INFORMATION DISCLOSURE AND IPO VALUATION: WHAT KINDS OF INFORMATION MATTER AND IS MORE INFORMATION ALWAYS BETTER?

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Information Disclosure and IPO Valuation: What Kinds of Information Matter and is More Information Always Better?

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ABSTRACT

Many financial theories emphasize the positive relationship between information disclosure and firm performance. However, disclosure of information can harm a firm if others make strategic use of the information. In this paper, we test the effect of information disclosure on performance. Using a sample of all firms which went through an IPO in the U.S. during the 2001-2003 period, we examine the relationship between different types of information including 1) the specificity of information, 2) the accuracy of information, and 3) the amount of time for information diffusion and the valuation of the IPO firm. We use OLS regression to predict IPO performance including 1) underpricing, 2) percent premium and 3) 3 year cumulative average adjusted returns. Also, we check for a potential curvilinear relationship between the level of information disclosure and IPO performance. We find a negative relationship between information disclosure and underpricing but a positive relationship with percent premium. The implications of these findings and several directions for future research are discussed as well.

INTRODUCTION

In an insightful essay, Bettis (1983: 405) argues that “modern financial theory suggests that disclosing additional information about a project or strategy can positively affect the value of the firm.” In fact, many financial theories have emphasized the positive relationship between information disclosure and firm performance. A central argument is that disclosing information affects the market price by reducing the uncertainty concerning cash flow forecasts (Klein & Bawa, 1976; Handa & Linn, 1993). The more information that is available, the better investors are able to forecast without errors. Since investors are risk averse, they will pay a premium for greater information. This should especially be true for initial public offering (IPO) firms which we focus on here.

However, from a strategic management perspective, public disclosure of information can harm a firm if market participants make strategic use of the information to their advantage (Darrough, 1993). For example, detailed disclosure about new products implies information about the future prospects of a firm to its investors, suppliers, customers, and competitors. While investors would be happy to have this information, they may be concerned that this information is divulged in the first place. For example, competitors, suppliers, and customers may be able to capitalize on this information and use it to appropriate potential rents (Alvarez & Barney 2004) which would otherwise have flowed to the focal firm.

Clearly, despite the proliferation of studies on the subject, to date these findings have not been systematically combined to assess the nature and shape of the relationship between information disclosure and firm valuation. (cf. Daily et al. 2005). From a practical point of view, these two
countervailing arguments suggest a potential paradox. If information disclosure is a source of proprietary cost but also essential to gain investors’ confidence, IPO firms may run the risk of revealing firm information to a point that may harm their competitive advantage. As Bettis (1983) implied, contradictory arguments from the different points of view are not minor problems of intellectual disagreement, but rather major problems of practical importance as well.

This dilemma raises the research question of this study: What is the pattern of the relationship between information disclosure and firm valuation? Is more information always better? The literature provides no clear answer because there has been a lack of effort to evaluate the relationship in an integrated manner.

In addition to the investigation of two conflicting predictions, this study also proposes an inverted U-shape relationship. In our inverted U-shape model, the rational corporation should attempt to reveal neither too much nor too little information. Accordingly, we are expecting that IPO firms do not provide detailed disclosure of proprietary information to competitors but they regulate the amount of information disclosed in order to maximize firm value (cf., Beatty & Ritter 1986; Peavy, 1984)

Thus, from the combined literatures of strategic management and finance, conflicting predictions emerge and each of these literatures has its own logic about the effect of information disclosure on IPO valuation. More specifically, we propose three competing hypotheses which illuminate the theoretical tension on the issue. That is, we examine the following three models of the relationship between information disclosure and firm valuation: 1) the positive linear model, 2) the negative linear model, and 3) the inverted U-shape model. In order to address these arguments, this paper is organized as follows. First, we examine the nature of information disclosure in the context of the IPO. Second, we briefly review three different points of view on the effect of information disclosure and performance. Third, we propose an alternative explanation to reconcile two contradictory points of view. Lastly, we test our models based on a sample of ventures that had gone through an initial public offering in the U.S. during the 2001-2003 time period. The implications of the findings and several directions for future research are discussed as well.

CONCEPTUAL DEVELOPMENT

Information Disclosure at the Time of the IPO

An IPO is a firm’s first sale of shares to the public market. It involves raising capital from outside and unknown investors for the company. Not surprisingly, insiders (e.g. current managers) possess rich information about the firm’s future prospects, but this information is not entirely known to outside potential investors (Daily et al, 2005). As such, this situation results in the classic problem of asymmetric information (Teoh et al., 1998; Jog & McConomy, 2003). In particular, IPO firms have often been characterized as existing in an information poor environment because there is less public information, no secondary market and a shorter operating history. All of which translate into high valuation uncertainty; these factors make it more difficult for investors and analysts to value an IPO. With this in mind, we argue that IPO firms are ideal for the study of information disclosure and its impact on the firm.

When a company intends to go public, it must register this intent with the Securities and Exchange Commission (SEC). Each IPO firm must first submit an SEC form S-1(registration statement filing) which is an initial prospectus. Later, the final prospectus (424B) will be submitted just before the firm goes public. We use S-1 filings as the primary source for
information disclosure in this study. Before we move on to the theoretical development and arguments, however, it should be noted that we make two important assumptions on which we build our arguments. First, we assume information disclosure as contained in the S-1 is to be believed as an unbiased account without misleading omission. Even if there is some concern about the truthfulness of the disclosure, we believe that the information identified via S-1 filings is credible on the whole owing to the due diligence of underwriters and the scrutiny of the SEC. The threat of a lawsuit might be a good incentive for providing credible information. Second, we assume each firm has some discretion in choosing the extent of its information disclosure. Leone et al. (2007) found that firms can exercise considerable latitude with respect to the specificity of information they provide. Third, and lastly, we assume that investors and competitors use the information with some degree of market efficiency and rationality.

Theoretical Models

The positive linear model

Traditionally, many modern financial theorists have agreed that increased disclosure is economically beneficial for firms (Salter & Weinhold, 1979; Pratt & DeVere, 1978; Bettis, 1983; Peavy, 1984). The reason for this is fourfold. First, greater public disclosure can lead to reduced estimation error in pricing shares (Botosan, 2000; Mensah et al., 2003). That is, reduced information asymmetry between investors and firm management leads to reduced estimation risk for potential investors, which thereafter leads to lower cost of equity capital (Klein and Bawa, 1976; Handa and Linn, 1993; Clarkson et al., 1996).

Second, information disclosure can increase stock liquidity. In particular, it can lead to reduced information asymmetry among informed and uninformed investors. Thus, investors can be confident on a “fair price” and therefore may be willing to take a larger position of ownership in a particular firm’s stock (Brennan & Tamarowski, 2000; Amihud & Mendelson, 1986; Diamond & Verrecchia, 1991).

Third, information disclosure can reduce agency costs (Jensen & Meckling, 1976). Given that accounting information is often used to supervise and monitor managers’ behaviors, information asymmetry between the management and the investors can be decreased by increasing disclosure of information. Also, several studies have shown that increased disclosure leads to a more effective allocation of capital (e.g. decreased cost of capital) (Schrand & Verrecchia, 2002; Strom, 2004).

Finally, signaling theory also suggests the positive impact of greater information disclosure. Since higher quality firms want to signal to investors that their firm is superior to others, disclosure of information allows for the signal to be communicated. This means that investors may interpret greater disclosure of information at the IPO stage as a positive signal entailing higher expected long-run performance. Welch (1989) also argues that a positive signal from the firm leads to higher market valuation. Taken together, modern financial theory posits a positive relationship between information disclosure and firm performance. From this perspective, information disclosure in the prospectus will be positively associated with the valuation and performance of the IPO firms.
The negative linear model

Information disclosure may not always lead to positive outcomes, however. Oftentimes, in disclosing information, management confronts a dilemma. Research shows that much of the information that is revealed is the same information that is competitively valuable (Bettis, 1983) and is often used by competitors (Elliott & Jacobson 1994). Many strategic management scholars therefore view information disclosure in terms of its negative impact (Porter, 1980; Bettis, 1983). For example, using a high technology IPO sample, Guo et al. (2004) detailed the downside of disclosure. Because competitors may access this information as well, there may be severe competitive costs associated with higher levels of disclosure. This view of information disclosure is consonant with proprietary cost theory which suggests that firms’ decisions to disclose information to investors can be influenced by a concern that such disclosures can damage their competitive position (Verrecchia, 1983; Darrough & Stoughton, 1990; Wagenhofer, 1990; Darrough, 1993; Healy & Palepu, 2001). These studies conclude that firms have an incentive not to disclose information that will derogate their competitive position, even if it makes it more costly to raise additional equity. For example, Verrecchia (1983) suggests that product market competition may discourage a firm from providing voluntary information. In sum, perspectives from competitive dynamics suggest that information disclosure in the prospectus will be negatively associated with IPO firm valuation and performance.

The inverted-U model

In this paper, we also propose an alternative perspective to explain contradictory predictions between information disclosure and performance. More specifically, there might be a trade-off in this relationship. The trade-off occurs due to the cost the firm faces with increased disclosure and the benefits that follow from the information disclosure (Healy & Palepu, 1993). Given that the costs and benefits coexist, an IPO firm may develop a disclosure strategy that optimizes the level of disclosure exceeding mandatory requirements. Therefore it is reasonable to assume that an inverted-U shape relationship exists between information disclosure and firm valuation and performance.

Based on the inverted U-shape model, the rational corporation should attempt to reveal sufficient information for efficient pricing, but should choose to disclose neither too much detail nor too little detail. While some information disclosure is beneficial to reducing the cost of capital, too much disclosure will harm the organization and lead potential investors to worry about the competitive impact that such disclosure will have on the firm. Indeed, Beatty & Ritter (1986) show that IPO firms do not provide detailed disclosure of proprietary information to competitors but they regulate the amount of information disclosure to reach the optimum point. Peavy (1984) also suggests that the goal of every corporate manager should be to achieve that unique level of information disclosure that yields the maximum expected performance. Given that managers tend to be concerned with their reputation (Healy 1985), they will seek to manage disclosure in such a way as to avoid too much information being released and too little information being released.

In sum, from the combined literatures of strategic management and finance, conflicting predictions (positive, negative and inverted-U) concerning the impact of information disclosure on valuation and performance have emerged. Each has its own logic about the effect of information disclosure on IPO performance. Therefore, we present and test the three competing hypotheses representing the theoretical tension surrounding this issue.
Hypothesis 1a (1b, 1c): The level of information disclosure will exhibit a positive (negative, inverted U) relationship with IPO performance.

METHODOLOGY

Data

To test the hypotheses, we develop a sample of ventures that had gone through an initial public offering (IPO) between 2001 and 2003. Holding companies, foreign firms and real estate investment trust (REITs) were eliminated from the sample resulting in a sample of 162 firms. The prospectuses of each firm provided the information in this study for all independent variables. The amended Securities and Exchange Act of 1934 sets the requirements for prospectuses. It assures consistency in the type of information that is included in the documents. The SEC also requires that a prospectus be accurate to the best knowledge of management. Given this strict requirement and the fact that the SEC has placed great importance on the quality of prospectuses, we believe they are a useful data source (Marino, Castaldi, & Dollinger, 1989).

Dependent Variable

We used three dependence variables that researchers have used to measure IPO performance. The first dependent variable is the “underpricing (UNDER)”. Underpricing represents money “left on the table” that the new IPO firm forgoes. In other words, this money accrues to initial investors in an IPO but not the pre-IPO owners of the IPO firm (Daily et al., 2005). Given that a new venture’s liquidity is particularly important due to its liability of newness (cf. Singh et al., 1986), underpricing is detrimental. This variable is calculated as the first day closing price minus the offer price divided by the offer price (Certo et al., 2001). The offer price was obtained from the final S-1 and the first day closing price was obtained from the CRSP database.

The second variable is the “offer price (OFFER) or percent premium.” The percent premium is a measure of investor optimism about the future value of a firm at the time of the IPO. This value is calculated as the share price at the time of IPO minus the firm’s book value divided by share price at the time of IPO. This measure uses both accounting based and stock price information to measure “difficult to account for” assets of the firm (Nelson, 2003: 715). This price reflects the price at which the firm’s stock will be sold to initial investors on the first day of trading. The offer price is particularly important to investment bankers because the price can determine the commission that the investment bankers will be paid (Daily et al., 2005).

The last dependent variable used in this study is the cumulative average adjusted returns (CAAR). As evidence suggests, IPO effects last more than one year (Ritter, 1991). The CAAR is a commonly used long-run return measure (Ritter, 1991; How & Yeo, 2001). We used mean adjusted abnormal returns (Brown & Warner, 1985) based on CRSP stock prices. This value can be calculated as the difference score between the firm’s daily return and market average return. To calculate the market return, we use the CRSP equally weight index. In order to conduct a sensitivity analysis, we also tested three different time intervals (e.g., 1 year, 2 year, and 3 year).

Independent Variable

We derived a composite measure of information disclosure from factor analysis of the following three indicators: 1) the specificity of information, 2) the accuracy of information, and 3) the amount of time for information diffusion and the valuation of the IPO firm. With an oblique
rotation method incorporating the principal component procedure, the three variables formed a single factor with an eigenvalue of 1.13. Based on the factor loadings the composite measure of information disclosure is a linear combination of +0.68×information diffusion +0.67×the certainty of information +0.48×the specificity of information. These weightings were used to construct an overall level of information disclosure (INFO), allowing a parsimonious analysis for testing the hypothesized relationships. The following details each of the components.

The specificity of information. When a company files to go public it is recommended to reveal in the prospectus the uses to which it intends to apply the IPO proceeds. While financial statements do not allow for much discretion in terms of what is disclosed, IPO documents provide much greater discretion (Leone et al., 2007). In practice, registrants can exercise considerable latitude with respect to the specificity of information they provide. While securities regulation mandates disclosure of the intended use of IPO proceeds in the prospectus, each firm voluntarily chooses the extent of specificity. Following a recently developed measure (Leone, 2007) we examine the extent of detail concerning dollars allocated for use as specified in the section titled “Use of Proceeds”. Specificity is the fraction of company proceeds for which the new venture provides a dollar figure for the detailed future uses. The specific uses include plans to 1) repay debt, 2) expansion or acquisition, 3) research and development or product development, 4) distribution to pre-IPO shareholders, 5) advertising, marketing, promotion, or sales, 6) working capital needs, or 7) other specific uses.

The certainty of information. After deciding to go through an IPO, the firm will work with the underwriter to put on a “road show” to communicate prospectus information to institutional investors. In order to gauge potential investor interest, a range of prices (a low and a high price) will be established in the S-1. This allows these potential investors to communicate their level of demand given the respective price. Since the actual offer price is not determined until the day before the IPO, there is significant flexibility about the spread of the price range. We use the price spread to measure the certainty of information provided in the prospectus. The variable is calculated as 1 / (1 + (high value – low value in the range of offer prices)).

The amount of time for information diffusion. The last variable is about information diffusion. After new ventures file their initial S-1, there is significant time gap until the IPO actually takes place. When this time lag is longer, potential investors will have an easier time developing valuation forecasts. The variable is calculated as the total days between the filing of the initial S-1 and the day of the actual IPO.

Control Variables

We implemented a number of controls for alternative explanations. The Absolute amount of information (LENGTH) was controlled by calculating the number of pages in the S-1. To take into consideration a possible variation of font sizes and page spaces, we copied the document into Microsoft Word separately. Firm age (AGE), the time since founding, helps to control for the maturity of the organization (e.g., the liability of newness (Singh et al., 1986). The natural logarithm of one plus the age of the firm was used (Carter, Dark & Singh, 1998). As a proxy for organization size and power, we use Total assets (ASSET), the natural log of total assets, and the Number of employees (EMP), the natural log of the total number of employees (Lester et al. 2006). Additionally we sought to control for the amount of risk facing the organization because higher risk may induce greater underpricing. Therefore, we used the total Risk factors (RF) used by Welbourne & Andrews (1996) summed together. This measure includes: technical obsolesce, new product, few or limited products, low number of years in operation, inexperienced management,
technical risk, seasonality, customer dependence, supplier dependence, inexperienced underwriter, competition, legal proceedings against company, liability and government regulation. We also controlled for Founder effects (FNDR) because founders may have an impact on the survival and performance of new ventures (Certo et al., 2001; Nelson, 2003). We used a dummy variable to operationalize CEO founder (1=founder, 0=nonfounder). To rule out agency issues in disclosing information, we also controlled for CEO duality (DUAL). A dummy variable was used (1=duality, 0=nonduality). Since board membership may influence investors’ evaluation of the focal firm, we control for the portion of Insiders on the board (IRATIO). The portion is calculated by the ratio of managers currently serving on the board to total board members (Certo et al., 2001). We also control for the reputation of underwriter. In order to calculate Reputation of underwriter (UNDREP), we calculate the investment banker market share (Certo et al, 2003; Jenkins & Ljungqvist, 2001). Greater IPO performance may occur due to an Industry effect (IND) (Certo et al., 2003). Therefore, we use 2-digit SIC (Standard Industry Classification) codes to control for this. Since R&D ability is often a crucial factor to predict IPO performance, we also controlled for Patent intensity (PAT) by using the total number of patents divided by the number of employees in the organization. Finally, we controlled for the possible effects of Venture-backing (VC). According to the certification argument (Jenkinson & Ljungqvist, 2001), venture capitalists who participate in the IPO market repeatedly may influence investor valuations. Those firms enjoying venture capital backing were coded 1 or 0 otherwise.

Analytical Approach

Hierarchical regression is used to estimate all models. Within this procedure, control variables are entered first followed by six additional models each pertaining to the independent variables. To test the inverted-U model, we use a quadratic regression model of the second-degree polynomial - squared term of the variable. If the results reveal a significant, positive coefficient for $\beta_1$ and negative coefficient for $\beta_2$ (the squared term), this indicates that information disclosure is positively associated with performance up to a certain point, beyond which performance declines (Flynn, 2003; Hitt et al, 1997; Agresti & Finlay, 1997).

$$Y = \alpha + \beta_1X + \beta_2X^2$$

In a practical sense, one can fit a quadratic regression model by treating them as a special case of the multiple regression model with two explanatory variables:

$$Y = \alpha + \beta_1X + \beta_2X^2 = \alpha + \beta_1X_1 + \beta_2X_2$$

Here, we identify $X_1$ with the explanatory variable $X$ and $X_2$ with its square $X^2$. We use least squared methodology to find the best fitting quadratic function out of the class of all second degree polynomials (Agresti & Finlay, 1997).

RESULTS

Table 1 provides the mean, standard deviation, and correlations among all variables used in the study. To test for the presence of multicollinearity, we examined the VIFs (Variation inflation factors) and none of them are more than 2.5. These VIFs are well below the commonly accepted threshold of 10 (Neter et al., 1985). This suggests that multicollinearity was not a problem. We
therefore retain all variables.

Table 2 presents the results of the hierarchical regression analysis. Hypothesis 1a (1b, 1c) proposed there would be a positive (negative, curvilinear) relationship between information disclosure and the IPO performance.

Model 1 introduces the control variables and model 2 tests the linear relationship with the amount of underpricing. The coefficient of this variable is negative and marginally significant ($\beta = -0.16; p < 0.1$). Thus, it would appear that a higher level of information disclosure has a negative impact on underpricing. In model 3, we also tested the inverted-U shape relationship but found no significant results (although the sign was in the correct direction) ($\beta = -0.04$).

Model 4 and 5 examines offer price (percent premium) as a dependent variable. The coefficient for this variable is positive and marginally significant ($\beta = 0.16; p < 0.1$). Therefore, it would appear that higher levels of information disclosure have a positive impact on the percent premium. On the other hand, we found no statistically significant coefficient for the proposed curvilinear relationship ($\beta = -0.19$).

Finally, Model 6 and 7 explored the long-run performance of new ventures. The coefficient in model 6 is positive but statistically not significant. We also tested the inverted-U shape but the coefficient is not significant ($\beta = -0.12$). In order to avoid selection bias, we ran the analysis using different time intervals such as 1 year CAAR and 2 year CAAR but the results remain the same. To save space, we only report the results based on the three year CAAR.

**DISCUSSIONS AND IMPLICATIONS**

New ventures at the time of the IPO are plagued by uncertainty. In part to address this uncertainty, the SEC mandates that U.S. firms file detailed registration statements that include a variety of important information. To evaluate the consequences of this information disclosure, we proposed three competing hypotheses. Our results seemed to support the positive model of information disclosure in that increased information disclosure tends to leave “less money on the table” in the form of underpricing and therefore provides more money for the new venture.

More specifically, there might be at least two implications about the negative relationship between the level of information disclosure and underpricing. First, when richer information is disclosed this may help the underwriter to more accurately price the IPO shares resulting in less underpricing. Given the existence of ex-ante uncertainty at the time of IPO, greater information should lead to less speculation concerning the actual value of the stock and therefore lead to less underpricing (Rock, 1986). Second, the potential agency problem is also relevant to our results. As suggested by Jensen & Meckling (1976), agency costs and corporate governance problems may reduce the confidence of potential investors that their funds will not be expropriated or wasted on unattractive projects. As such, greater information disclosure can help reduce the cost of monitoring mangers’ use of corporate assets for self interested purposes (Mahoney, 1995; Leone et al., 2007) thereby positively impacting IPO performance.

Interestingly, the strategic management perspective (e.g. that greater information disclosure will negatively impact performance) did not explain our results. Furthermore, we found no evidence of an inverted-U shape in terms of the level of information disclosed and firm performance. It may be that managers may not be able to provide higher levels of information disclosure, or perhaps they do not know (or possess) the relevant information (Jung & Kwon,
1988; Leone, 2007).

We also examined the long-run impact of information disclosure on IPO performance. According to signaling theory, good firms want to signal their quality to investors. This means that investors may view increased disclosure at the time of IPO as a positive signal and predictive of better long-run performance. Given that many IPO firms encounter a correction period after their IPO and the initial abnormal returns tend to go back to normal (Aggarwal & Rivoli, 1990), it is reasonable to assume that high disclosure levels may result in a smaller subsequent correction and therefore better long-run performance. However, we found no significant results. It seems that there might be too much noise between the information disclosure at the time of IPO and long-run performance of the ventures. A refined longitudinal design is highly recommended for future research.

We believe that an opportunity exists to extend our study to a different IPO period. While we believe that our sample is large enough (given the power analysis) to detect a significant result, the time period we used (e.g. 2001-2003) was fairly slow in terms of overall IPO activity. As such, it would be interesting to identify whether this sample included much greater than average disclosure of information. In any event, our results would urge practitioners (e.g. managers of firms preparing to go through an IPO) to disclose greater amounts of information as this leads to less underpricing in general and higher valuation overall.

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NOTES

1. In 2007, the U.S. courts saw 166 securities class-action filings, up 43% from 2006, yet still below the 10-year average which is 194 (Brown, 2008).

2. To determine sufficient sample size, we ran a power analysis. We set our study to have a strong power level (larger than 0.8). Following Cohen (1988), we assume 1) the effect size is “medium” (0.2), and 2) α=0.05. This results in a suggested sample size of 95. Thus, we believe the sample size is large enough to detect our hypothesized relationships.

3. CRSP stands for Center for Research in Security Prices at the University of Chicago.

4. Following Leone et al. (2007), we use net proceeds to the issuing company, not to selling stockholders, after deducting underwriter commissions.

REFERENCES


Table 1: Descriptive Statistics and Correlations*

| Variables | Mean | S.D. | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   |
|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1.LENGTH  | 144.85 | 64.19 | 1.00 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 2.IND     | 52.80  | 21.11 | -0.14 | 1.00 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 3.DUAL    | 0.52   | 0.50  | -0.10 | 0.13 | 1.00 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 4.FNDR    | 0.35   | 0.48  | -0.18 | -0.02 | 0.12 | 1.00 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 5.AGE     | 2.38   | 1.10  | -0.07 | -0.03 | 0.04 | -0.12 | 1.00 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 6.EMP     | 6.66   | 1.87  | -0.04 | 0.23  | 0.00 | -0.26 | 0.21 | 1.00 |      |      |      |      |      |      |      |      |      |      |      |      |
| 7.ASSET   | 8.48   | 1.10  | 0.14  | -0.11 | -0.05 | -0.12 | 0.12 | 0.39 | 1.00 |      |      |      |      |      |      |      |      |      |      |      |
| 8.PAT     | 0.07   | 0.30  | -0.06 | -0.18 | -0.04 | -0.06 | 0.01 | -0.24 | 0.17 | 1.00 |      |      |      |      |      |      |      |      |      |      |
| 9.IRATIO  | 0.46   | 0.47  | 0.08  | 0.11  | 0.17 | 0.03  | -0.07 | 0.01 | 0.03 | -0.08 | 1.00 |      |      |      |      |      |      |      |      |      |
| 10.RF     | 3.37   | 0.27  | 0.32  | 0.04  | -0.10 | -0.17 | -0.12 | -0.16 | 0.04 | 0.02 | -0.03 | 1.00 |      |      |      |      |      |      |      |      |
| 11.VC     | 0.39   | 0.49  | 0.08  | -0.08 | 0.10 | 0.25  | -0.09 | 0.19 | -0.11 | 0.17 | 0.04 | -0.04 | 1.00 |      |      |      |      |      |      |      |
| 12.UNDER  | 8.25   | 1.22  | 0.11  | 0.05  | -0.07 | 0.30  | 0.11 | 0.40 | 0.31 | -0.02 | 0.08 | 0.06 | -0.16 | 1.00 |      |      |      |      |      |      |
| 13.INFO   | 0.00   | 1.00  | 0.03  | 0.00  | 0.09 | 0.16  | -0.17 | -0.12 | -0.28 | 0.04 | 0.02 | -0.04 | 0.05 | -0.18 | 1.00 |      |      |      |      |      |
| 14.INFOSQ | 0.99   | 2.52  | -0.08 | 0.03  | 0.00 | 0.11 | 0.05 | -0.02 | -0.17 | -0.04 | -0.06 | 0.14 | -0.05 | 0.21 | 0.70 | 1.00 |      |      |      |      |
| 15.UNDREP | 0.08   | 0.18  | -0.05 | 0.13 | 0.18 | 0.06  | 0.04 | 0.01 | -0.04 | 0.03 | 0.02 | -0.12 | 0.07 | -0.01 | 0.12 | 0.09 | 1.00 |      |      |      |
| 16.OFFER  | 2.98   | 60.04 | 0.00  | 0.04 | 0.14 | 0.13 | 0.01 | -0.08 | -0.09 | 0.02 | 0.00 | 0.03 | 0.09 | -0.11 | 0.17 | 0.05 | 0.04 | 1.00 |      |      |
| 17.CAR    | 0.32   | 0.92  | -0.11 | -0.15 | 0.07 | 0.11 | -0.02 | 0.03 | 0.02 | -0.09 | 0.09 | -0.06 | -0.07 | -0.08 | 0.05 | -0.03 | 0.08 | 0.06 | 1.00 |

*N = 162, Correlations of .015 or greater are significant at p < .05. Correlations greater than .021 are significant at p < .01.
Table 2: Results of OLS Regression

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<tr>
<th>Control variables</th>
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<th>Model 4 (Percent Premium 1)</th>
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† p < 0.10,  * p < 0.05,  ** p < 0.01,  *** p < 0.001