Transparency and Financing Choices of Family Firms

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November 2012

Journal of Financial and Quantitative Analysis, Forthcoming

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Abstract

While recent literature has documented that U.S. family firms differ markedly from their non-family counterparts, there is a paucity of evidence on how these firms differ in terms of their cost of capital or financial structure. In this paper, we show that family and non-family firms differ in their debt maturity and leverage ratios in a manner consistent with the higher expropriation potential of family firms. Moreover, while more transparency causes both family and non-family firms to increase the maturity structure of their debt and reduce leverage ratios, the effects are stronger for family firms.

I. Introduction

Family firms are ubiquitous in almost every industrial economy and are particularly dominant in countries in Europe, Latin America and Asia (Claessens et al. (2000), Shleifer and Vishny (2003)). Even in the U.S., family firms are far more common than generally assumed (Holderness (2009)). For example, founding family members are still actively involved in 35.4% and 45.67% of companies listed in the S&P 500 and S&P 1500 Indices, respectively (Chen et al. (2009)). Due to their economic significance, a growing literature attempts to address how family-controlled firms differ from non-family publicly traded firms in terms of performance, governance and disclosure (e.g., Villalonga and Amit (2006), Anderson et al. (2009)).

Surprisingly, in spite of the growing interest in family firms, research on the financing choices of family firms is limited.[2] The paucity of research is all the more surprising because existing literature provides strong evidence that agency problems affect financial structure (e.g., Jensen and Meckling (1976); Berger et al. (1997)), and that family firms are associated with greater expropriation potential of investors and minority shareholders than non-family firms. Consequently, one should expect to see differences in the financial structures between family and non-family firms.

Moreover, a significant literature shows that information environment affects the relative costs of issuing different types of securities and hence the capital structure of firms as it determines the ability of outsiders to gather information and monitor managers

[2] Using a sample of 5,975 firms from 38 different countries over the 1992-2006 period, Ellul (2009) finds that the presence of family blockholders increases leverage. He argues that this is consistent with a control motive for family blockholders since leverage allows the firm to raise funds without diluting control.

(e.g., Agarwal and O'Hara (2007), Bharath et al. (2009), Chang et al. (2006), Wittenberg-Moerman (2009)). However, information environment is likely to affect the cost of capital of family and non-family firms differently. In particular, because family firms are associated with greater expropriation potential, greater transparency would lower their cost of capital more on the margin, and thus, their financial structures should also be more affected by transparency.

In this paper, we posit two hypotheses regarding the financing choices of family firms vis-à-vis non-family firms. First, we argue that the greater expropriation potential of family firms causes their financial structure to differ from that of non-family firms in ways that reduce agency costs associated with greater scope for expropriation. However, as stated earlier, it is important to consider transparency when one is interested in determining whether greater agency problems in the form of expropriation potential affects financial structure. Therefore, our second hypothesis concerns how the financial structure of family and non-family firms change in response to transparency. We argue that because family firms in general have a greater capacity to expropriate and misuse corporate resources, greater transparency for such firms facilitates information gathering and monitoring by market participants to a greater extent, and confers greater incremental benefits in the form of cheaper capital and flexibility in financing, than for non-family firms. Thus, while the first hypothesis pertains to the effect of greater agency problems or expropriation potential associated with family ownership on financial structure, the

second relates to the effect of a change in transparency on the financial structures of family firms relative to non-family firms.[3]

Specifically, we posit that for any given level of transparency, family firms will have lower debt maturity and higher debt ratios than non-family firms, and that the effect of greater transparency on the leverage ratio and debt maturity structures will be stronger for family firms than for non-family firms. Theory suggests that firms will have to rely more on debt financing when expropriation is more likely (Grossman and Hart (1982), Jensen (1986)). This is because the free-rider problem makes it difficult for shareholders to monitor management, but debt as a hard claim can reduce the misuse of resources. Moreover, consistent with the arguments in Diamond (1991) and Harris and Raviv (1990), we also expect that firms with greater agency problems will rely more on short-term debt than on long-term debt. Therefore, we expect, for any given level of transparency, that family firms will have shorter debt maturity and higher leverage ratios. Next, improved transparency, by reducing the scope for expropriation, will enable firms to reduce their dependence on debt overall by issuing more equity, and to increase the maturity structure

[3] To facilitate their expropriation of minority shareholders, controlling family members have incentives to conceal important company information, suggesting that family firms on average would be more opaque than non-family firms (Anderson et al. (2009)). Thus, the cost of transparency consists of these foregone expropriation benefits. Some other costs of transparency are in the form of direct accounting costs, costs associated with disclosure of proprietary information to rivals, higher CEO compensation and even greater agency problems if transparency increases beyond some margin (Hermalin and Weisbach (2011)). However, transparency has it benefits as well. In particular, lower information asymmetry between the firm's insiders and outside investors allows greater financial flexibility and lowers the cost of capital.

of their debt; further, these elements of the financial structure of family firms will be affected more by an improvement in transparency than those of non-family firms.

We test our hypotheses on a sample consisting of family and non-family firms in the S&P 1500 index. As shown in prior studies (e.g., Klasa (2007) and Lang and Lundholm (1993)), family firm status and information environment are not randomly determined, suggesting potential endogeneity associated with the two variables. To address this potential endogeneity, we use three alternative methodologies, namely, a double-propensity-score-matching, time-invariant firm fixed-effects, and a 2-stage instrumental approach.

Frist, we perform a double propensity-score matching procedure to identify 323 pairs of family and non-family firms with the closest corporate transparency. These 323 pairs constitute our main test sample. We find evidence consistent with our hypotheses. We first show that transparency is positively related to debt maturity and negatively related to the leverage ratio, consistent with previous findings on U.S. firms. Next, we show that *ceteris paribus*, family firms have shorter debt maturity and higher leverage than non-family firms. Finally, we find that while our measures of transparency are positively related with debt maturity and negatively related with the leverage ratio for non-family firms, the effects are stronger for family firms. Our estimation methodology follows a standard approach in the literature and uses a two-stage least square method to allow for the simultaneity of debt maturity and leverage ratio choices.

Second, we include firm-fixed effects or random effects to control for time-invariant firm characteristics that could be potentially related to family firm status or transparency. Our main findings remain similar. Finally, as suggested in Tucker (2010), to complement

the propensity-score-matching, we also use the Heckman model and the two-stage least square approach to confirm our findings. Again, we are able to obtain robust results.

Since firm size is an important determinant of transparency (Healy and Palepu (2001)), we also examine whether a firm's inclusion in the S&P 500 has a stronger effect on the debt maturity structure and leverage ratio of family firms than non-family firms. Consistent with our hypothesis, this "difference-in-difference" method also shows that S&P 500 inclusion has a more positive effect on debt maturity and a more negative effect on the leverage ratios of family than non-family firms.

Our findings are related to those in a recent paper by Lin et al. (2011). These authors examine the effect of the divergence between corporate insiders' control rights and cash flow rights (as in firms with dual class shares) on the shadow cost of external capital, and find a positive relationship. They also find that greater information opacity exacerbates the effect of expropriation potential on the cost of external finance. We do not provide direct evidence on the cost of external finance; however, consistent with Lin et al. (2011), we find that greater scope for expropriation in family firms limits the use of securities that are more sensitive to information asymmetry, and this effect is stronger when opacity is greater.

Our results on debt maturity also provide an interesting contrast with those in Datta et al. (2005). These authors also examine debt maturity choice by firms in the S&P 1500. Datta et al. (2005) find that firms with higher managerial ownership have more short-term debt relative to total debt. They suggest that this finding is consistent with the hypothesis that managers typically have an incentive to choose a longer debt maturity structure to avoid monitoring by short-term lenders. Greater managerial ownership then

aligns the interests of managers and shareholders and pushes the firm closer to the optimal maturity structure, which involves shorter debt maturity. However, since managerial ownership is highly positively correlated with family ownership, it is possible that we pick up the effect of managerial ownership. To verify this, we then separately consider the effect of managerial ownership and family ownership (after excluding managerial ownership) on debt maturity. We find that both ownership variables have a negative effect on debt maturity. Thus, we confirm that founding family ownership has an incremental effect on debt maturity. Moreover, when we repeat the same estimation by using leverage as the dependent variable, we find that only founding family ownership has a significant effect on capital structure. These results together suggest that we establish an independent channel through which family ownership affects financial structure, and our results do not merely reflect managerial ownership.

Our study makes the following contributions. First, while various characteristics of family firms have been studied by prior literature, there is little evidence on the association between family ownership and capital structure. Therefore our findings that family firms in the U.S. have shorter debt maturity structures and lower leverage than non-family firms expand existing literature on family firms. In particular, the results seem to suggest family firms are subject to more severe agency problems arising from the conflicts between outside investors and inside controlling shareholders. Second, our paper adds to the literature linking costly external finance to the potential for expropriation of minority shareholders by corporate insiders when control rights and ownership rights diverge, and how this relationship is affected by the opacity of the information environment. Specifically, we show that transparency has larger effects on

debt maturity and leverage for family firms as compared to non-family firms, suggesting that the information environment matters more for a company's financing choice when the potential for conflicts of interest between insiders and outsiders is greater.

The rest of the paper is organized as follows. Section II discusses the relevant literature. Section III presents our main arguments and develops testable hypotheses. Section IV describes the data and discusses summary statistics. Empirical results are presented in Section V. Section VI concludes the paper.

II. Related Literature

A. Family Firms and Corporate Transparency

An important characteristic of family ownership is the mitigation of agency problems arising from the separation of ownership and management as described by Jensen and Meckling (1976). Specifically, controlling families reduce owner-manager conflicts either by directly appointing a family member as CEO or by effectively monitoring professional executives (the "monitor-in-place" argument as described in Demsetz and Lehn (1985)). However, with substantial ownership, controlling shareholders are also in a position to derive personal benefits at the expense of minority shareholders (the "expropriation" argument). For example, family members can engage in related-party transactions (Anderson and Reeb (2003)), issue special dividends (DeAngelo and DeAngelo (2000)), freeze out small shareholders (Gilson and Gorbon (2003)), entrench themselves (Shleifer and Vishny (1997), Perez-Gonzalez (2006)), or reap excessive insider trading gains (Anderson et al. (2012)). Thus, compared to shareholders of non-family firms, minority shareholders of family firms are exposed to less severe agency

problems because of managerial conflicts of interest, but face higher risks of being expropriated by majority shareholders.

These differences in agency problems cause corporate transparency to be different for family firms than for non-family firms. In particular, the "monitor-in-place" argument would suggest family firms have better disclosure and are more transparent than non-family firms.[4] On the other hand, the "expropriation" argument says that they would be associated with lower corporate transparency if controlling shareholders intend to expropriate minority shareholders. Empirical evidence on this issue is mixed. Ali et al. (2007) and Wang (2006) find that family firms in S&P 500 Index provide better financial reporting quality, and also have greater analyst coverage and smaller bid-ask spreads. However, Chen et al. (2008) document that family firms in the S&P 1500 firms are less likely to provide voluntary disclosures such as conference calls and earnings forecasts and Anderson et al. (2009) finds that family firms among the largest two thousand industrial firms in the U.S. are more opaque than non-family firms. Such mixed results are consistent with both a "monitor-in-place" argument as well as the "expropriation" argument.

While these findings appear to be conflicting at first glance, a possible explanation is that firm size affects the disclosure incentives of family firms more than it does non-family firms. In fact, Anderson et al. (2009) find that family firms with higher family ownership within the S&P 500 have higher Tobin's Q than non-family firms, but outside

[4] However, greater alignment of interest could also reduce the demand for transparency as shareholders do not need to monitor management. Costly disclosure could lead to a negative relationship between family ownership and transparency.

of these highly transparent firms, there does not appear to be any value premium. While Anderson et al. (2009) do not directly examine how transparency is related to family ownership within and outside the S&P 500, their results together with Ali et al. (2007) also suggest that transparency is higher for family firms within the S&P 500, and that the opposite is the case outside the S&P 500.

B. Family Firms and Financing Choices

The literature on the capital structure and financing choices of family firms is brief. Anderson and Reeb (2003) consider firms in the S&P 500, and examine whether family firms, family ownership share, and the status of the CEO (founder, heir or hired), affects the leverage ratio. They do not find any difference in leverage between family and non-family firms. Anderson et al. (2003) directly examine how family ownership affects the cost of debt. They find that after controlling for industry and firm-specific characteristics, the cost of debt financing for family firms is lower than for non-family firms, and they attribute the lower cost of debt to lower agency costs of family firms.

C. Debt Maturity

There is a sizeable literature on theories and determinants of debt maturity structure. As discussed in the Introduction, Harris and Raviv (1990) stress the importance of short-term debt in eliciting timely information from and monitoring management. Stulz (2000) also argues that short-term debt can be very effective in monitoring management. These arguments would suggest that when the firm is not very transparent, short-term debt could be used to mitigate agency and information problems. Rajan (1992), however, points to the dark side of short-term debt: when a lender acquires information about a

firm and can threaten liquidation when the firm has insufficient cash flow and must roll over the debt, a problem of "information monopoly" is created. In this situation, the threat of liquidation can distort ex-ante effort incentives.

Diamond (1991, 1993) and Flannery (1986) stress information asymmetry rather than monitoring. Berger et al. (2005) argue that both models imply that the maturity of debt increases with less information asymmetry, and find support for this prediction for a sample of commercial loans for large U.S. banks. Wittenberg-Moerman (2009) examines syndicated loans traded in the secondary market and finds that the bid-ask spread affects the cost of subsequent debt issues. She also finds that more information asymmetry decreases debt maturity.

D. Leverage

Instead of providing an overview of the extensive literature on leverage, we will briefly discuss the literature on the effect of agency costs and transparency on capital structure.[5] Jensen and Meckling (1976) point out that firms may need to rely on debt financing to reduce the agency costs associated with equity financing. Grossman and Hart (1982) argue that the threat of bankruptcy and loss of benefits of control in the presence of debt can mitigate managerial incentives to divert cash flows, whereas Jensen (1986) argues that debt can reduce the agency problems associated with free cash flows.

Corporate transparency reduces information asymmetry between insiders and outsiders. More transparent firms are likely to rely more on equity than debt, since equity is informationally more sensitive than debt (Myers and Majluf (1984)). Consistent with

[5] Parsons and Titman (2009) provide a comprehensive review of the empirical literature on capital structure.

this argument, Chang et al. (2006) examine the effect of greater equity analyst coverage on firms' leverage ratios, market timing incentives, the size and frequency of equity issuance, and the debt equity choice, and find that greater analyst coverage is associated with lower leverage ratios. Bharath et al. (2009) construct a measure of information asymmetry based on the first principal component of several market-microstructure-based measures of adverse selection. They find that firms with greater information asymmetry have higher debt ratios. Prior literature also provides empirical evidence that higher information quality contributes to a lower cost of equity and debt financing (Sengupta (1998)).

III. Hypothesis Development

As discussed above, previous literature documents differences in agency conflicts or expropriation potential between family and non-family firms. There is also evidence that information asymmetry (plausibly related to transparency) is related to firms' capital structure choices in general. We now develop our hypothesis on how the financial structures of family and non-family firms are likely to differ for a given level of transparency, and how they are likely to be affected as transparency changes.

Existing literature shows that there are two distinct characteristics of family firms. One is that management (usually connected to the family) has a significantly higher stake in the firm than non-family firms, leading to less severe agency problems that arise from

the separation of management and ownership.[6] The second characteristic is that family control leaves outside shareholders vulnerable to expropriation.[7]

The greater risk of expropriation is likely to affect the financing choices of family firms, relative to those of non-family firms. The arguments of Jensen and Meckling (1976) and Grossman and Hart (1982) suggest that family firms would need to rely more on debt financing to reduce the agency costs associated with equity financing. Also, to avoid liquidating their ownership, founding family members have incentives to employ more debt financing than equity financing (Anderson and Reeb (2003)). Next, even for debt financing, the arguments of Harris and Raviv (1990), Stulz (2000) and Diamond (1991) imply that firms will be more reliant on short-term debt financing if creditors require timely information, and the threat of intervention and liquidation are mechanisms not only for disciplining management, but also to allow lenders to recover some value from their investments in the firm. However, over-reliance on certain types of finance is also costly. For example, too much short-term debt can increase liquidity risk (Diamond (1991)), and monitored finance is also likely to be expensive. Similarly, too much long-term debt (as opposed to equity) and a higher leverage ratio can also lead to debt overhang, or increase the indirect costs of financial distress.

Clearly, firms trade off the benefits and costs of opacity in choosing how opaque

[6] Thus, for example, if a manager owns a fraction α of the company, and managerial effort improves expected cash flow, a higher α increases the marginal return to the manager from effort. Thus, effort increases to the point where the marginal cost of effort equals the marginal return.

[7] This can be thought of as a higher probability, ceteris paribus, that a marginal dollar is diverted to generate a private benefit of β for the manager of a family firm. As long as $\beta > \alpha$, where α refers to the manager's fractional ownership, there will be diversion, and both features discussed above are in play.

they want to be. When the ownership structure creates more opportunities for expropriation, firms have a greater incentive to remain opaque. However, opacity also comes at a cost, since capital markets will only be willing to provide capital at a significant premium if the risk of expropriation is high and monitoring is costly. The choice of the degree of opacity (or transparency) thus reflects the associated costs of obtaining external finance, or deviation from an optimal financial structure, as well as other costs. [8] Part of the costs associated with higher cost of capital and lack of financing flexibility is borne by the managers by virtue of their ownership stake in the firm.

For certain types of firms, the benefits from greater transparency could be very high, causing these firms to be more transparent. For example, several studies find that proxies of firm size (e.g., market value or total assets) have a strong positive relationship with transparency (Lang and Lundholm (1993)). Part of the benefit of greater transparency for such firms could derive from the fact that, having grown into large firms, these firms still enjoy significant growth potential by virtue of their product innovation or market power, and are likely to need significant amounts of external financing to sustain their growth and market positions. The benefit of transparency will be especially high for such firms since transparency will reduce information asymmetry and allow them financial flexibility at a lower cost of capital.

The tradeoffs vis-à-vis transparency choice can also be different for family and non-

[8] These costs are not limited to direct accounting costs, "proprietary costs" or litigation costs which preclude managers from disclosing forward looking information (Healey and Palepu (2001)). Hermalin and Weisbach (2011) argue "because better monitoring tends to affect managers adversely, managerial compensation will rise as a compensating differential. In addition, increased monitoring can give management incentives to engage in value-reducing activities intended to make them appear more able."

family firms. In particular, greater transparency may affect the cost and availability of external financing much more for family firms than for non-family firms. This is because the scope for expropriation is greater in family firms, and consequently, a given improvement in transparency is likely to facilitate the monitoring efforts of investors and market participants, and the market's willingness to provide capital, to a greater extent for family firms than for corresponding non-family firms.

Several implications emerge from the above discussion. First, consistent with existing literature, greater transparency is likely to increase debt maturity and lower leverage ratios, as firms move closer to an optimal capital and debt maturity structure. Second, for any given level of transparency, family firms will have lower debt maturity and higher debt ratios than non-family firms. Third, since the incremental effect of transparency is likely to be more important for family firms, the effects should be stronger for family firms than for non-family firms. Further, because firm size is a robust proxy for transparency, we expect the effect of firm size to be different on the financing choices of family and non-family firms. While existing studies find that firm size affects both transparency and financial structure, we are not aware of any studies showing that the magnitudes of these effects are different for family versus non-family firms. We use inclusion in the S&P 500 Index as our proxy for firm size to test these latter effects.

We now state our main testable hypotheses.

H1. (a) For a given level of transparency, family firms have lower debt maturity and higher debt ratio than non-family firms, and (b) The effect of transparency on debt maturity and leverage ratio should be stronger for family firms than for non-family firms.

H2. (a) Inclusion in the S&P 500 Index is associated with higher debt maturity and lower

leverage ratio for both family and non-family firms in our sample of S&P 1500 firms. (b) Holding S&P 500 status unchanged, family firms have lower debt maturity and higher debt ratio than non-family firms, and (c) Inclusion in the S&P 500 has a stronger effect on the debt maturity and leverage ratios of family firms than those of non-family firms.\

IV. Sample

Our sample consists of companies that were listed in the S&P 1500 Index in year 2003, and the sample period spans the years 2003 to 2009. To construct variables for our empirical tests, we require data from various sources. Specifically, financial data are obtained from Compustat, and data related to financial analysts and their earnings forecasts are retrieved from IBES. PIN scores are obtained from Stephen Brown's website.[9] Finally, information on managerial ownership and firm age is extracted from Corporate Library and Execucomp.

Next, we describe the process of identifying family firm status for our sample firms. For firms in the S&P 500 Index, we use the data from *BusinessWeek* (2003) directly. *BusinessWeek* (2003) considered a company a family firm if the founder or his/her descendants are the CEO, top executive, director of the board, or are the largest shareholders. This definition of family firm follows the one used by Anderson and Reeb (2003) and has been commonly adopted by the other studies.[10] Based on this definition,

[9] http://janssenbrown.net/StephenBrownresearch/index.html.

[10] A number of academic studies including Anderson and Reeb (2003), Anderson et al. (2003), Villalonga and Amit (2006), Wang (2006), Ali et al. (2007), Chen et al. (2008), Anderson et al. (2009), and Chen et al. (2009) use this definition of family firms.

BusinessWeek (2003) classifies 177 firms in the S&P 500 Index as of year 2003 as family firms, and the remaining as non-family firms.[11]

For the other companies in the S&P 1500 Index (including firms in the S&P MidCap 400 Index and the S&P SmallCap 600 Index), we manually classify them into family and non-family firms following the definition of Anderson and Reeb (2003) and *BusinessWeek* (2003). The classification involves two steps. First, we collect information about a company's founding family and its history through various sources including proxy statements, company's website, Hoovers, Gale Business Resources, and internet search. Second, we go through SEC documents to identify whether the founding families still hold positions in the top management or on the board of directors. Based on those criteria, we find that 508 firms (50.8%) in the S&P MidCap 400 and SmallCap 600 indices can be considered as family firms, and the remaining as non-family firms. Overall, together with firms in the S&P 500, 685 firms (45.67%) of S&P 1500 firms are deemed as family firms, and the remaining 815 firms as non-family firms.[12]

Table 1 provides descriptive statistics for family and non-family firms in the S&P 1500 index after excluding financial firms (as financial firms have different capital structures from industrial firms). We find that on average founding family members hold 15.09% of their firms' outstanding shares. Also, 99% of family firms have at least one founding family member sitting on the board, and 53% of family firms are managed by founder CEOs or descendant CEOs. These suggest that controlling families have non-

[11] Family firm classification for the entire sample period is manually validated by examining corporate proxy statements.

[12] The percentage of family firms in the S&P 1500 Index is similar to that reported by Chen at al. (2008) and Anderson et al. (2009).

trivial influence over their firms. Turning to firm characteristics, we find that relative to non-family firms, family firms have smaller firm size in terms of sales revenue (*lnSale*), shorter firm age (*FirmAge*), similar growth opportunities (*MB*), lower leverage (*Leverage*), better performance (*Profit*) and stock returns (*RET*).

The information provided in Table 1 indicates that family firms are different from non-family firms in several dimensions, suggesting a potential self-selection associated with family firm status. Similarly, as indicated in earlier studies, corporate transparency is related to certain firm characteristics such as size and profitability (see Healy and Palepu (2001), Bushman et al. (2004) for detailed literature review), also suggesting a potential endogeneity problem associated with corporate transparency. To address these issues, we resort to several econometric methodologies to test our hypotheses. Specifically, as our main research design, we rely on the propensity-score-matching (PSM) to control for observable differences between family and non-family firms and between transparent and opaque firms. Except for the PSM, we also verify our results by using time-invariant firm fixed-effects and a two-stage-instrumental approach.

For the PSM, we perform a *double* propensity-score-matching to identify a set of family and non-family firms with closest corporate transparency. First, we estimate equation (1) on the entire S&P 1500 firms to identify a matched sample of family and non-family firms. Next, we use this matched sample to estimate equation (2) and form a matched sample of transparent and opaque firms. Consistent with Anderson et al. (2009), we add *FamilyFirm* to equation (2) to allow for possible causality from family firm status to corporate transparency. *FamilyFirm* in equation (2) is now considered to be exogenous as equation (2) is estimated using the matched family and non-family firms from the first

round of PSM. This double PSM procedure yields 323 pairs of family and non-family firms.

Specifically, following Anderson et al. (2012) and Lang and Lundholm (1993), we develop equations (1) and (2) as follows and estimate them using a Probit model.

$$(1)\ FamilyFirm = \beta_0+\beta_1 lnSale+\beta_2 FirmAge+\beta_3 MB+\beta_4 Profit+\beta_5 Volatility +\beta_6 ShareTurnover +\beta_7 Segment+\beta_8 BoardIndep +\beta_9 IndustryDummy+\beta_{10} YearDummy +\varepsilon$$

$$(2)\ Transparency = \beta_0+\beta_1 lnSale +\beta_2 FirmAge+\beta_3 MB+\beta_4 Profit+\beta_5 Volatility +\beta_6 Rating+\beta_7 R\&D+\beta_8 ShareTurnover+\beta_9 Segment+\beta_{10} FamilyFirm +\beta_{11} IndustryDummy+ \beta_{12} YearDummy+\varepsilon$$

Here *FamilyFirm* is an indicator variable, which equals one if the company is a family firm, and zero otherwise. *Transparency* is also an indicator variable, which equals one if the company's transparency index is higher than the sample median, and zero otherwise.[13] We construct a composite transparency measure based on four variables including *AnalystNum*, *AnalystErr*, *AnalystDisp* and *PIN*. *AnalystNum* is analyst coverage defined as the number of analysts providing earnings forecasts nine months prior to the end of fiscal year; *AnalystErr* is analyst forecast error defined as the absolute difference

[13] In order to use a unified approach to solve the endogeneity associated with corporate transparency and family firm status, we first construct a continuous transparency measure and then transform it into a dummy variable. In the later section, we conduct several alternative tests to demonstrate the robustness of our results.

between IBES consensus earnings forecast (nine months prior) and IBES actual earnings, deflated by lagged share price; *AnalystDisp* is analyst forecast dispersion defined as the standard deviation of earnings forecasts (nine months prior), deflated by lagged share price; *PIN* is the probability of informed trading. As in Anderson et al. (2009), we use the factor score obtained from the principal component analysis to develop the composite transparency measure.[14] *lnSale* is log of total sales. *FirmAge* is log of the number of years since firm inception. *MB* is the firm's market value (share price × number of shares outstanding) divided by its equity. *Profit* is earning before interest, taxes, depreciation, and amortization (EBITDA) divided by total assets. *Volatility* is standard deviation of the change in EBITDA over the 5 years preceding and including the year in which leverage and maturity are measured. *ShareTurnover* is the median value of shares traded (volume) in a month divided by shares outstanding over a twelve-month period. *Segment* is the log of the number of business segments. *BoardIndep* is percentage of independent directors on the board. *Rating* is coded as one if a firm's S&P credit rating is investment grade (BBB- or higher) and zero otherwise. *R&D* is R&D expenses divided by total sales.[15]

[14] Because analyst forecast errors, dispersions, and PIN are negatively related to transparency, we multiply these three measures by -1. Thus, the factor score from this analysis is increasing in corporate transparency.

[15] To ascertain the robustness of our results, we also perform the propensity-score-matching in a different way. Specifically, we estimate equations (1) and (2) independently on the entire S&P 1500 firms to develop two propensity scores for family firm status and corporate transparency (when doing this, we do not include *FamilyFirm* in equation (2)). After obtaining the two propensity scores, we then rank our sample firms into vigintiles (20 equally large subsamples) based on the propensity score for family firm status. Within each vigintile, for each family firm, we then select a non-family firm with closest propensity score for the transparency indicator. That is, we intend to select a non-family firm that is not only close in

Table 2 provides descriptive statistics for variables used to test our empirical hypotheses for the 323 pairs of family and non-family firms. In Panel A, we first present descriptive statistics for the entire matched sample, and we next compare the difference in these variables across family and non-family firms in Panel B. *Maturity* is fraction of a firm's total debt that matures in more than three years. *Leverage* is total debt divided by market value of total assets, where market value of total assets is share price × outstanding shares + book value of total assets − book value of equity.[16] *MgtOwnE* is management ownership defined as the sum of common and restricted stock owned by the top five executives (excluding family founder and descendant CEOs) divided by shares outstanding. *AbEarnings* is abnormal earnings defined as ($earnings_{t+1}$ − $earnings_t$) / ($price_t$ × number of $shares\ outstanding_t$). *TermPremium* is the yield on 10-year government bonds subtracted from the yield on 6-month government bonds. *AssetMaturity* is (gross PPE / total assets) × (gross PPE / depreciation expense) + (current assets / total assets) × (current assets / cost of goods sold). *FixedAsst* is net PPE divided by total assets. *RET* is annual stock return. *Deficit* is the difference between change in total assets and change in retained earnings scaled by total assets. *ITC* is coded as one for company with investment tax credit and zero otherwise. *NOL* is coded as one for company with operating loss carry-forwards and zero otherwise. All other variables are the same as defined earlier.

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propensity score for family firm status but also in propensity score for corporate transparency. This methodology is similar to those studies which seek to identify control firms based on two dimensions simultaneously (e.g., Purnanandam and Swaminathan (2004), Field and Lowry (2009)). Our main results remain unaffected.

[16] Our results are qualitatively similar if we define *Leverage* as total debt divided by total assets.

The numbers provided in Panel A are comparable to those in prior studies (e.g., Datta et al. (2005)).

Next, turning to Panel B, which provides the mean and median test for the difference between family and non-family firms, we find that *Leverage* and *Maturity* are significantly lower for family firms. Moreover, family firms also have lower debt quality as they are less likely to be rated investment grade by credit agencies (*Rating*). Due to the matching procedure, family firms on average have a similar transparency index as compared to non-family firms. As expected, *MgtOwnE* is significantly higher for family firms, indicating that executives of family firms own a larger percentage of their company's stocks. For the other variables, we find that as compared to non-family firms, family firms are smaller (*lnSale*) and younger (*FirmAge*), but they have more investment in R&D (*R&D*). However, compared to non-family firms, and they are more likely to report carried-forward operating loss (*NOL*). Finally, family firms have shorter asset maturity (*AssetMaturity*) and rely less on fixed assets (*FixedAsst*).

V. Empirical Estimation

A. Main Results based on the Propensity-Score-Matching

Following existing literature (Barclay et al. (2003), Johnson (2003), Datta et al. (2005), Billett et al. (2007), Bharath et al. (2011)), we use a two-stage least squares regression analysis (2SLS) to estimate the relations between corporate transparency,

leverage ratio, and debt maturity. In the benchmark model, leverage and debt maturity are simultaneously determined using the following two equations: [17]

$$(3)\ Maturity = \alpha_0+\alpha Transparency+\beta FamilyFirm\times Transparency+\delta_0 FamilyFirm$$
$$+\delta_1 Leverage+\delta_2 MgtOwnE+\delta_3 FirmAge+\delta_4 MB+\delta_5 lnSale+\delta_6 ln^2 Sale$$
$$+\delta_7 Volatility+\delta_8 AbEarnings+\delta_9 AssetMaturity+\delta_{10} TermPremium$$
$$+\delta_{11} Rating+\delta_{12} ITC+\delta_{13} NOL+\delta_{14} IndustryDummy+\delta_{15} YearDummy+\varepsilon$$

$$(4)\ Leverage = \alpha_0+\alpha Transparency+\beta FamilyFirm\times Transparency+\delta_0 FamilyFirm$$
$$+\delta_1 Maturity+\delta_2 MgtOwnE+\delta_3 FirmAge+\delta_4 MB+\delta_5 lnSale+\delta_6 Volatility$$
$$+\delta_7 AbEarnings+\delta_8 FixedAsst+\delta_9 Profit+\delta_{10} R\&D+\delta_{11} RET+\delta_{12} Deficit$$
$$+\delta_{13} ITC+\delta_{14} NOL+\delta_{15} IndustryDummy+\delta_{16} YearDummy+\varepsilon$$

All other explanatory variables are as defined earlier. Here, α measures the effect of transparency on the left-hand side variable, β measures how the family firm status adds to

[17] The exclusion restrictions deserve discussion. A comparison of the list of exogenous variables in equations (2) and (3) shows that asset maturity (*AssetMaturity*), yield on 10-year government bonds subtracted from the yield on 6-month government bonds (*TermPremium*), and the existence of investment grade credit rating (*Rating*) are instruments for debt maturity. These are variables that are expected to affect the maturity structure but are plausibly less relevant for the leverage ratio. On the other hand, profitability (*Profit*), the ratio of fixed assets to total assets (*FixedAsst*), the firm's R&D intensity (*R&D*), the financing deficit (*Deficit*) and lagged stock returns (*RET*) are variables that either reflect "Pecking Order" behavior, market timing, or adverse selection considerations that are relevant for the debt-equity choice, and are instruments for the leverage ratio.

this effect, and δ_0 measures the stand-alone effect of family firm status. Prior literature suggests that α should be positive in equation (3) and negative in equation (4). Based on hypothesis H1 and H2, we expect (i) β in equations (3) to be positive and δ_0 to be negative, and (ii) β in equations (4) to be negative and δ_0 to be positive. The regression results presented in Table 3 with columns (1) to (4) for equation (3) and columns (5) to (8) for equation (4).

In the first two columns of Table 3, we first report the estimation results for equation (3) without the inclusion of *FamilyFirm*×*Transparency*. Consistent with prior studies (e.g., Wittenberg-Moerman (2009)), we find that the coefficient on the corporate transparency indicator is significantly positive, suggesting that better information quality is related to longer debt maturity. In column (2), we also verify our results by replacing *Transparency* indicator with *SP500* - that is, firms listed in the S&P500 index are found to have longer debt maturity than other firms (as S&P500 firms on average are more transparent than SP mid- and small-cap firms). On the other hand, the coefficient on *FamilyFirm* is significantly negative in the first two columns, indicating that family firms have shorter debt maturity relative to non-family firms.

Next, in columns (3) to (4), we present the complete estimation of equations (3). First, the results suggest that the association between corporate transparency and maturity is stronger for family firms as the coefficient on the interaction of *FamilyFirm* and the two transparency measures (*FamilyFirm*×*Transparency* and *FamilyFirm*×*SP500*) is significantly positive. To gauge the economic significance, taking column (3) for example, in addition to the stand-alone coefficient, *Transparency* on average increases debt maturity by another 3.84 percentage points for family firms. Thus, these results

support the notion that family firms are likely to be perceived as more creditworthy if they are more transparent. This is likely to raise debt capacity, and make the more stringent and costly monitoring by short-term lenders less necessary.[18] The other control variables, whenever significant, are consistent with prior studies.

Turning to equation (4), in columns (5) to (6) of Table 3, we report the estimation results for equation (4) without *FamilyFirm*×*Transparency*. We find that the coefficient on corporate transparency is significantly negative, suggesting that better information quality is related to lower leverage ratio. This finding is consistent with Chang et al. (2006) that transparency makes equity issuance less costly. However, the coefficient on *FamilyFirm* is significantly positive, indicating that family firms have higher leverage relative than non-family firms. Next, in columns (7) and (8), we find that the coefficient on the interaction of *FamilyFirm* and the transparency measures (*FamilyFirm*×*Transparency* and *FamilyFirm*×*SP500*) is significantly negative, suggesting that a given improvement in the information environment tilts the financial structure of family firms more towards equity than debt compared to for the effect on non-family firms. Again, to evaluate the economic significance, taking column (7) for example, in addition to the stand-alone coefficient, *Transparency* on average decreases *Leverage* by another 2.57 percentage points for family firms. Overall, these results confirm our prediction that a transparent information environment indicates less scope for

[18] We also consider the sum of *FamilyFirm* and *FamilyFirm*×*Transparency*. We find that the sum of *FamilyFirm* and *FamilyFirm*×*Transparency* is insignificantly different from zero. This suggests that relative to non-family firms, opaque family firms have shorter debt maturity and higher leverage, but transparent family firms do not exhibit any difference. Again, this confirms our proposition that transparency helps alleviate the concern about misuse of corporate resources in family firms.

the misuse of corporate resources, making it less necessary for family firms to rely on the monitoring role of short-term debt and the discipline of long-term debt. The other control variables, whenever significant, are consistent with prior studies.

B. Random and Fixed Effect Models

Apart from relying on the propensity-score-matching (PSM), we also ascertain the robustness of our results by using alternative econometric methodologies. First, we include time-invariant fixed effects in equations (3) and (4) to deal with the endogeneity of family firm status and transparency. Since a very small fraction of the firms change their family-firm status within our sample period, the endogeneity concern is mainly about firm characteristics that were pre-determined at the beginning of our sample period. As such, the addition of fixed effects is able to deal with time-invariant unobservables that differ across treatment and control firms (e.g., family and non-family firms or transparency and opaque firms). Using the entire S&P 1500 firms, we re-estimate equations (3) and (4) using the random- and firm-fixed effects and provide the results in Panel A of Table 4. To save space, we only present abbreviated results on key variables. The first two columns present results using the random effect model, and columns (3) and (4) provide results for firm-fixed effect model. In brief, the results are consistent with those reported in Table 3. That is, transparency matters more for family firms in determining debt maturity and leverage. The coefficient on *FamilyFirm* becomes insignificant in columns (3) and (4), in which firm-fixed effect model is used. This may be due to the fact that family firm status is rather persistent during our sample period. Actually, only 45 family firms (out of 438) become non-family firms during the 7 years sample period (from 2003 to 2009), so the coefficient on *FamilyFirm* is subsumed by the

inclusion of firm-fixed effects. However, we also note that the coefficient on *FamilyFirm* still retains the predicted sign even with the inclusion of firm-fixed effects.

C. Two-Stage-Instrumental Approach

While controlling for firm-fixed effects addresses endogeneity of family firm status that can be attributed to time-invariant firm characteristics, the fixed-effects also largely absorb the direct effect of family-firm status itself (though not the interactive effect), since there is very little variation in that status within our sample period. To isolate the direct family firm effect, in this section we use the instrumental variable (IV) approach to deal with the endogeneity of family firm status and transparency. Specifically, for family firm status, we utilize the Heckman model to deal with self-selection. As indicated in Tucker (2010), while the propensity-score-matching intends to control for *observable* differences across treatment and control firms, the Heckman model is used to control for *unobservable* differences. To the extent that some unobservables that differ across family and non-family firms are not included in the matching procedure, the self-selection problem associated with family firm status may not be entirely solved. Thus, as indicated in Tucker (2010), the Heckman model complements the PSM method in addressing the endogeneity of the family firm status. However, since corporate transparency is also potentially endogenous, to deal with the endogeneity of corporate transparency in a consistent framework, we utilize the two-stage least square (2SLS) approach. The 2SLS approach is in spirit similar to the Heckman model in that both methods would yield a predicted variable from the first-stage treatment model to be used in the second stage model (see Kennedy (2008) and Larcker and Rusticus (2010)). More importantly, the

success of both the Heckman model and the 2SLS approach is conditional on the identification of instruments in the first-stage treatment model.

To this end, following the suggestion in Larcker and Rusticus (2010) and Lennox et al. (2012), we modify equations (1) and (2) to include instrumental variables (*FamilyFirm* is of course excluded from equation (2)). To instrument family firm status, following Klasa (2007), we use the industry-level competition (the Herfindahl index, *Herfindahl*) and change in industry volatility (*Industry Volatility Change*). The logic behind the two variables is that founding family members are less likely to retain their control if the companies operate in relatively competitive and more volatile industries (as doing business in these industries demand higher management talent and would bear too much risk). Except for the two industry-level measures, we also use CEO age (*CEOAge*) to instrument family firms in that it is expected to be positively associated with family firms status.[19] Importantly, we do not expect that these instrumental variables will be correlated with individual firm's capital structure or debt maturity – that is, they would not affect the dependent variables (*Maturity* and *Leverage*) in the second-stage model.[20]

[19] CEOs closer to retirement will be more likely to continue in their roles if they represent controlling families and potential successors exist. In contrast, if successors do not exist, controlling families are more likely to sell their stakes, and younger professional managers will be in charge (Klasa (2007)). Thus, *CEOAge* is likely to be positively associated with family firm status.

[20] While there is a literature on industry competitive conditions and leverage, the focus is more on within-industry dispersion in capital structure in concentrated industries (see, for example, Brander and Lewis (1986), Chevalier (1995), and Dasgupta and Titman (1998). Indeed, industry concentration itself is not even considered in Frank and Goyal (2009) as a factor that affects capital structure. MacKay and Phillips (2005) observe that most of the variation in capital structure is within-industry rather than across industries and proceed to examine how a firm's position within the industry affects its capital structure

To instrument the continuous transparency index, following Barth et al. (2001) and Chang et al. (2006), we use the industry median number of analyst following (*Industry Analyst Coverage*), and industry competition (*Herfindahl*). The industry-level of analyst coverage and industry competition are used to capture the industrial effects on firms' information environment. We expect industry median analyst coverage to be positively (a firm would be more transparent if the industry overall has better transparency), and the Herfindahl index to be negatively related to corporate transparency (more concentrated industry has lower transparency).

The results of the first-stage treatment models are provided in Panel B of Table 4. We find that the coefficients on all instruments are statistically significant with the predicted signs. After estimating the first-stage treatment models, we then use the instrumented corporate transparency and add the Inverse Mills' Ratio (*IMR*) from the first-stage Heckman model for selection of family or non-family status to re-estimate equations (3) and (4). To save space, we only provide abbreviated results on key variables. The results in Panel B of Table 4 indicate that our main results still hold. In brief, family firms on average have a shorter debt maturity and a larger leverage ratio, and greater transparency lengthens debt maturity and decreases the reliance on debt financing. More importantly, the interaction between family firm and the transparency measure is significant in all columns with predicted signs, suggesting that corporate

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choice. We check the validity of these instruments by including them in the second-stage regressions along with the inverse Mills Ratio. They are insignificant in the debt and maturity regressions. Moreover, since two of our instruments, although not time-invariant, are at the level of the industry (*Herfindahl* and *Industry Volatility Change*), we also drop industry-fixed effects in the second stage. However, our results do not change if industry fixed-effects are included.

transparency matters more for family firms than for no-family firms in determining debt maturity and leverage. [21]

D. Robustness Tests

1. A Sample of Largest 1500 Industrial Firms in Compustat

A potential concern with using S&P 1500 index as the sample is that membership in the index is selected by Standard and Poor's based on certain criteria (like market value or liquidity) which may potentially affect transparency or financing choice. Although our main conclusions would not be affected unless the selection criteria affect the financing and transparency choices of family and non-family firms differently, we confirm the robustness of our results by looking at an alternative sample that is unaffected by any selection criteria for S&P inclusion. More specifically, we obtain the largest 1,500 industrial firms based on firm size (total assets) from Compustat and manually classify those firms into family and non-family firms using the same criteria as described earlier for the sample period from years 2006 to 2009. Again, to avoid potential endogeneity associated with family firms and corporate transparency, we perform a double

[21] We find that the partial *F*-statistic is 14.2 and the partial R^2 is 0.08 for *Industry Analyst Coverage* and *Herfindahl* which are significantly greater than the threshold suggested by Larcker and Rusticus (2010). This suggests that the two variables are appropriate to instrument corporate transparency. With respect to family firm status, to the best of our knowledge, we are not aware of any test that examines the power of the instruments under the Heckman model. Thus, as suggested in Lennox et al. (2012), we check the Variance-Inflation-Factors (VIFs) associated with the inverse Mills ratio (*IMR*), family firms (*FamilyFirm*), transparency (*Transparency*), and the interaction between family firm and transparency (*FamilyFirm*×*Transparency*). We find that VIF with these variables is all below 5, indicating that multicollinearity is not a concern in our model and our instruments are appropriate.

propensity-score-matching based on equations (1) and (2) as discussed earlier to identify a matched sample of family and non-family firms with closest corporate transparency. This matching procedure produces 344 pairs of family and non-family firms, and we use them repeat the estimation of equations (3) and (4). The results are presented in Table 5.

Generally, the results in Table 5 are similar to those reported in Table 3. Again, we find that relative to non-family firms, family firms have shorter maturity and rely more on debt financing. Also, the effect of corporate transparency on leverage and debt maturity is more pronounced in family firms. Thus, the results in Table 5 suggest that our findings are not driven by Standard and Poor's selection criteria, and the results lend further support to our proposition that corporate transparency matters more for family firms than for non-family firms.

2. Alternative Definition of Family Firms and Estimation Methods

Our main results reported in Table 3 control for family ownership status in terms of a family-firm dummy. We also examine whether our findings are different when percentage of family ownership is used in the empirical analysis. The results (not tabulated) indicate that using family ownership to proxy for the impact of family firms leads to similar conclusions. That is, family ownership is negatively related to debt maturity and positively related to leverage; moreover, corporate transparency lengthens debt maturity and decreases the reliance on debt financing, and these relationships are stronger for family firms with higher family ownership.

Finally, instead of using two-stage least squares regression analysis (2SLS) to estimate the relations between family firms, leverage ratio, and debt maturity, we also confirm our results by using ordinary least squares regression analysis (OLS) – that is, we

estimate equations (3) and (4) individually. The results from OLS analysis are qualitatively similar to those reported in Table 3.

3. Does Managerial Ownership Explain Our Results?

In a paper related to ours, Datta et al. (2005) examine debt maturity choice for the S&P 1500 firms over the period 1992-1999. However, Datta et al. (2005) do not distinguish between family and non-family firms. The authors hypothesize, instead, that short-term debt is effective in mitigating agency problems between managers and shareholders; hence managers will have an incentive to sub-optimally choose a longer debt maturity structure. As managerial ownership increases, manager and shareholder interests align more closely, and debt maturity structure should move closer to optimal, i.e., towards shorter maturity. They find that managerial ownership and debt maturity are negatively related.

While Datta et al. (2005) find agency problems and alignment of incentives to be the reason for cross-sectional variation in debt maturity within the S&P 1500 firms, our results suggest that debt maturity is affected by whether or not a firm is a family firm, as well as by the different transparency choices of firms within the two groups. Since managerial ownership is highly correlated with family firm status (managerial ownership tends to be much higher in family firms), there is an issue of which of these two possibilities drive the results on debt maturity. To address this, we separately consider the effect of managerial ownership and family ownership (after excluding managerial ownership) by estimating the following regression:

$$(5)\ Maturity = \alpha_0+\alpha_1 MgtOwnI+\alpha_2 FamilyOwnE+\beta Transparency+\delta_1 Leverage$$
$$+\delta_2 FirmAge+\delta_3 MB+\delta_4 lnSale+\delta_5 ln^2 Sale+\delta_6 Volatility+\delta_7 AbEarnings$$
$$+\delta_8 AssetMaturity+\delta_9 TermPremium+\delta_{10} Rating+\delta_{11} ITC+\delta_{12} NOL$$
$$+\delta_{13} IndustryDummy+\delta_{14} YearDummy+\varepsilon$$

where *MgtOwnI* is management ownership defined as the sum of common and restricted stock owned by the top five executives divided by shares outstanding. *FamilyOwnE* is percentage of common stock controlled by founding family members after excluding *MgtOwnI*.[22] The other variables are the same as previously defined. Equation (5) not only enables us to investigate the impact of managerial ownership on debt maturity, but also allows us to examine whether founding family ownership has incremental effects on debt maturity in addition to managerial ownership.

First, in the first two columns of Table 5, we try to replicate the results of Datta et al. (2005) using our sample. In the first column, using the entire S&P 1500 and a sample period from years 2003 to 2009, we find very similar results as in Datta et al. (2005) – that is, managerial ownership is negatively related to debt maturity. Using the propensity-score-matched sample yields very similar results, as shown in the second column.

The regression estimate of equation (5) is presented in column (3) of Table 6. We find that the coefficient on *MgtOwnI* is significantly negative, consistent with Datta et al. (2005). More importantly, we find that the coefficient on *FamilyOwnE* is also significantly negative, suggesting that family ownership are negatively associated with debt maturity after controlling for managerial ownership. We note that this negative

[22] For example, in WalMart, the Walton family controls around 43% of common stock in 2009, and the top five managers together own around 0.2% (*MgtOwnI*). Thus, *FamilyOwnE* is 42.8% (43% - 0.2%).

association between family ownership and debt maturity in family firms can be explained by the expropriation argument instead of the incentive/alignment story – that is, family firms with more managerial ownership are required to have more short term debts due to greater scope for expropriation. To further confirm this expropriation story, although Datta et al. (2005) do not examine the impact of managerial ownership on leverage, we again modify equation (4) to incorporate both *MgtOwnI* and *FamilyOwnE* to see if family ownership has impacts on capital structure after controlling for managerial ownership. We present this analysis in column (4) of Table 6. We find that the coefficient on *MgtOwnI* is insignificant, while the coefficient on *FamilyOwnE* is significantly positive, suggesting that higher family ownership is associated with higher leverage ratio. Again, this finding supports our hypothesis H1a.

To summarize, the results in Table 6 indicate that even after controlling for managerial ownership, family ownership still exhibits significant effects on maturity and capital structure.

VI. Conclusion

While a significant literature exists on how information asymmetry affects the financial structures of non-family firms, we know little about family firms. In this paper, we fill this gap. One important difference between U.S. family and non-family firms is the greater potential for expropriation of minority shareholders of family firms. The potential for expropriation is likely to affect, together with their disclosure practices and choice of the level of transparency, the cost of capital for family firms. This suggests that, for any given level of transparency, the financial structures of family and non-family firms should differ. Moreover, given the greater potential for expropriation of minority

shareholders, improvements in transparency should matter more for family firms, and affect their financial structure to a larger extent.

We find that family firms in the S&P 1500 have lower debt maturity and higher leverage ratios than non-family firms. This is consistent with the argument that the potential for expropriation constraints the family firms to rely more on debt of lower maturity, which facilitates monitoring and timely information production, and on more debt in relation to equity, which limits the scope for expropriation. Moreover, we find that family firms' financial structure change more in response to a change in transparency than that of non-family firms. This is consistent with the notion that family firms deviate more from an optimal capital structure because of the scope for expropriation created by imperfect shareholder monitoring. Greater transparency, by improving shareholder monitoring, reduces the scope for expropriation and makes such deviations less necessary for family firms.

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TABLE 1

Descriptive Statistics of Family and Non-family Firms in the S&P 1500

The sample consists of 1,242 *non-financial* family and non-family firms in the S&P 1500 index. The sample period is from years 2003 to 2009. *lnSale* is log of total sales. *FirmAge* is log of the number of years since firm inception. *MB* is the firm's market value / shareholder's equity. *Leverage* is total debt / market value of total assets, where market value of total assets is share price × outstanding shares + book value of total assets − book value of equity. *Profit* is earning before interest, taxes, depreciation, and amortization (EBITDA) / total assets. *RET* is annual stock return.

	Mean	Median	SD.	Family Firms	Non-Family Firms	Diff. *t*-stat.
Family firm characteristics						
Family ownership (%)	15.086	9.210	17.494	-	-	-
Family member sitting on the board of directors (%)	99.014	1.000	-	-	-	-
Founder or descendant CEO (%)	53.031	1.000	-	-	-	-
Firm characteristics						
lnSale	7.503	7.408	1.517	7.310	7.658	-6.08***
FirmAge	3.386	3.466	0.976	3.328	3.433	-2.17**
MB	2.858	2.159	2.756	2.853	2.861	-0.13
Leverage	15.395	12.599	14.027	13.622	16.803	-6.34***
Profit	0.134	0.128	0.085	0.137	0.131	2.08**
RET	12.441	7.906	47.313	13.406	11.669	1.85*

TABLE 2

Descriptive Statistics of Family Firms and Non-family Firms in the S&P 1500

The sample consists of 323 pairs of family firms and non-family firms in the S&P 1500 index matched by the propensity-score-matching procedure. The sample period is from years 2003 to 2009. *FamilyFirm* is a dummy variable coded as 1 for family firms and 0 otherwise. *Maturity* is fraction of a firm's total debt that matures in more than 3 years. *Leverage* is total debt / market value of total assets, where market value of total assets is share price × outstanding shares + book value of total assets − book value of equity. *Transparency* is a composite measure based on four variables including *AnalystNum*, *AnalystErr*, *AnalystDisp* and *PIN* (please refer to Section IV for details). *MgtOwnE* is management ownership defined as the sum of common and restricted stock owned by the top five executives (excluding stock ownership of founder and descendant CEOs of family firms) divided by shares outstanding. *FirmAge* is log of the number of years since firm inception. *MB* is the firm's market value divided by its equity. *lnSale* is log of total sales. *Volatility* is standard deviation of the change in EBITDA over the 5 years preceding and including the year in which leverage and maturity are measured. *AbEarnings* is abnormal earnings defined as ($earnings_{t+1}$ − $earnings_t$) / (share price × outstanding shares). *TermPremium* is yield on 10-year government bonds subtracted from the yield on 6-month government bonds. *AssetMaturity* is (gross PPE / total assets) × (gross PPE / depreciation expense) + (current assets / total assets) × (current assets / cost of goods sold). *FixedAsst* is net PPE / total assets. *Profit* is earning before interest, taxes, depreciation, and amortization (EBITDA) / total assets. *R&D* is R&D expenses / total sales. *RET* is annual stock return. *Deficit* is the difference between change in total assets and change in retained earnings scaled by total assets. *Rating* is coded as 1 if a firm's S&P credit rating is investment grade (BBB- or higher) and 0 otherwise. *ITC* is coded as 1 for company with investment tax credit and 0 otherwise. *NOL* is coded as 1 for company with operating loss carry forwards and 0 otherwise.

TABLE 2 (continued)

Panel A: Summary Statistics for the 323 Pairs of Family and Non-Family Firms

	Mean	SD.	25th	Median	75th
Maturity(%)	62.618	32.97	43.067	70.979	90.249
Leverage(%)	17.353	13.32	6.983	14.792	25.315
Transparency	6.273	3.97	2.968	5.375	8.427
MgtOwnE(%)	1.375	3.30	0.152	0.431	1.110
FirmAge	3.460	0.99	2.855	3.563	4.255
MB	2.806	2.82	1.465	2.154	3.319
lnSale	7.733	1.45	6.723	7.626	8.734
Volatility	3.663	3.39	1.494	2.598	4.503
AbEarnings	0.030	0.20	-0.016	0.012	0.032
AssetMaturity	10.918	9.91	3.620	7.321	15.394
TermPremium	1.829	1.22	0.209	2.057	2.988
FixedAsst	0.410	0.31	0.167	0.312	0.592
Profit	0.136	0.08	0.099	0.140	0.185
R&D	0.046	0.07	0.000	0.000	0.034
RET(%)	12.937	47.68	-14.933	8.819	32.878
Deficit	0.077	0.23	-0.038	0.021	0.093
Rating	0.390	0.49	0.000	0.000	1.000
ITC	0.147	0.35	0.000	0.000	0.000
NOL	0.421	0.49	0.000	0.000	1.000
N	4,194				

Panel B: Difference of Mean and Median Test for Family versus Non-family Firms

	Mean			Median		
	Family Firms	Non-Family Firms	Diff. *t*-stat	Family Firms	Non-Family Firms	Diff. *z*-stat
Maturity(%)	58.961	64.977	-3.26***	68.220	71.882	-2.31**
Leverage(%)	16.561	17.834	-3.45***	13.143	15.868	-4.32***
Transparency	6.218	6.270	-0.73	5.340	5.357	-1.50
MgtOwnE(%)	1.830	1.035	4.32***	0.524	0.473	1.36
FirmAge	3.378	3.491	-1.92*	3.380	3.529	-2.06**
MB	2.706	2.863	-0.05	2.132	2.135	-0.98
lnSale	7.611	7.798	-2.12**	7.488	7.644	-2.24**
Volatility	3.914	3.437	1.45	2.819	2.364	1.63
AbEarnings	0.034	0.023	0.51	0.008	0.007	1.39
AssetMaturity	9.308	12.081	-5.13***	6.652	7.921	-4.46***
TermPremium	1.835	1.805	-0.19	2.701	2.048	-0.53
FixedAsst	0.380	0.423	-3.20***	0.284	0.328	-3.36***
Profit	0.136	0.135	0.23	0.131	0.127	0.53
R&D	0.041	0.031	2.25**	0.001	0.001	0.57
RET(%)	12.911	12.362	1.59	7.549	9.953	-1.46
Deficit	0.081	0.063	1.27	0.025	0.019	1.17
Rating	0.263	0.492	-8.57***	0.000	0.000	-8.26***
ITC	0.141	0.141	-0.84	0.000	0.000	-0.83
NOL	0.463	0.393	2.24**	0.000	0.000	2.23**
N	4,194					

TABLE 3

The Effect of Family Firm Status on the Relation between Leverage, Maturity and Corporate Transparency (Propensity-Score-Matched Sample)

The sample consists of 323 pairs of family firms and non-family firms in the S&P 1500 index matched by the propensity-score-matching procedure. The sample period is from years 2003 to 2009. All variables are defined in Table 2. The *t*-statistics are based on robust standard errors clustered by firm. *, **, *** represent significance at the 10%, 5%, and 1%.

TABLE 3 (continued)

Panel A: The Effect of Family Firm Status on the Relation between Debt Maturity and Corporate Transparency

	Dep. = *Maturity*				Dep. = *Leverage*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
α_1:*Transparency*	4.352**	-	1.719	-	-3.819**	-	-2.173	-
	(2.15)		(0.77)		(-2.06)		(-1.14)	
α_2:*SP500*	-	2.373*	-	-1.022	-	-2.245***	-	-0.316
		(1.83)		(-0.67)		(-3.07)		(-0.37)
β_1:*FamilyFirm×Transparency*	-	-	3.841***	-	-	-	-2.568***	-
			(3.00)				(-2.95)	
β_2:*FamilyFirm×SP500*	-	-	-	8.189***	-	-	-	-4.491***
				(3.03)				(-2.88)
δ_0:*FamilyFirm*	-4.279***	-4.202***	-4.656***	-7.292***	2.205**	1.724**	2.487***	3.428***
	(-2.78)	(-2.80)	(-3.13)	(-3.87)	(2.31)	(2.10)	(2.46)	(3.19)
Leverage(predicted)	0.813***	0.781***	0.776***	0.801***	-	-	-	-
	(5.02)	(4.93)	(4.87)	(5.03)				
Maturity(predicted)	-	-	-	-	0.463***	0.364***	0.502***	0.394***
					(5.40)	(5.71)	(5.43)	(5.92)
MgtOwnE	-0.132	-0.225	-0.125	-0.208	-0.046	-0.052	-0.046	-0.049
	(-0.56)	(-0.97)	(-0.56)	(-0.92)	(-0.35)	(-0.45)	(-0.34)	(-0.43)
FirmAge	0.982	0.699	0.699	0.615	-1.038**	-0.540	-0.873**	-0.499
	(1.45)	(1.13)	(1.01)	(1.00)	(-2.51)	(-1.63)	(-2.03)	(-1.48)
MB	0.446**	0.490***	0.422**	0.479**	-0.273**	-0.261**	-0.268**	-0.259**
	(2.40)	(2.59)	(2.32)	(2.54)	(-2.26)	(-2.36)	(-2.18)	(-2.31)
lnSale	15.519***	-	15.259***	-	1.677*	-	1.701*	-
	(3.04)		(2.99)		(1.75)		(1.77)	
ln^2*Sale*	-1.017***	-	-0.963***	-	-	-	-	-
	(-3.45)		(-3.28)					
Volatility	-0.523**	-0.539**	-0.497**	-0.521**	0.261	0.067	0.259	0.074
	(-2.08)	(-2.24)	(-1.99)	(-2.20)	(1.58)	(0.54)	(1.50)	(0.59)
AbEarnings	-	-	-	-	7.606***	7.242***	7.815***	7.379***
	10.552***	10.326***	10.420***	10.434***				
	(-4.19)	(-4.04)	(-4.16)	(-4.09)	(5.25)	(5.72)	(5.23)	(5.73)
AssetMaturity	0.172**	0.155**	0.172**	0.161**	-	-	-	-

	(2.21)	(2.08)	(2.20)	(2.17)				
TermPremium	-0.603	-0.395	-0.553	-0.403	-	-	-	-
	(-1.08)	(-0.71)	(-1.06)	(-0.72)				
FixedAsst	-	-	-	-	1.584	2.086	1.366	1.719
					(0.84)	(1.24)	(0.71)	(1.01)
Profit	-	-	-	-	-	-	-	-
					30.417***	40.016***	30.206***	38.608***
					(-3.94)	(-7.21)	(-3.73)	(-6.72)
R&D	-	-	-	-	-10.919	-16.207**	-10.134	-15.192*
					(-1.22)	(-2.17)	(-1.07)	(-1.94)
RET	-	-	-	-	-0.035***	-0.033***	-0.036***	-0.033***
					(-5.80)	(-6.55)	(-5.68)	(-6.40)
Deficit	-	-	-	-	0.506	1.132	0.238	0.906
					(0.40)	(1.06)	(0.18)	(0.82)
Rating	2.585*	3.791**	2.768*	3.452**	-	-	-	-
	(1.71)	(2.49)	(1.70)	(2.28)				
ITC	3.174*	2.825*	3.425**	3.010*	-1.917**	-1.794**	-2.196**	-1.938**
	(1.90)	(1.67)	(2.07)	(1.79)	(-2.08)	(-2.24)	(-2.25)	(-2.34)
NOL	0.409	0.798	0.382	0.798	1.120	1.291*	1.118	1.216*
	(0.30)	(0.58)	(0.28)	(0.58)	(1.43)	(1.90)	(1.39)	(1.76)
Industry and year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj.-R^2	0.203	0.207	0.204	0.205	0.234	0.252	0.234	0.245
No. of Obs.	4,194							

			F-value				*F-value*	
$\alpha_1 + \beta_1 = 0$			6.76***				4.87***	
$\alpha_2 + \beta_2 = 0$				7.14***				14.36***
$\delta_0 + \beta_1 = 0$			0.32				0.00	
$\delta_0 + \beta_2 = 0$				0.17				0.55

TABLE 4

The Effect of Family Firm Status on the Relation between Leverage, Maturity and Corporate Transparency – Robustness Tests

The sample period is from years 2003 to 2009. *ShareTurnover* is the median value of shares traded (volume) in a month divided by shares outstanding over a twelve-month period. *Segment* is the log of the number of business segments. *Herfindahl* is computed by summing squared market shares within each 3-digit SIC industry. *BoardIndep is* percentage of independent directors on the board. *CEOAge* is CEO's age. *Industry Volatility Change* is the median change in stock return volatility between year t-3 and t-1 in each industry (2-digit SIC codes). *Industry Analyst Coverage* is the median number of analyst following in each industry (2-digit SIC codes). *IMR* is the Inverse Mills' Ratio produced by the first-stage Heckman model. All other variables are defined in Table 2. The *t*-statistics are based on robust standard errors clustered by firm. *, **, *** represent significance at the 10%, 5%, and 1%.

TABLE 4 (continued)

Panel A: Random Effect and Fixed Effect Model

	Random Effect		Fixed Effect	
	Dep. = *Maturity*	Dep. = *Leverage*	Dep. = *Maturity*	Dep. = *Leverage*
	(1)	(2)	(3)	(4)
α_1:*Transparency*	4.864***	-2.973***	4.553**	-2.343***
	(2.66)	(-6.73)	(2.10)	(-4.97)
β_1:*FamilyFirm*×*Transparency*	2.586**	-0.920**	2.251**	-0.825**
	(2.08)	(-2.22)	(1.97)	(-2.09)
δ_0:*FamilyFirm*	-3.360**	0.351	-0.466	0.359
	(-2.20)	(1.64)	(-0.76)	(0.85)
Leverage(predicted)	0.567***	-	0.435***	-
	(4.18)		(2.89)	
Maturity (predicted)	-	0.138***	-	-0.024
		(3.83)		(-0.54)
Control variables	Yes	Yes	Yes	Yes
Industry and year dummies	Yes	Yes	Yes	Yes
Adj.-R^2	0.186	0.183	0.236	0.233
No. of Obs.	6,079			
	F-value			
$\alpha_1 + \beta_1 = 0$	13.02***	36.73***	15.86***	31.64***
$\delta_0 + \beta_1 = 0$	0.19	3.41*	2.30	3.65*

TABLE 4 (continued)

Panel B: 2 Stage Instrumental Variable Approach - First Stage (Determinants of Family Firms and Transparency)

	Dep. = *FamilyFirm*		Dep. = *Transparency*
lnSale	-0.063**	*lnSale*	1.695***
	(-2.03)		(22.63)
FirmAge	0.013	*FirmAge*	-0.281***
	(0.30)		(-3.59)
MB	0.000***	*MB*	0.000**
	(2.73)		(2.57)
Profit	-0.288	*Profit*	3.510***
	(-0.63)		(3.40)
Volatility	0.008	*Volatility*	0.109***
	(0.75)		(4.53)
ShareTurnover	0.022**	*Rating*	0.830***
	(2.11)		(4.27)
Segment	-0.074**	*R&D*	1.946**
	(-2.20)		(2.46)
BoardIndep	-2.935***	*ShareTurnover*	0.151***
	(-9.59)		(5.05)
CEOAge	0.011**	*Segment*	-0.410***
	(2.17)		(-5.86)
Herfindahl	0.860**	*Herfindahl*	-2.373**
	(2.09)		(-2.02)
Industry Volatility Change	-1.694**	*Industry Analyst Coverage*	0.135***
	(-2.13)		(5.77)
Year dummies	Yes		Yes
Pseudo-R^2/Adj.-R^2	0.233		0.538
No. of Obs.	6,079		6,079

TABLE 4 (continued)

Panel B: 2 Stage Instrumental Variable Approach (continued) - Second Stage

	Dep. = *Maturity*		Dep. = *Leverage*	
	(1)	(2)	(3)	(4)
α_1:*Transparency*	5.165**	3.525	-4.281**	-3.473*
	(2.30)	(1.45)	(-2.23)	(-1.77)
β_1:*FamilyFirm*×*Transparency*	-	2.759**	-	-1.472**
		(2.15)		(-2.17)
δ_0:*FamilyFirm*	-17.755**	-16.790**	14.947**	14.684**
	(-2.22)	(-2.12)	(2.55)	(2.45)
Leverage(predicted)	0.878***	0.858***	-	-
	(5.45)	(5.33)		
Maturity(predicted)	-	-	0.355***	0.366***
			(5.59)	(5.55)
IMR	7.132*	6.487*	-8.044**	-7.818**
	(1.78)	(1.67)	(-2.28)	(-2.16)
Control variables	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Adj.-R^2	0.179	0.178	0.236	0.233
No. of Obs.	6,079			
		F-value		*F-value*
$\alpha_1 + \beta_1 = 0$		6.83***		5.29**
$\delta_0 + \beta_1 = 0$		1.29		1.42

TABLE 5

The Effect of Family Firm Status on the Relation between Leverage, Maturity and Corporate Transparency

(Results based on the Largest 1500 Industrial Firms in Compustat)

The sample consists of 344 pairs of family firms and non-family firms matched by the propensity-score-matching procedure. The sample firms are chosen from the largest 1500 industrial firms in Compustat. The sample period is from years 2006 to 2009. All variables are defined in Table 2. The *t*-statistics are based on robust standard errors clustered by firm. *, **, *** represent significance at the 10%, 5%, and 1%.

TABLE 5 (continued)

	Dep. = *Maturity*				Dep. = *Leverage*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
α_1:*Transparency*	5.465*	-	3.903	-	-7.596***	-	-6.925***	-
	(1.80)		(1.27)		(-3.49)		(-3.02)	
α_2:*SP500*	-	6.036***	-	0.940	-	-5.662***	-	-3.180***
		(2.75)		(0.39)		(-5.59)		(-2.91)
β_1:*FamilyFirm*×*Transparency*	-	-	3.046**	-	-	-	-2.308**	-
			(2.13)				(-2.37)	
β_2:*FamilyFirm*×*SP500*	-	-	-	11.921***	-	-	-	-5.920***
				(3.36)				(-2.61)
δ_0:*FamilyFirm*	-5.157***	-5.174***	-5.279***	-8.658***	2.008	1.365	2.343*	3.224**
	(-2.89)	(-2.88)	(-2.94)	(-3.96)	(1.56)	(1.27)	(1.67)	(2.14)
Leverage(predicted)	0.764***	0.742***	0.755***	0.746***	-	-	-	-
	(3.56)	(3.99)	(3.51)	(4.02)				
Maturity(predicted)	-	-	-	-	0.485***	0.367***	0.531***	0.390***
					(3.98)	(4.22)	(3.93)	(4.20)
MgtOwnE	-0.321**	-0.343**	-0.320**	-0.331**	0.126	0.079	0.143	0.083
	(-2.17)	(-2.37)	(-2.20)	(-2.33)	(1.17)	(0.85)	(1.28)	(0.89)
FirmAge	0.244	0.580	0.251	0.691	-1.217**	-1.099**	-1.244**	-1.141**
	(1.09)	(0.60)	(1.12)	(0.72)	(-2.17)	(-2.28)	(-2.12)	(-2.32)
MB	0.804	0.381*	0.824	0.340	-0.156	-0.292**	-0.153	-0.272**
	(0.82)	(1.76)	(0.84)	(1.58)	(-1.14)	(-2.52)	(-1.07)	(-2.33)
lnSale	16.500***	-	15.576**	-	2.986**	-	3.091**	-
	(2.68)		(2.53)		(2.06)		(2.04)	
ln^2*Sale*	-1.065***	-	-1.000***	-				
	(-3.10)		(-2.92)					
Volatility	-0.137	-0.178	-0.139	-0.191	-0.007	-0.235*	0.018	-0.218
	(-0.43)	(-0.58)	(-0.43)	(-0.63)	(-0.04)	(-1.67)	(0.10)	(-1.50)
AbEarnings	6.431***	6.379***	6.377***	6.275***	-4.638***	-4.006***	-4.795***	-4.027***
	(3.04)	(3.13)	(3.03)	(3.08)	(-3.38)	(-3.40)	(-3.32)	(-3.34)
AssetMaturity	0.014	-0.018	0.013	-0.003	-	-	-	-
	(0.14)	(-0.17)	(0.12)	(-0.03)				
TermPremium	2.757**	1.659**	2.953**	1.327**	-	-	-	-
	(2.40)	(2.20)	(2.43)	(2.15)				

FixedAsst	-	-	-	-	1.843	1.843	2.364	1.608
					(1.04)	(1.04)	(1.16)	(0.89)
Profit	-	-	-	-	-40.554***	-40.554***	-25.549***	-40.270***
					(-7.49)	(-7.49)	(-3.14)	(-7.30)
R&D	-	-	-	-	-18.378***	-18.378***	13.199	-17.443***
					(-3.18)	(-3.18)	(1.08)	(-2.86)
RET	-	-	-	-	-2.043***	-2.043***	-1.892**	-2.026***
					(-2.91)	(-2.91)	(-2.18)	(-2.84)
Deficit	-	-	-	-	0.356	0.356	-1.783	0.031
					(0.25)	(0.25)	(-0.89)	(0.02)
Rating	2.846	4.903**	2.779	4.652**	-	-	-	-
	(1.17)	(2.24)	(1.15)	(2.13)				
ITC	3.793**	3.966**	3.701**	4.028**	-2.205**	-2.205**	-2.769**	-2.301***
	(2.15)	(2.24)	(2.11)	(2.30)	(-2.56)	(-2.56)	(-2.51)	(-2.61)
NOL	-0.299	-0.522	-0.231	-0.773	-0.097	-0.097	-0.181	0.058
	(-0.18)	(-0.32)	(-0.14)	(-0.48)	(-0.12)	(-0.12)	(-0.19)	(0.07)
Industry and year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj.-R^2	0.142	0.138	0.143	0.146	0.198	0.204	0.200	0.203
No. of Obs.	2,559							

	F-value		*F-value*	
$\alpha_1 + \beta_1 = 0$	20.94***		21.68***	
$\alpha_2 + \beta_2 = 0$		16.03***		18.16***
$\delta_0 + \beta_1 = 0$	0.70		2.94*	
$\delta_0 + \beta_2 = 0$		1.29		0.02

TABLE 6

The Separate Effect of Managerial and Family Ownership on Maturity and Leverage

MgtOwnI is management ownership defined as the sum of common and restricted stock owned by the top five executives divided by shares outstanding. *FamilyOwnE* is family ownership defined as the sum of common and restricted stock owned by non-CEO family members divided by shares outstanding. All other variables are defined in Table 2. The *t*-statistics are based on robust standard errors clustered by firm. *, **, *** represent significance at the 10%, 5%, and 1%.

TABLE 6 (continued)

	Dep. = *Maturity*			Dep. = *Leverage*
	(1) S&P 1500 firms	(2) Matched sample	(3) Matched sample	(4) Matched sample
MgtOwnI	-0.286***	-0.374***	-0.253*	0.033
	(-2.77)	(-2.70)	(-1.76)	(0.40)
FamilyOwnE	-	-	-0.284***	0.112**
			(-3.07)	(2.04)
Transparency	4.149**	5.00**	4.84**	-4.629**
	(2.16)	(1.95)	(2.00)	(-2.46)
Leverage(predicted)	0.825***	0.729***	0.733***	-
	(5.81)	(4.18)	(4.25)	
Maturity(predicted)	-	-	-	0.478***
				(5.23)
FirmAge	1.041	1.198*	1.269*	-1.366***
	(1.61)	(1.66)	(1.77)	(-3.08)
MB	0.382**	0.332*	0.363*	-0.219*
	(2.06)	(1.76)	(1.94)	(-1.85)
lnSale	16.264***	16.452***	16.962***	1.729
	(3.50)	(2.99)	(3.11)	(1.57)
ln^2Sale	-1.071***	-1.029***	-1.064***	-
	(-4.03)	(-3.30)	(-3.44)	
Volatility	-0.432**	-0.595**	-0.593**	0.345**
	(-2.18)	(-2.24)	(-2.25)	(2.00)
AbEarnings	-11.557***	-10.421***	-10.504***	7.702***
	(-5.39)	(-3.77)	(-3.85)	(4.97)
AssetMaturity	0.251***	0.209**	0.215***	-
	(3.23)	(2.54)	(2.66)	
TermPremium	-0.918*	-0.716	-0.685	-
	(-1.75)	(-1.24)	(-1.21)	
FixedAsst	-	-	-	0.974
				(0.50)
Profit	-	-	-	-30.140***
				(-4.11)
R&D	-	-	-	-0.608
				(-0.06)
RET	-	-	-	-0.037***
				(-5.60)
Deficit	-	-	-	0.628
				(0.43)
Rating	3.308**	2.568*	2.475	-
	(2.04)	(1.74)	(1.55)	
ITC	2.262	3.295*	2.990*	-2.110**
	(1.41)	(1.93)	(1.76)	(-2.26)
NOL	0.097	0.360	0.416	1.167
	(0.08)	(0.25)	(0.29)	(1.43)
Industry and year dummies	Yes	Yes	Yes	Yes
Adj.-R^2	0.178	0.172	0.174	0.240
No. of Obs.	6,079	4,194	4,194	4,194