(9.28)	1.19	(4.40)
IPO+6	109	63.68	(18.06)	55.63	(21.22)	5.09	(19.19)	3.07	(11.69)	-0.12	(7.26)
IPO+8	67	58.59	(19.71)	56.64	(25.49)	2.28	(15.97)	2.70	(12.90)	0.79	(8.53)
IPO+10	56	54.91	(20.24)	45.93	(25.76)	6.99	(17.65)	5.20	(15.06)	0.16	(12.36)
Panel B: Family-Owned Firms											
Pre-IPO	-	-	-	-	-	-	-	-	-	-	-
IPO	63	60.72	(17.23)	46.30	(20.20)	10.21	(20.78)	14.94	(13.50)	1.47	(3.08)
IPO+1	60	62.59	(17.37)	47.97	(19.27)	16.21	(15.70)	4.16	(8.93)	2.09	(3.83)
IPO+2	59	65.36	(18.05)	54.13	(22.78)	16.55	(19.44)	3.63	(7.86)	1.50	(2.67)
IPO+4	50	62.95	(18.48)	50.53	(18.50)	7.05	(15.11)	2.92	(10.21)	1.08	(3.22)
IPO+6	38	67.01	(14.91)	55.66	(16.49)	8.03	(16.83)	2.03	(8.57)	0.85	(6.57)
IPO+8	22	62.06	(19.54)	63.73	(22.64)	3.83	(11.82)	-0.04	(6.11)	1.65	(2.66)
IPO+10	17	56.93	(19.49)	49.92	(25.48)	3.51	(18.56)	2.44	(10.71)	1.99	(4.34)
Panel C: Entrepreneurial Firms											
Pre-IPO	-	-	-	-	-	-	-	-	-	-	-
IPO	35	61.23	(18.20)	44.59	(22.25)	13.84	(19.40)	19.56	(13.48)	1.90	(1.99)
IPO+1	26	60.34	(20.56)	45.42	(22.16)	12.47	(23.57)	7.17	(10.08)	2.15	(4.29)
IPO+2	18	61.67	(19.30)	43.75	(21.96)	21.06	(17.98)	6.37	(9.15)	0.18	(3.41)
IPO+4	10	68.91	(16.80)	49.77	(23.72)	16.20	(19.75)	1.32	(9.56)	0.46	(3.80)
IPO+6	6	74.35	(20.15)	63.76	(25.70)	-10.04	(20.49)	-6.44	(6.72)	-2.22	(6.07)
IPO+8	3	55.92	(10.01)	35.23	(5.11)	8.23	(17.10)	14.91	(13.53)	-9.97	(24.84)
IPO+10	1	40.29	-	20.96	-	-1.01	-	-3.16	-	7.32	-

Table 1, continued. Summary statistics of capital structure and financing decisions.

		Book leverage D/A_t %		Market leverage D/A_t %		d/A_t %		e/A_t %		$\Delta RE/A_t$ %	
Year	*N*	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Panel D: Privately Controlled Firms											
Pre-IPO	-	-	-	-	-	-	-	-	-	-	-
IPO	52	57.36	(22.07)	42.54	(23.20)	7.23	(17.96)	22.50	(21.08)	1.02	(9.18)
IPO+1	50	62.02	(17.10)	48.19	(21.53)	13.23	(19.00)	1.93	(13.32)	2.26	(2.79)
IPO+2	46	63.05	(15.39)	50.29	(21.69)	10.38	(17.07)	2.56	(6.21)	2.54	(3.24)
IPO+4	40	60.49	(15.99)	50.96	(19.46)	13.44	(18.23)	0.43	(9.26)	1.89	(6.27)
IPO+6	28	62.93	(15.54)	55.16	(22.63)	6.47	(20.56)	3.38	(9.99)	0.09	(7.77)
IPO+8	21	59.47	(19.38)	54.46	(27.41)	2.15	(18.53)	7.28	(17.17)	-1.44	(9.96)
IPO+10	20	52.11	(20.97)	40.38	(25.33)	9.89	(11.39)	3.36	(20.54)	-2.53	(18.80)
Panel E: Other Firms											
Pre-IPO	-	-	-	-	-	-	-	-	-	-	-
IPO	59	56.67	(18.57)	44.23	(24.34)	6.52	(22.02)	18.80	(23.69)	2.19	(13.88)
IPO+1	57	59.12	(20.24)	47.92	(25.44)	10.56	(17.14)	2.52	(7.15)	0.26	(7.02)
IPO+2	59	57.33	(20.51)	46.33	(26.52)	6.28	(18.42)	6.44	(16.23)	0.52	(8.75)
IPO+4	38	61.53	(19.07)	57.30	(21.84)	4.89	(18.66)	3.56	(8.14)	1.13	(3.04)
IPO+6	36	58.98	(21.74)	54.63	(24.24)	4.20	(19.46)	4.84	(15.00)	-0.32	(6.98)
IPO+8	20	54.46	(22.07)	54.32	(26.84)	-0.57	(17.86)	-1.03	(11.69)	3.63	(6.46)
IPO+10	17	57.70	(21.50)	49.93	(26.79)	8.22	(23.12)	10.92	(10.55)	0.80	(8.29)
Panel F: Largest Owner in Charge											
Pre-IPO	-	-	-	-	-	-	-	-	-	-	-
IPO	116	60.21	(18.11)	44.42	(20.90)	9.57	(19.66)	19.02	(15.82)	1.82	(2.70)
IPO+1	103	62.31	(16.75)	46.91	(19.34)	14.09	(18.22)	5.26	(9.58)	2.39	(3.90)
IPO+2	89	64.24	(17.17)	51.75	(21.65)	16.36	(19.60)	4.19	(5.98)	1.62	(3.24)
IPO+4	66	62.59	(18.01)	51.08	(19.30)	9.68	(16.17)	1.18	(8.54)	1.02	(4.56)
IPO+6	50	65.56	(16.81)	56.24	(20.04)	6.87	(19.62)	1.70	(9.45)	0.15	(7.91)
IPO+8	28	61.51	(20.46)	60.85	(26.49)	1.18	(14.52)	3.61	(14.86)	0.44	(7.86)
IPO+10	28	55.76	(21.49)	46.51	(26.09)	8.10	(11.68)	3.75	(14.37)	-0.80	(16.19)

Table 1, continued. Summary statistics of capital structure and financing decisions.

		Book leverage D/A_t %		Market leverage D/A_t %		d/A_t %		e/A_t %		$\Delta RE/A_t$ %	
Year	*N*	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Panel G: RI = 1											
Pre-IPO	56	74.83	(17.72)	-	-	-	-	-	-	-	-
IPO	72	61.22	(21.93)	46.27	(24.95)	10.53	(21.19)	18.56	(20.29)	3.30	(10.83)
IPO+1	72	64.47	(18.87)	48.58	(22.74)	17.57	(19.90)	3.34	(13.65)	1.97	(4.13)
IPO+2	69	66.48	(16.97)	53.06	(23.51)	16.99	(17.59)	5.74	(11.25)	0.84	(3.47)
IPO+4	56	66.08	(17.78)	55.73	(19.87)	12.03	(19.33)	0.90	(9.30)	0.66	(5.96)
IPO+6	44	70.27	(15.40)	59.18	(19.42)	8.29	(22.91)	2.27	(12.74)	-1.29	(7.65)
IPO+8	29	64.30	(20.12)	59.01	(27.05)	5.56	(15.13)	6.15	(14.23)	-1.34	(11.05)
IPO+10	28	57.66	(22.99)	49.97	(29.71)	8.32	(19.98)	6.21	(18.78)	-1.15	(16.15)
Panel H: RI = 1 $\wedge$ $\forall$(DI, PP) = 0											
Pre-IPO	20	72.41	(22.42)	-	-	-	-	-	-	-	-
IPO	23	61.15	(20.56)	49.57	(26.58)	10.05	(16.37)	17.96	(15.52)	2.98	(6.09)
IPO+1	23	64.57	(19.41)	50.15	(23.63)	16.80	(19.16)	2.14	(8.30)	2.02	(3.26)
IPO+2	22	65.64	(15.38)	58.82	(22.26)	11.03	(19.76)	5.45	(7.78)	1.53	(3.24)
IPO+4	18	68.48	(15.54)	58.31	(22.57)	5.49	(16.32)	-0.98	(8.59)	0.49	(5.60)
IPO+6	15	70.58	(14.63)	60.21	(20.96)	6.87	(22.50)	2.96	(5.59)	0.29	(3.29)
IPO+8	11	62.23	(25.60)	61.07	(32.71)	9.81	(14.30)	5.51	(13.71)	-0.99	(12.93)
IPO+10	9	58.39	(26.62)	58.31	(34.18)	5.38	(13.29)	9.16	(19.26)	-7.74	(25.90)
Panel I: RI = 0 $\wedge$ (DI $\vee$ PP) = 1											
Pre-IPO	68	68.19	(16.83)	-	-	-	-	-	-	-	-
IPO	75	59.01	(16.77)	46.47	(22.00)	8.59	(20.84)	18.28	(18.11)	-0.09	(9.49)
IPO+1	69	60.59	(17.31)	51.78	(21.32)	11.70	(16.89)	4.31	(5.30)	1.07	(5.32)
IPO+2	66	60.52	(18.11)	51.42	(24.44)	10.67	(21.75)	4.57	(11.14)	1.37	(5.77)
IPO+4	50	61.12	(17.16)	53.27	(19.52)	7.44	(19.34)	4.33	(10.91)	1.09	(2.24)
IPO+6	41	60.45	(19.20)	56.63	(21.64)	0.00	(17.57)	5.03	(13.18)	-0.61	(8.03)
IPO+8	23	51.39	(16.95)	49.83	(23.30)	-1.18	(19.56)	0.93	(13.80)	2.63	(6.64)
IPO+10	17	50.04	(18.89)	39.38	(23.34)	5.62	(16.74)	5.79	(12.78)	1.01	(8.24)

Table 2. Determinants of annual changes in leverage and components.

OLS regressions of changes in book leverage and its components on the M/B ratio, fixed assets, profitability, firm size, and lagged leverage.

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{t-1} = -\left(\frac{e_t}{A_t}\right) - \left(\frac{\Delta RE_t}{A_t}\right) - \left[E_{t-1}\left(\frac{1}{A_t} - \frac{1}{A_{t-1}}\right)\right] = a + b\left(\frac{M}{B}\right)_{t-1} + c\left(\frac{PPE}{A}\right)_{t-1} + d\left(\frac{EBITDA}{A}\right)_{t-1} + e\log(S)_{t-1} + f\left(\frac{D}{A}\right)_{t-1} + \varepsilon_{t-1}$$

Book leverage is book debt to assets. The M/B is assets minus book equity plus market equity divided by assets. The M/B is measured at time *t-1* except for the IPO year when it is measured at time *t*. Observations with an excessive market-to-book (larger than ten) are omitted. Fixed assets [*PPE/A*] are defined as net property, plant, and equipment over assets. Profitability [*EBITDA/A*] is defined as operating income before depreciation divided by assets. Firm size is equal to the natural log of net sales. The total change in leverage is in Panel A. The net equity issues are in Panel B. Newly retained earnings are in Panel C while Panel D presents the growth in the assets component.

		M/B_{t-1} %		PPE/A_{t-1} %		$EBITDA/A_{t-1}$ %		$log(S)_{t-1}$		D/A_{t-1}%		
Year	*N*	**b**	**t(b)**	**c**	**t(c)**	**d**	**t(d)**	**e**	**T(e)**	**f**	**t(f)**	**R^2**
Panel A: Change in book leverage $(\Delta(D/A_t))$%												
IPO	181	-0.24	[-3.56]	-0.04	[-.66]	-0.18	[-2.60]	0.24	[3.47]	-0.38	[-5.58]	0.25
IPO+1	169	-0.17	[-2.35]	-0.07	[-1.08]	-0.05	[-0.68]	-0.24	[-3.28]	-0.38	[-4.98]	0.23
IPO+2	179	-0.25	[-3.21]	-0.06	[-0.80]	0.00	[-0.04]	0.02	[0.29]	-0.26	[-3.53]	0.07
IPO+4	138	-0.07	[-0.89]	-0.17	[-2.10]	-0.18	[-2.16]	-0.12	[-1.46]	-0.31	[-3.80]	0.18
IPO+6	105	0.04	[0.40]	-0.19	[-1.87]	-0.07	[-0.61]	-0.24	[-2.55]	-0.18	[-1.81]	0.10
IPO+10	53	-0.22	[-1.43]	0.04	[0.28]	0.04	[0.23]	0.32	[1.93]	-0.33	[-2.37]	0.14
Panel B: Change in book leverage due to net equity issues $(-(e/A_t))$%												
IPO	181	-0.29	[-4.25]	0.02	[0.27]	0.12	[1.70]	0.37	[5.34]	-0.02	[-0.31]	0.24
IPO+1	169	-0.29	[-3.83]	-0.06	[-0.81]	-0.18	[-2.46]	0.12	[1.65]	-0.44	[-5.65]	0.18
IPO+2	179	-0.16	[-2.00]	0.06	[0.81]	-0.03	[-0.34]	0.10	[1.37]	-0.14	[-1.87]	0.02
IPO+4	138	-0.31	[-3.65]	-0.23	[-2.77]	0.06	[0.71]	-0.18	[-2.14]	-0.03	[-0.30]	0.12
IPO+6	105	0.01	[0.05]	-0.20	[-1.95]	0.02	[0.20]	-0.17	[-1.75]	-0.17	[-1.68]	0.06
IPO+10	53	-0.22	[-1.71]	-0.03	[-0.22]	0.34	[2.54]	0.30	[2.17]	0.12	[1.02]	0.38

Table 2, continued. Determinants of annual changes in leverage and components.

Year	*N*	M/B_{t-1} % b	t(b)	PPE/A_{t-1} % c	t(c)	$EBITDA/A_{t-1}$ % d	t(d)	$log(S)_{t-1}$ e	T(e)	D/A_{t-1}% f	t(f)	R^2
Panel C: Change in book leverage due to newly retained earnings $(-(\Delta RE/A_t))$%												
IPO	181	0.01	[0.07]	0.08	[1.21]	-0.48	[-6.78]	-0.04	[-0.54]	0.13	[1.80]	0.21
IPO+1	169	0.17	[2.38]	0.10	[1.40]	-0.42	[-6.08]	-0.21	[-2.92]	0.22	[2.88]	0.25
IPO+2	179	0.23	[4.27]	0.05	[1.01]	-0.73	[-14.41]	-0.17	[-3.29]	0.08	[1.50]	0.56
IPO+4	138	-0.07	[-0.97]	0.10	[1.47]	-0.60	[-8.48]	0.10	[1.45]	0.05	[0.68]	0.38
IPO+6	105	-0.02	[-0.26]	0.14	[1.69]	-0.57	[-6.20]	-0.11	[-1.48]	0.16	[2.03]	0.43
IPO+10	53	-0.16	[-1.39]	-0.01	[-0.08]	-0.79	[-6.65]	0.16	[1.28]	-0.18	[-1.69]	0.53
Panel D: Change in book leverage due to growth in assets $(-E_{t-1}(1/A_t-1/A_{t-1}))$%												
IPO	181	0.15	[3.12]	-0.16	[-3.48]	-0.06	[-1.31]	-0.26	[-5.43]	-0.61	[-12.83]	0.64
IPO+1	169	-0.01	[-0.09]	-0.07	[-1.00]	0.28	[3.80]	-0.30	[-3.93]	-0.12	[-1.54]	0.17
IPO+2	179	-0.17	[-2.34]	-0.15	[-2.05]	0.36	[5.06]	-0.01	[-0.18]	-0.14	[-1.90]	0.13
IPO+4	138	0.31	[3.85]	0.04	[0.45]	0.08	[1.04]	0.03	[0.35]	-0.30	[-3.79]	0.21
IPO+6	105	0.06	[0.58]	-0.04	[-0.39]	0.34	[3.06]	0.06	[0.59]	-0.09	[-0.94]	0.14
IPO+10	53	0.21	[1.53]	0.07	[0.57]	0.51	[3.62]	-0.20	[-1.40]	-0.23	[-1.84]	0.32

Table 3. Correlation matrix. Correlations between the most important variables.

	$D/A_{book,\ t}$	$D/A_{market,\ t}$	$M/B_{efwa,\ t}$	M/B_t	PPE/A_t	$EBITDA/A_t$	$log(S)_t$	Div/BE_t	Div/ME_t	Dp/A_t	$A\text{-}shares_t$	$Disp_t$	Fam_t	$Entr_t$	$Priv_t$	$OwnSV_t$	$D/A_{book,\ t+1}$	$D/A_{market,\ t+1}$
$D/A_{book,\ t}$	1.000	.754**	-.268**	-.238**	0.021	-.077**	.161**	-.001	-.211**	-.182**	-.007	-.154**	.078**	0.036	-.039	.061*	.857**	.690**
$D/A_{market,\ t}$		1.000	-.547**	-.625**	.206**	-.228**	.195**	-.173**	0.004	-.111**	-0.038	-.146**	0.021	-.057	-.031	-.030	.663**	.824**
$M/B_{efwa,\ t}$			1.000	.844**	-.201**	.068*	-.112**	.142**	-.154**	0.031	-.015	.081**	0.013	.076*	-.052	0.027	-.229**	-.459**
M/B_t				1.000	-.196**	.141**	-.089**	.233**	-.205**	0.046	-.070*	.150**	-.036	.068*	0.016	0.012	-.238**	-.522**
PPE/A_t					1.000	.127**	.070*	-.031	0.057	.202**	-.037	-.020	-.046	-.185**	0.032	-.175**	-.023	.147**
$EBITDA/A_t$						1.000	.165**	.236**	.22**	.340**	.147**	-.090**	.071*	-.001	-.005	.090**	-.096**	-.205**
$log(S)_t$							1.000	.072*	.226**	.141**	-.060*	.078*	-.048	-.212**	-.034	-.114**	.087**	.153**
Div/BE_t								1.000	.311**	.076*	-.060*	.080**	0.014	-.020	-.042	0.006	-.086**	-.177**
Div/ME_t									1.000	.102**	0.014	-.021	-.009	-.055	-.015	0.014	-.221**	-.079**
Dp/A_t										1.000	.063*	0.025	-.026	0.012	.069*	-.001	-.229**	-.179**
$A\text{-}shares_t$											1.000	-.440**	.247**	-.028	0.037	0.224	0.003	-.022
$Disp_t$												1.000	-.278**	-.006	.081**	-.279**	-.163**	-.146**
$Family_t$													1.000	-.227**	-.446**	.388**	.070*	0.042
$Entr_t$														1.000	-.193**	.172**	0.04	-0.055
$Priv_t$															1.000	.145**	-.003	-.024
$OwnSV_t$																1.000	.105**	0.017
$D/A_{book,\ t+1}$																	1.000	.767**
$D/A_{market,\ t+1}$																		1.000

**The correlation is statistically significant at a 1% level.
*The correlation is statistically significant at a 5% level.

Notes. The table contains some variables that are neither present in the regression analyses of the latter tables, nor defined and presented in the paper. That is because they largely pick up information that is present in other variables and to not add any new insights. These variables are: (1) [*A-shares*], a dummy variable that is 1 if dual class shares are used by the firm; (2) [*Disp*], an ownership dispersion measure that is equal to 1 minus the sum of all votes of the blockholders; (3) [Family], [Entrepreneur], [Private] and [Owner in charge] are all dummies, too.

Table 4. Determinants of leverage.

OLS regressions of book and market leverage on the M/B ratio, fixed assets, profitability, and firm size.

$$\left(\frac{D}{A}\right)_t = a + b\left(\frac{M}{B}\right)_{efwa,t-1} + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + f\log(S)_{t-1} + \varepsilon_t$$

Book leverage is book debt over assets. Market leverage is book debt divided by assets minus book equity plus market equity. The M/B is defined twofold. First, [M/B_{efwa}] is a weighted average M/B from the IPO year to year *t-1*. The weights are the amount of external finance raised in each year during the period ending at *t-1*. External finance is net equity issues plus net debt issues. When this sum is negative, we set its value to zero. The other is the simple, lagged M/B in year *t-1*. It is defined as assets minus book equity plus market equity divided by assets. Fixed assets [*PPE/A*] are defined as net property, plant, and equipment over assets. Profitability [*EBITDA/A*] is operating income before depreciation and amortization divided by assets. Firms size [*S*] is the natural log of net sales. Panel A reports results for book leverage while Panel B presents the results for market leverage. The last 8 rows of each panel report regression results for specific subsamples.

		$M/B_{efwa,t-1}$		M/B_{t-1}		PPE/A_{t-1} %		$EBITDA/A_{t-1}$ %		$log(S)_{t-1}$		
Year	*N*	**b**	**t(b)**	**C**	**t(c)**	**d**	**t(d)**	**e**	**t(e)**	**f**	**t(f)**	**R^2**
Panel A: Book leverage %												
IPO+1	169	-	-	-0.32	[-4.32]	-0.07	[-0.90]	-0.13	[-1.71]	0.12	[1.64]	0.13
IPO+2	146	-0.17	[-0.89]	-0.22	[-1.18]	-0.10	[-1.28]	-0.08	[-1.06]	0.13	[1.69]	0.13
IPO+4	135	-0.22	[-1.69]	-0.02	[-0.14]	0.01	[0.12]	-0.12	[-1.36]	0.13	[1.57]	0.06
IPO+6	103	-0.23	[-1.60]	0.21	[1.39]	-0.13	[-1.32]	-0.38	[-3.58]	-0.03	[-0.36]	0.14
IPO+10	52	0.16	[0.92]	-0.54	[-2.81]	-0.12	[-0.90]	0.00	[0.00]	0.28	[1.78]	0.24
1978-1997 All firms	1081	-0.11	[-1.97]	-0.14	[-2.56]	-0.09	[-2.91]	-0.10	[-3.35]	0.08	[2.72]	0.08
Entrepreneur (founder/CEO)	98	-0.34	[-1.64]	-0.06	[-0.29]	-0.16	[-1.63]	-0.05	[-0.49]	0.35	[3.64]	0.22
Family (founder family)	372	-0.16	[-2.08]	0.03	[0.32]	-0.13	[-2.50]	-0.24	[-4.66]	0.13	[2.48]	0.11
Private (non-founder fam control)	299	-0.18	[-2.06]	-0.23	[-2.69]	0.02	[0.39]	-0.02	[-0.31]	0.23	[4.05]	0.18
Other (controlled by institution)	300	-0.13	[-0.94]	-0.11	[-0.77]	-0.08	[-1.31]	-0.19	[-3.45]	-0.04	[-0.67]	0.08
Owner in charge (blockholder/CEO)	548	-0.13	[-1.90]	-0.04	[-0.61]	-0.11	[-2.54]	-0.10	[-2.29]	0.17	[4.03]	0.07
RI = 1	427	-0.02	[-0.23]	-0.18	[-2.39]	-0.09	[-1.87]	-0.02	[-0.37]	0.19	[3.79]	0.07
RI = 1 $\wedge$ $\forall$(DI, PP) = 0	152	-0.13	[-1.04]	-0.21	[-1.65]	-0.23	[-2.92]	0.13	[1.50]	0.29	[3.21]	0.19
RI = 0 $\wedge$ (DI $\vee$ PP) = 1	397	-0.28	[-3.31]	-0.07	[-0.87]	-0.11	[-2.12]	-0.12	[-2.31]	-0.14	[-2.72]	0.11

Table 4, continued. Determinants of leverage.

OLS regressions of book and market leverage on the M/B ratio, fixed assets, profitability, and firm size.

$$\left(\frac{D}{A}\right)_t = a + b\left(\frac{M}{B}\right)_{efwa,t-1} + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + f\log(S)_{t-1} + \varepsilon_t$$

		$M/B_{efwa,t-1}$		M/B_{t-1}		PPE/A_{t-1} %		$EBITDA/A_{t-1}$ %		$log(S)_{t-1}$		
Year	*N*	**b**	**t(b)**	**C**	**t(c)**	**d**	**t(d)**	**e**	**t(e)**	**f**	**t(f)**	**R^2**
Panel B: Market leverage %												
IPO+1	167	-	-	-0.54	[-8.75]	0.04	[0.66]	-0.22	[-3.70]	0.12	[2.01]	0.41
IPO+2	145	-0.17	[-1.09]	-0.44	[-2.80]	0.00	[-0.04]	-0.24	[-3.52]	0.10	[1.49]	0.37
IPO+4	134	-0.23	[-2.10]	-0.31	[-2.80]	0.14	[1.90]	-0.13	[-1.71]	0.11	[1.51]	0.34
IPO+6	103	-0.07	[-0.58]	-0.36	[-2.70]	0.02	[0.18]	-0.31	[-3.31]	-0.05	[-0.58]	0.34
IPO+10	51	0.07	[0.39]	-0.53	[-2.97]	0.07	[0.57]	-0.21	[-1.45]	0.32	[2.17]	0.35
1978-1997 All firms	1072	-0.07	[-1.41]	-0.42	[-8.57]	0.05	[1.87]	-0.19	[-7.37]	0.14	[5.35]	0.32
Entrepreneur (founder/CEO)	98	-0.38	[-1.99]	-0.16	[-0.82]	-0.07	[-0.79]	-0.09	[-0.97]	0.34	[3.96]	0.34
Family (founder family)	372	-0.06	[-0.96]	-0.38	[-5.89]	0.01	[0.11]	-0.35	[-8.43]	0.20	[4.83]	0.43
Private (non-founder fam control)	295	-0.22	[-3.12]	-0.40	[-5.71]	0.10	[2.14]	-0.10	[-2.03]	0.29	[6.42]	0.46
Other (controlled by institution)	299	-0.22	[-1.83]	-0.27	[-2.20]	0.03	[0.60]	-0.27	[-5.53]	-0.07	[-1.32]	0.29
Owner in charge (blockholder/CEO)	541	-0.04	[-0.75]	-0.44	[-7.53]	-0.01	[-0.14]	-0.15	[-3.95]	0.25	[7.07]	0.37
RI = 1	425	-0.02	[-0.29]	-0.47	[-7.48]	0.08	[1.93]	-0.09	[-2.14]	0.24	[5.66]	0.35
RI = 1 $\wedge$ $\forall$(DI, PP) = 0	151	-0.10	[-0.99]	-0.48	[-4.56]	-0.03	[-0.50]	-0.01	[-0.17]	0.32	[4.23]	0.43
RI = 0 $\wedge$ (DI $\vee$ PP) = 1	396	-0.20	[-2.75]	-0.32	[-4.51]	-0.01	[-0.30]	-0.26	[-6.00]	-0.07	[-1.63]	0.33

Table 5. Determinants of leverage. Alternative control variables.

OLS regressions of leverage on determinants suggested by Fama & French (2002).

$$\left(\frac{D}{A}\right)_t = a + b\left(\frac{M}{B}\right)_{efwa,t-1} + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{ET}{A}\right)_{t-1} + e\left(\frac{Div}{BE}\right)_{t-1} + f\left(\frac{Div}{ME}\right)_{t-1} + g\left(\frac{Dp}{A}\right)_{t-1} + h\log(S)_{t-1} + \varepsilon_t$$

Book leverage is book debt divided by assets while market leverage is book debt to assets minus book equity plus market equity. The M/B is defined twofold. First, [M/B_{efwa}] is a weighted average M/B from the IPO year to year *t-1*. The weights are the amount of external finance raised in each year during the period ending at *t-1*. External finance is net equity issues plus net debt issues. When this sum is negative, we set its value to zero. The other is the simple, lagged M/B in year *t-1*. It is defined as assets minus book equity plus market equity divided by assets. Earnings before interest and taxes [*ET*] over assets and market dividends [*Div/ME*] defined as dividends over market equity are good proxies for profitability. [*Div/BE*] denote dividends over book equity. Depreciation expense [*Dp/A*] is defined as depreciation to assets. Firms size [*S*] is the natural log of net sales. Panel A reports results for book leverage while Panel B presents the results for market leverage.

		M/B_{efwa}		*M/B*		*ET/A %*		*Div/BE %*		*Div/ME %*		*Dp/A %*		*log(S)*		
Year	*N*	**b**	**t(b)**	**c**	**t(c)**	**d**	**t(d)**	**e**	**t(e)**	**f**	**t(f)**	**g**	**t(g)**	**h**	**t(h)**	**R^2**
Panel A: Book leverage %																
IPO+1	169	-	-	-0.45	[-6.01]	-0.31	[-4.62]	0.19	[2.00]	-0.34	[-3.71]	-0.16	[-2.31]	0.10	[1.42]	0.28
IPO+2	146	-0.13	[-0.71]	-0.41	[-2.22]	-0.11	[-1.14]	0.21	[1.84]	-0.44	[-3.99]	-0.03	[-0.35]	0.20	[2.53]	0.22
IPO+4	135	-0.17	[-1.40]	-0.15	[-1.13]	0.03	[0.29]	0.15	[1.80]	-0.22	[-2.37]	-0.25	[-3.02]	0.21	[2.56]	0.15
IPO+6	103	-0.10	[-0.77]	-0.19	[-1.32]	-0.18	[-1.83]	0.37	[2.53]	-0.72	[-5.41]	-0.26	[-3.27]	0.00	[0.00]	0.35
IPO+10	52	0.06	[0.41]	-0.37	[-2.25]	0.29	[2.01]	-0.29	[-1.61]	-0.19	[-1.19]	-0.29	[-2.53]	0.32	[2.39]	0.48
1978-1997 All firms	1081	-0.07	[-1.28]	-0.24	[-4.49]	-0.05	[-1.92]	0.10	[3.20]	-0.33	[-10.10]	-0.24	[-8.58]	0.16	[5.53]	0.21
Entrepreneur (founder/CEO)	98	-0.28	[-1.45]	-0.18	[-0.94]	-0.03	[-0.33]	0.09	[0.71]	-0.44	[3.95]	-0.23	[-2.60]	0.38	[4.38]	0.34
Family (founder family)	372	-0.18	[-2.58]	-0.10	[-1.45]	0.00	[-0.04]	0.12	[2.55]	-0.28	[-5.66]	-0.40	[-8.80]	0.18	[3.78]	0.30
Private (non-founder contr)	299	-0.16	[-1.99]	-0.33	[-3.75]	-0.09	[-1.87]	0.08	[0.87]	-0.32	[-3.73]	-0.18	[-3.60]	0.30	[6.03]	0.29
Other (control by institution)	300	-0.03	[-0.20]	-0.30	[-2.16]	-0.14	[-2.36]	0.29	[2.91]	-0.48	[-5.16]	-0.14	[-2.66]	0.07	[1.15]	0.16
Owner in charge (blockh/CEO)	548	-0.11	[-1.70]	-0.19	[-2.88]	0.04	[1.04]	0.08	[2.14]	-0.33	[-7.91]	-0.34	[-9.01]	0.20	[5.41]	0.26
RI = 1	427	0.03	[0.36]	-0.20	[-2.78]	-0.06	[-1.23]	0.03	[0.33]	-0.16	[-2.04]	-0.34	[-7.51]	0.29	[6.30]	0.20
RI = 1 $\wedge$ $\forall$(DI, PP) = 0	152	-0.04	[-0.36]	-0.16	[-1.31]	-0.08	[-1.13]	-0.03	[-0.23]	-0.02	[-0.18]	-0.43	[-5.72]	0.48	[6.25]	0.29
RI = 0 $\wedge$ (DI $\vee$ PP) = 1	397	-0.20	[-2.59]	-0.20	[-2.62]	-0.00	[-0.02]	0.14	[2.89]	-0.38	[-7.34]	-0.17	[-3.85]	-0.02	[-0.47]	0.23

Table 5, continued. Determinants of leverage. Alternative control variables.

OLS regressions of leverage on determinants suggested by Fama & French (2002).

$$\left(\frac{D}{A}\right)_t = a + b\left(\frac{M}{B}\right)_{efwa,t-1} + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{ET}{A}\right)_{t-1} + e\left(\frac{Div}{BE}\right)_{t-1} + f\left(\frac{Div}{ME}\right)_{t-1} + g\left(\frac{Dp}{A}\right)_{t-1} + h\log(S)_{t-1} + \varepsilon_t$$

		M/B$_{efwa}$		*M/B*		*ET/A %*		*Div/BE %*		*Div/ME %*		*Dp/A %*		*log(S)*		
Year	*N*	**b**	**t(b)**	**c**	**t(c)**	**d**	**t(d)**	**e**	**t(e)**	**f**	**t(f)**	**g**	**t(g)**	**h**	**t(h)**	**R^2**
Panel B: Market leverage %																
IPO+1	167	-	-	-0.59	[-9.13]	-0.26	[-4.26]	-0.10	[-1.22]	-0.07	[-0.83]	-0.11	[-1.88]	0.11	[1.67]	0.46
IPO+2	145	-0.12	[-0.79]	-0.52	[-3.23]	-0.18	[-2.20]	-0.08	[-0.86]	-0.14	[-1.49]	-0.01	[-0.16]	0.15	[2.24]	0.40
IPO+4	134	-0.23	[-2.20]	-0.42	[-3.73]	0.01	[0.12]	0.08	[1.19]	-0.23	[-2.89]	-0.18	[-2.59]	0.18	[2.56]	0.39
IPO+6	103	0.07	[0.58]	-0.67	[-5.49]	-0.11	[-1.31]	0.09	[0.73]	-0.55	[-4.80]	-0.08	[-1.15]	0.00	[-0.06]	0.52
IPO+10	51	0.01	[0.04]	-0.36	[-2.24]	0.17	[1.22]	-0.46	[-2.66]	0.12	[0.78]	-0.28	[-2.58]	0.25	[1.90]	0.53
1978-1997 All firms	1072	-0.05	[-1.03]	-0.48	[-10.20]	-0.12	[-4.82]	-0.01	[-0.45]	-0.19	[-6.57]	-0.16	[-6.58]	0.18	[7.05]	0.37
Entrepreneur (founder/CEO)	98	-0.35	[-1.82]	-0.19	[-0.98]	-0.02	[-0.15]	-0.04	[-0.33]	-0.13	[-1.17]	-0.16	[-1.78]	0.35	[4.06]	0.36
Family (founder family)	368	-0.05	[-0.88]	-0.51	[-8.04]	-0.11	[-2.75]	0.02	[0.50]	-0.21	[-4.72]	-0.23	[-5.65]	0.23	[5.50]	0.45
Private (non-founder contr)	295	-0.23	[-3.37]	-0.36	[-4.89]	-0.08	[-1.87]	-0.20	[-2.74]	0.01	[0.16]	-0.13	[-3.13]	0.31	[7.43]	0.51
Other (control by institution)	299	-0.13	[-1.10]	-0.38	[-3.09]	-0.21	[-4.03]	0.07	[0.72]	-0.24	[-2.89]	-0.15	[-3.01]	0.01	[0.15]	0.33
Owner in charge (blockh/CEO)	541	-0.04	[-0.70]	-0.54	[-9.38]	-0.03	[-0.95]	0.01	[0.35]	-0.20	[-5.35]	-0.18	[-5.55]	0.26	[7.75]	0.43
RI = 1	425	0.02	[0.37]	-0.48	[-7.93]	-0.06	[-1.47]	-0.15	[-2.27]	0.01	[0.12]	-0.24	[-6.18]	0.31	[7.77]	0.42
RI = 1 $\wedge$ $\forall$(DI, PP) = 0	151	-0.03	[-0.37]	-0.43	[-4.52]	-0.08	[-1.43]	-0.23	[-2.31]	0.12	[1.22]	-0.31	[-5.03]	0.44	[6.97]	0.54
RI = 0 $\wedge$ (DI $\vee$ PP) = 1	396	-0.14	[-1.98]	-0.44	[-6.37]	-0.11	[-2.70]	0.05	[1.11]	-0.25	[-5.29]	-0.17	[-4.21]	0.01	[0.20]	0.37

Table 6. Determinants of cumulative changes in leverage from the pre-IPO value.

OLS regressions of the cumulative change in leverage since the pre-IPO value on the M/B ratio, fixed assets, profitability, and firm size.

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{pre-IPO} = a + b\left(\frac{M}{B}\right)_{efwa,t-1} + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + f\log(S)_{t-1} + g\left(\frac{D}{A}\right)_{pre-IPO} + \varepsilon_t$$

Book leverage is book debt over assets. Market leverage is book debt divided by assets minus book equity plus market equity. The M/B is defined twofold. First, [M/B_{efwa}] is a weighted average M/B from the IPO year to year *t-1*. The weights are the amount of external finance raised in each year during the period ending at *t-1*. External finance is net equity issues plus net debt issues. When this sum is negative, we set its value to zero. The other is the simple, lagged M/B in year *t-1*. It is defined as assets minus book equity plus market equity divided by assets. Fixed assets [*PPE/A*] are defined as net property, plant, and equipment over assets. Profitability [*EBITDA/A*] is operating income before depreciation and amortization divided by assets. Firms size [*S*] is the natural log of net sales. Panel A reports results for book leverage while Panel B presents the results for market leverage.

		$M/B_{efwa,t-1}$		M/B_{t-1}		PPE/A_{t-1} %		$EBITDA/A_{t-1}$ %		$log(S)_{t-1}$		$(D/A)_{pre\text{-}IPO}$ %		
Year	*N*	**b**	**t(b)**	**c**	**t(c)**	**D**	**t(d)**	**e**	**t(e)**	**f**	**T(f)**	**g**	**t(g)**	**R^2**
Panel A: Book leverage %														
IPO+1	169	-	-	-0.37	[-5.91]	-0.08	[-1.31]	0.01	[0.20]	0.01	[0.12]	-0.49	[-7.67]	0.39
IPO+2	146	-0.13	[-0.78]	-0.24	[-1.51]	-0.08	[-1.13]	0.04	[0.50]	0.14	[2.02]	-0.45	[-6.39]	0.35
IPO+4	122	-0.29	[-2.50]	-0.03	[-0.28]	-0.05	[-0.69]	-0.20	[-2.59]	-0.08	[-1.00]	-0.40	[-5.21]	0.33
IPO+6	95	-0.24	[-1.74]	0.07	[0.44]	-0.13	[-1.39]	-0.27	[-2.70]	-0.23	[-2.59]	-0.44	[-4.80]	0.30
IPO+10	48	-0.07	[-0.36]	-0.26	[-1.20]	-0.03	[-0.18]	-0.16	[-1.03]	0.10	[0.58]	-0.50	[-3.06]	0.26
1978-1997 All firms	1013	-0.20	[-3.96]	-0.15	[-2.93]	-0.07	[-2.66]	-0.08	[-3.06]	-0.06	[-2.17]	-0.42	[-15.63]	0.31
Entrepreneur (founder/CEO)	84	-0.42	[-1.74]	0.10	[0.43]	-0.03	[-0.23]	-0.04	[-0.27]	0.19	[1.62]	-0.35	[-2.85]	0.15
Family (founder family)	345	-0.07	[-0.78]	-0.05	[-0.58]	-0.09	[-1.61]	-0.13	[-2.38]	0.09	[1.58]	-0.31	[-5.59]	0.09
Private (non-founder contr)	291	-0.26	[-3.22]	-0.13	[-1.54]	-0.02	[-0.30]	-0.13	[-2.49]	-0.08	[-1.41]	-0.36	[-6.04]	0.39
Other (control by institution)	281	-0.17	[-1.60]	-0.18	[-1.75]	-0.08	[-1.74]	-0.04	[-0.83]	-0.11	[-2.30]	-0.51	[-10.31]	0.43
Owner in charge (blockh/CEO)	519	-0.12	[-1.86]	-0.11	[-1.59]	-0.07	[-1.71]	-0.17	[-3.92]	-0.05	[-1.12]	-0.31	[-7.45]	0.20
RI = 1	379	-0.20	[-3.29]	-0.12	[-1.92]	0.03	[0.75]	-0.11	[-2.56]	-0.09	[-2.04]	-0.46	[-10.32]	0.42
RI = 1 $\wedge$ $\forall$(DI, PP) = 0	139	-0.49	[-4.99]	-0.02	[-0.25]	-0.11	[-1.74]	-0.04	[-0.57]	-0.12	[-1.49]	-0.39	[-5.26]	0.55
RI = 0 $\wedge$ (DI $\vee$ PP) = 1	390	-0.28	[-3.32]	-0.05	[-0.59]	-0.09	[-1.72]	-0.04	[-0.85]	-0.15	[-2.98]	-0.33	[-6.87]	0.16

Table 6, continued. Determinants of cumulative changes in leverage from the pre-IPO value.

OLS regressions of the cumulative change in leverage since the pre-IPO value on the M/B ratio, fixed assets, profitability, and firm size.

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{pre-IPO} = a + b\left(\frac{M}{B}\right)_{efwa,t-1} + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + f\log(S)_{t-1} + g\left(\frac{D}{A}\right)_{pre-IPO} + \varepsilon_t$$

		$M/B_{efwa,t-1}$		M/B_{t-1}		PPE/A_{t-1} %		$EBITDA/A_{t-1}$ %		$log(S)_{t-1}$		$(D/A)_{pre\text{-}IPO}$ %		
Year	*N*	**b**	**t(b)**	**c**	**t(c)**	**D**	**t(d)**	**e**	**t(e)**	**f**	**t(f)**	**g**	**t(g)**	**R^2**
Panel B: Market leverage %														
IPO+1	167	-	-	-0.55	[-10.07]	0.03	[0.58]	-0.12	[-2.20]	0.08	[1.58]	-0.46	[-8.36]	0.55
IPO+2	145	-0.15	[-1.03]	-0.42	[-3.00]	0.01	[0.09]	-0.16	[-2.56]	0.10	[1.63]	-0.45	[-7.36]	0.51
IPO+4	121	-0.24	[-2.43]	-0.28	[-2.80]	0.09	[1.40]	-0.14	[-2.12]	0.03	[0.52]	-0.45	[-6.71]	0.51
IPO+6	95	-0.05	[-0.46]	-0.43	[-3.63]	-0.01	[-0.13]	-0.21	[-2.50]	-0.14	[-1.98]	-0.45	[-6.10]	0.55
IPO+10	47	-0.20	[-1.02]	-0.25	[-1.23]	0.17	[1.29]	-0.34	[-2.31]	0.13	[0.86]	-0.27	[-1.74]	0.36
1978-1997 All firms	1004	-0.10	[-2.23]	-0.42	[-9.66]	0.05	[2.08]	-0.18	[-7.66]	0.05	[1.97]	-0.39	[-16.68]	0.49
Entrepreneur (founder/CEO)	84	-0.46	[-2.06]	-0.03	[-0.14]	0.01	[0.12]	-0.21	[-1.78]	0.05	[0.50]	-0.37	[-3.35]	0.29
Family (founder family)	341	0.03	[0.41]	-0.43	[-6.65]	0.04	[0.81]	-0.29	[-6.49]	0.22	[4.99]	-0.39	[-9.08]	0.44
Private (non-founder contr)	287	-0.21	[-2.96]	-0.38	[-5.40]	0.07	[1.64]	-0.14	[-3.17]	0.14	[2.77]	-0.41	[-7.99]	0.54
Other (control by institution)	280	-0.20	[-2.16]	-0.32	[-3.44]	0.01	[0.20]	-0.17	[-0.39]	-0.11	[-2.54]	-0.47	[-10.53]	0.55
Owner in charge (blockh/CEO)	512	-0.02	[-0.40]	-0.47	[-8.45]	0.03	[0.70]	-0.18	[-5.26]	0.15	[4.39]	-0.36	[-10.45]	0.46
RI = 1	377	-0.10	[-1.97]	-0.39	[-7.27]	0.13	[3.66]	-0.13	[-3.64]	0.07	[1.81]	-0.44	[-11.17]	0.57
RI = 1 $\wedge$ $\forall$(DI, PP) = 0	138	-0.26	[-2.89]	-0.37	[-4.11]	0.02	[0.27]	-0.10	[-1.56]	0.12	[1.65]	-0.43	[-6.24]	0.62
RI = 0 $\wedge$ (DI $\vee$ PP) = 1	389	-0.18	[-2.42]	-0.33	[-4.64]	0.01	[0.14]	-0.22	[-5.09]	-0.07	[-1.65]	-0.34	[-8.13]	0.35

Table 7. Determinants of cumulative changes in leverage from the pre-IPO value. Alternative control variables.

OLS regressions of the cumulative change in leverage since the pre-IPO value on the M/B ratio, fixed assets, profitability, firm size, book and market dividends, and depreciation; caption of Table 5 for relevant definitions of variables. Panel A reports the results for book leverage; Panel B shows the results for market leverage.

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{pre-IPO} = a + b\left(\frac{M}{B}\right)_{efwa,t-1} + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + f\log(S)_{t-1} + g\left(\frac{Div}{BE}\right)_{t-1} + h\left(\frac{Div}{ME}\right)_{t-1} + i\left(\frac{Dp}{A}\right)_{t-1} + j\left(\frac{D}{A}\right)_{pre-IPO} + \varepsilon_t$$

		$M/B_{efwa,t-1}$	M/B_{t-1}	PPE/A_{t-1} %	$EBITDA/A_{t-1}$ %	$Log(S)_{t-1}$	Div/BE_{t-1} %	Div/ME_{t-1} %	Dp/A_{t-1} %	$D/A_{pre-IPO}$ %	
		b	**c**	**d**	**E**	**f**	**g**	**h**	**i**	**j**	
Year	*N*	**t(b)**	**t(c)**	**t(d)**	**t(e)**	**t(f)**	**t(g)**	**t(h)**	**T(i)**	**t(j)**	**R^2**
Panel A: Book leverage %											
IPO+1	169	-	-0.47	-0.07	0.04	0.04	0.14	-0.30	-0.08	-0.50	0.43
		-	[-6.99]	[-1.08]	[0.56]	[0.62]	[1.59]	[-3.60]	[-1.08]	[-8.01]	
IPO+2	150	-0.58	0.26	-0.04	0.11	0.21	0.05	-0.23	-0.06	-0.47	0.37
		[-3.54]	[1.75]	[-0.58]	[1.16]	[3.11]	[0.51]	[-2.55]	[-0.70]	[-6.97]	
IPO+4	122	-0.27	-0.09	-0.06	-0.14	-0.04	0.10	-0.09	-0.08	-0.46	0.33
		[-2.29]	[-0.71]	[-0.79]	[-1.32]	[-0.48]	[1.32]	[-1.02]	[-0.83]	[-5.12]	
IPO+6	95	-0.18	-0.20	-0.12	-0.16	-0.17	0.31	-0.50	-0.17	-0.55	0.40
		[-1.34]	[-1.35]	[-1.36]	[-1.53]	[-2.02]	[2.12]	[-3.60]	[-1.85]	[-6.10]	
IPO+10	48	-0.05	-0.22	-0.06	0.26	0.16	-0.47	-0.05	-0.23	-0.78	0.43
		[-0.27]	[-1.02]	[-0.47]	[1.42]	[1.01]	[-2.30]	[-0.29]	[-1.46]	[-4.71]	
1978-1997 All firms	1013	-0.15	-0.24	-0.05	0.00	0.01	0.08	-0.26	-0.14	-0.49	0.38
		[-3.16]	[-4.98]	[-1.89]	[-0.11]	[0.41]	[2.82]	[-8.87]	[-5.00]	[-18.20]	
Entrepreneur (founder/CEO)	84	-0.41	0.00	0.12	-0.21	0.10	0.16	-0.62	-0.20	-0.33	0.40
		[-1.91]	[-0.01]	[1.05]	[-1.61]	[1.01]	[1.33]	[-5.33]	[-1.66]	[-3.07]	
Family (founder family)	345	-0.10	-0.14	-0.03	0.00	0.13	0.12	-0.21	-0.23	-0.43	0.14
		[-1.18]	[-1.66]	[-0.44]	[0.04]	[2.30]	[2.24]	[-3.40]	[-3.47]	[-7.20]	
Private (non-founder fam)	291	-0.21	-0.24	-0.01	-0.02	0.00	-0.01	-0.19	-0.14	-0.45	0.43
		[-2.61]	[-2.67]	[-0.26]	[-0.37]	[-0.08]	[-0.12]	[-2.36]	[-2.88]	[-7.47]	
Other Controlled by inst)	281	-0.10	-0.31	-0.08	-0.03	-0.03	0.19	-0.33	-0.07	-0.54	0.48
		[-0.99]	[-2.95]	[-1.73]	[-0.57]	[-0.70]	[2.44]	[-4.40]	[-1.46]	[-11.07]	
Owner in charge (blockhol/CEO)	519	-0.11	-0.23	0.00	-0.03	0.00	0.08	-0.31	-0.23	-0.43	0.30
		[-1.73]	[-3.59]	[0.10]	[-0.57]	[0.01]	[1.97]	[-7.25]	[-4.97]	[-10.07]	
RI = 1	379	-0.17	-0.14	0.03	0.01	-0.04	-0.11	-0.05	-0.15	-0.55	0.45
		[-2.75]	[-2.07]	[0.72]	[0.13]	[-0.90]	[-1.57]	[-0.70]	[-3.02]	[-11.06]	
RI = 1 $\wedge$ $\forall$(DI, PP) = 0	139	-0.44	-0.04	-0.09	0.06	-0.04	-0.12	-0.05	-0.15	-0.46	0.59
		[-4.54]	[-0.45]	[-1.39]	[0.74]	[-0.55]	[-1.16]	[-0.54]	[-2.14]	[-5.90]	
RI = 0 $\wedge$ (DI $\vee$ PP) = 1	390	-0.23	-0.18	-0.09	0.05	-0.03	0.13	-0.37	-0.10	-0.38	0.26
		[-2.93]	[-2.32]	[-1.94]	[0.90]	[-0.71]	[2.73]	[-7.25]	[-2.08]	[-8.29]	

Table 7, continued. Determinants of cumulative changes in leverage from the pre-IPO value. Alternative control variables.

OLS regressions of the cumulative change in leverage since the pre-IPO value on the M/B ratio, fixed assets, profitability, firm size, book and market dividends, and depreciation.

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{pre-IPO} = a + b\left(\frac{M}{B}\right)_{efwa,t-1} + c\left(\frac{M}{B}\right)_{t-1} + d\left(\frac{PPE}{A}\right)_{t-1} + e\left(\frac{EBITDA}{A}\right)_{t-1} + f\log(S)_{t-1} + g\left(\frac{Div}{BE}\right)_{t-1} + h\left(\frac{Div}{ME}\right)_{t-1} + i\left(\frac{Dp}{A}\right)_{t-1} + j\left(\frac{D}{A}\right)_{pre-IPO} + \varepsilon_t$$

		$M/B_{efwa,t-1}$	M/B_{t-1}	PPE/A_{t-1} %	$EBITDA/A_{t-1}$ %	$Log(S)_{t-1}$	Div/BE_{t-1} %	Div/ME_{t-1} %	Dp/A_{t-1} %	$D/A_{pre-IPO}$ %	
		b	**c**	**d**	**E**	**f**	**g**	**h**	**i**	**j**	
Year	*N*	**t(b)**	**t(c)**	**t(d)**	**t(e)**	**t(f)**	**t(g)**	**t(h)**	**t(i)**	**t(j)**	**R^2**
Panel B: Market leverage %											
IPO+1	167	-	-0.55	0.02	-0.07	0.12	-0.10	-0.05	-0.03	-0.46	0.56
		-	[-9.27]	[0.41]	[-1.00]	[2.20]	[-1.26]	[-0.63]	[-0.47]	[-8.43]	
IPO+2	149	-0.60	0.21	0.03	0.00	0.16	-0.22	0.04	-0.06	-0.44	0.48
		[-3.99]	[1.53]	[0.53]	[0.05]	[2.59]	[-2.46]	[0.52]	[-0.75]	[-7.10]	
IPO+4	121	-0.22	-0.36	0.08	-0.03	0.08	0.54	-0.15	-0.09	-0.52	0.51
		[-2.18]	[-3.36]	[1.23]	[-0.38]	[1.08]	[0.81]	[-1.95]	[-1.18]	[-6.87]	
IPO+6	95	0.05	-0.61	0.02	-0.10	-0.08	0.04	-0.35	-0.04	-0.51	0.62
		[0.47]	[-5.00]	[0.22]	[-1.18]	[-1.21]	[0.32]	[-3.15]	[-0.59]	[-7.16]	
IPO+10	47	-0.24	-0.03	0.19	0.08	0.14	-0.56	0.27	-0.33	-0.53	0.50
		[-1.40]	[-0.14]	[1.47]	[0.48]	[0.95]	[-2.92]	[1.59]	[-2.21]	[-3.24]	
1978-1997 All firms	1004	-0.07	-0.46	0.06	-0.12	0.08	-0.01	-0.13	-0.09	-0.43	0.51
		[-1.61]	[-10.65]	[2.62]	[-5.06]	[3.56]	[-0.46]	[-4.84]	[-3.44]	[-17.94]	
Entrepreneur (founder/CEO)	84	-0.38	-0.08	0.15	-0.27	0.01	0.04	-0.28	-0.27	-0.41	0.35
		[-1.75]	[-0.37]	[1.24]	[-2.06]	[0.10]	[0.33]	[-2.29]	[-2.09]	[-3.66]	
Family (founder family)	341	0.02	-0.46	0.05	-0.26	0.23	0.03	-0.09	-0.01	-0.42	0.45
		[0.25]	[-6.86]	[1.03]	[-5.12]	[5.16]	[0.65]	[-1.88]	[-0.09]	[-8.64]	
Private (non-founder fam)	287	-0.18	-0.36	0.06	-0.04	0.16	-0.23	0.08	-0.11	-0.45	0.57
		[-2.58]	[-4.59]	[1.43]	[-0.83]	[3.13]	[-3.27]	[1.18]	[-2.69]	[-8.66]	
Other Controlled by inst)	280	-0.15	-0.37	0.01	-0.14	-0.05	0.01	-0.13	-0.07	-0.49	0.56
		[-1.59]	[-3.88]	[0.11]	[-2.92]	[-1.13]	[0.16]	[-1.96]	[-1.68]	[-10.99]	
Owner in charge (blockhol/CEO)	512	-0.02	-0.53	0.06	-0.12	0.17	0.01	-0.15	-0.10	-0.41	0.48
		[-0.30]	[-9.40]	[1.66]	[-3.02]	[4.88]	[0.37]	[-4.01]	[-2.62]	[-11.33]	
RI = 1	377	-0.06	-0.37	0.13	-0.01	0.11	-0.21	0.10	-0.19	-0.53	0.60
		[-1.13]	[-6.71]	[3.64]	[-0.16]	[2.75]	[-3.40]	[1.64]	[-4.39]	[-12.45]	
RI = 1 $\wedge$ $\forall$(DI, PP) = 0	138	-0.19	-0.36	0.03	0.03	0.18	-0.26	0.12	-0.19	-0.53	0.66
		[-2.12]	[-4.06]	[0.53]	[0.46]	[2.48]	[-2.81]	[1.33]	[-2.81]	[-7.35]	
RI = 0 $\wedge$ (DI $\vee$ PP) = 1	389	-0.15	-0.41	0.00	-0.16	-0.00	0.05	-0.22	-0.07	-0.37	0.39
		[-2.09]	[-5.73]	[0.07]	[-3.54]	[-0.05]	[1.12]	[-4.77]	[-1.55]	[-8.95]	

Table 8. Descriptives of different equity issue types.

RIs denote rights issues, PPs – private placements, and DIs – directed issues. The table shows the absolute and relative size (means and medians) of different equity issuance types and corresponding market-to-book. The M/B is defined as assets minus book equity plus market equity divided by assets.

	N	*Amount in Millions of SEK*					*Relative Amount in t-1 Assets*					M/B_{t-1}					M/B_t				
		Min	**Max**	**Mean**	**Med.**	**SD**	**Min**	**Max**	**Mean**	**Med.**	**SD**	**Min**	**Max**	**Mean**	**Med.**	**SD**	**Min**	**Max**	**Mean**	**Med.**	**SD**
RIs	93	8.47	1500.95	224.12	133.69	251.10	0.01	0.93	0.18	0.10	0.19	0.45	9.13	1.54	1.31	1.02	0.31	5.96	1.46	1.24	0.78
PPs	145	0.02	4374.80	118.31	23.22	395.11	0.00	0.89	0.08	0.04	0.13	0.46	8.32	1.70	1.22	1.28	0.06	8.32	1.56	1.24	1.12
DIs	147	0.04	1971.33	110.88	19.19	295.64	0.00	0.53	0.06	0.03	0.08	0.38	3.98	1.35	1.24	0.47	0.30	5.18	1.31	1.20	0.50

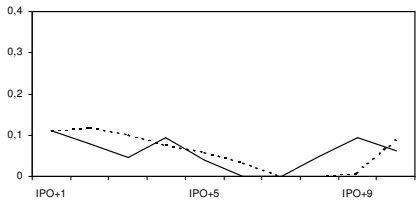
Figure 1
Univariate explanatory power of determinants of capital structure as corporations age

R^2 for univariate OLS regressions of *book leverage* on determinants of capital structure.

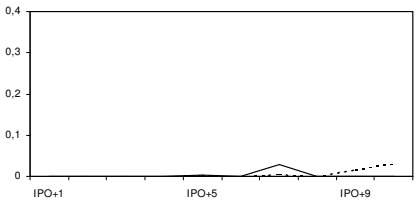
$$\left(\frac{D}{A}\right)_{IPO+t} = a + bX_{t-1} + \varepsilon_t$$

Book leverage is book debt to assets. Each variable is defined in two ways. The solid line uses *t-1* value while the dashed line uses an external finance weighted-average value from the IPO year to year *t-1*. External finance is net equity issues plus net debt issues. Where this sum takes a negative value, I set its value to zero. The M/B is defined as assets minus book equity plus market equity divided by assets. Fixed assets [*PPE/A*] are defined as net property, plant, and equipment over assets. Profitability [*EBITDA/A*] is operating income before depreciation and amortization divided by assets. Firms size [*S*] is the natural log of net sales. Market dividends [*Div/ME*] are defined as dividends over market equity. [*Div/BE*] denote dividends over book equity. Depreciation expense [*Dp/A*] is defined as the depreciation expense to assets.

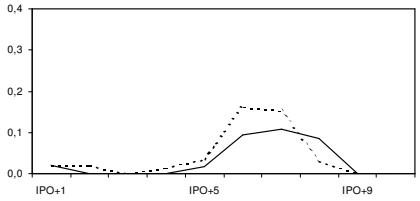
a. *M/B*



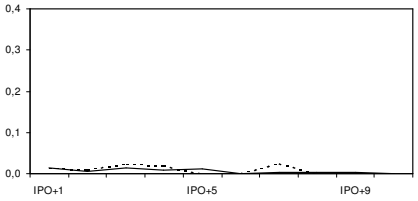
b. *PPE/A*



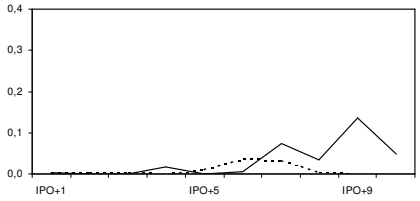
c. *EBITDA/A*



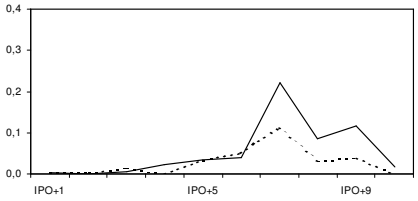
d. *log(S)*



e. D/BE



f. D/ME



g. Dp/A

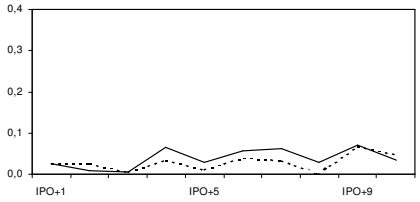


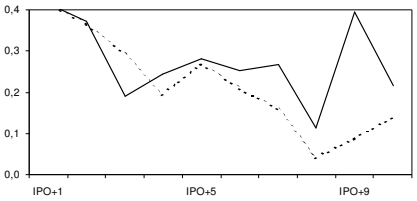
Figure 2
Univariate explanatory power of determinants of capital structure as corporations age.

R^2 for univariate OLS regressions of *market leverage* on determinants of capital structure.

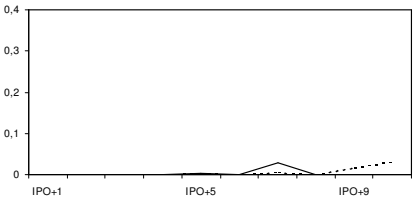
$$\left(\frac{D}{A}\right)_{IPO+t} = a + bX_{t-1} + \varepsilon_t$$

Each variable is defined in two ways. The solid line uses *t-1* value while the dashed line uses an external finance weighted-average value from the IPO year to year *t-1*. Variables are defined as before, see Figure 1a!

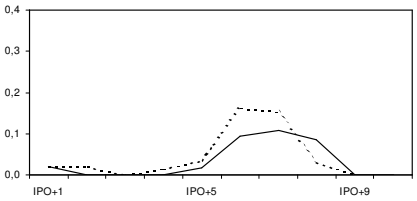
a. MB



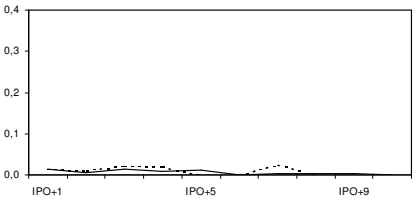
b. *PPE/A*



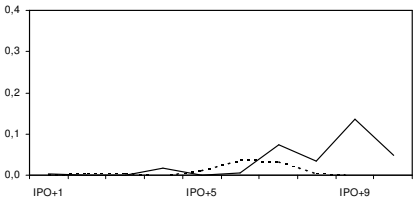
c. *EBITDA/A*



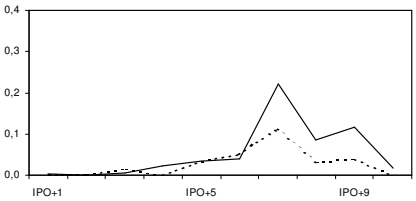
d. *log(S)*



e. D/BE



f. D/ME



g. Dp/A

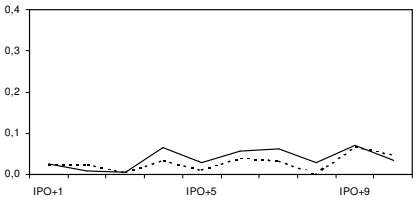


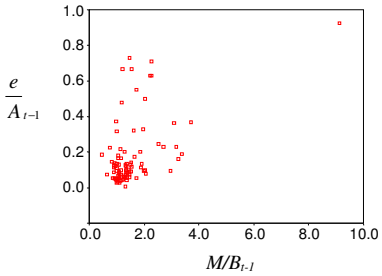
Figure 3. Correlation between issue type and market-to-book.

Rights Issues

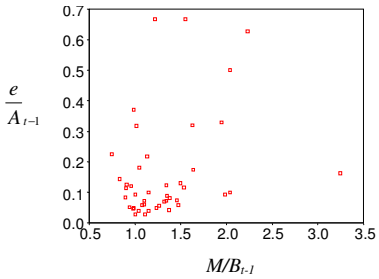
	M/B_{t-1}	M/B_t
RIs	0.40**	0.38**

**Significant at a 1% level

a. All sample, M/B < 10



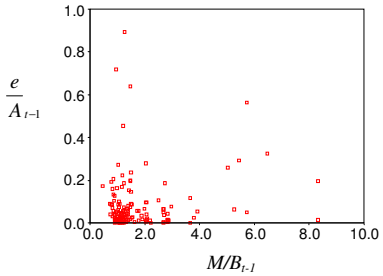
b. Survived at IPO+10, M/B < 10



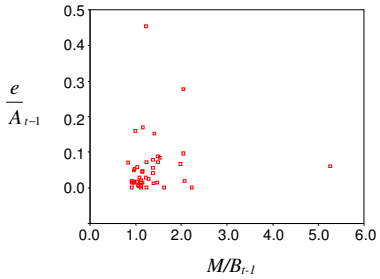
Private Placements

	M/B_{t-1}	M/B_t
PPs	0.11	0.01

a. All sample, M/B < 10



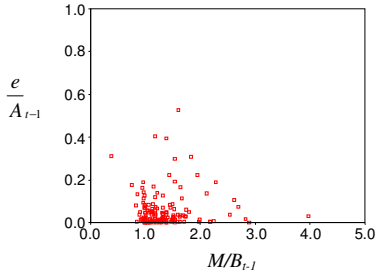
b. Survived at IPO+10, M/B < 10



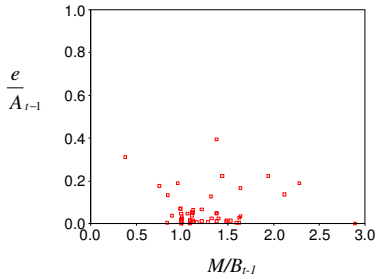
Directed Issues

	M/B_{t-1}	M/B_t
DIs	-0.07	-0.02

a. All sample, M/B < 10



b. Survived at IPO+10, M/B < 10



Notes. The small tables above show the correlation coefficient between the size of the respective SEO type and corresponding value of the M/B. The first line of the small graphs graphically shows the respective correlations for all observations with M/B smaller than 10. The second line of graphs shows the same correlations for companies that are still alive ten years after the IPO year. As the graphs evidence, there is no survivorship bias in these correlation coefficients.