

Institutional Investor Portfolio Stability and Post-IPO Firm Survival: A Contingency Approach

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Abstract

This study examines the influence of institutional investor portfolio stability on the survival of 379 IPO firms that went public in 1997. I find a negative relationship between the amount of stable institutional investment in and newly public firms and post-IPO firm failure. Consistent with multiple agency theory I also find that outside director board control weakens the influence of stable institutional investment on post-IPO firm failure. These results provide support for multiple agency theory and highlight the importance of differences among and between principals and agents in the post-IPO setting.

Keywords: institutional investment, firm survival, initial public offerings

1. Introduction

A large body of research examines the role of institutional ownership in shaping organizational outcomes (Dalton, Hitt, Certo, & Dalton, 2007; Shleifer & Vishny, 1997; Short, 1994). A subset of these studies examine the influence of institutional ownership on the performance of established corporations (Daily, 1996; Dalton, Daily, Certo, & Roengpitya, 2003). These studies are commonly grounded in agency theory (Dalton et al., 2007), which posits that high levels of institutional investment discipline managers to act in the interests of shareholders rather than in their own (Jensen & Meckling, 1976). While a substantial body of research has focused on the influence of institutional investors to discipline managers the results of these studies have been mixed. Indeed, two meta-analyses, (Dalton et al., 2003; Sundaramurthy, Rhoades, & Rechner, 2005) found no statistically significant relationship between institutional ownership and firm performance.

I suggest that extant research has paid scant attention to the effects of institutional investor interest differences when examining linkages between institutional ownership and firm performance. Indeed a growing body of research suggests that institutional owners differ in their investment objectives and time horizons (Koh, 2007; Porter, 1992). Whereas traditional agency theory assumes that principals such as institutional investors are homogenous in their interests research drawing upon multiple agency theory logic suggests that principals vary in their interests and that these differences shape organizational actions (Connelly, Tihanyi, Certo, & Hitt, 2010; Tihanyi, Johnson, Hoskisson, & Hitt, 2003).

Multiple agency theory (Hoskisson, Hitt, Johnson, & Grossman, 2002), examines the agency problem of conflicts of interest between multiple principals and multiple agents. As such, multiple agency theory draws upon the principal-agent relationship of traditional agency theory (Jensen & Meckling, 1976), but accounts for the increasing complexity of principal-agent relationships in the corporate world (Child & Rodrigues, 2003). Multiple agency theory recognizes the potential for conflicting interests between and among different principals and agents as a result of differing investment time horizons (Arthurs, Hoskisson, Busenitz, & Johnson, 2008; Hoskisson et al., 2002).

This study addresses gaps in extant research by drawing on multiple agency theory to consider the influence of differences in institutional investor investment time horizon preferences on the survival of newly public firms. Specifically, this study develops theory and hypotheses which address the influence of stable institutional investment, defined as institutional investment which exhibits a long-term investment horizon manifest through low levels of portfolio churning, on the failure of newly public firms. In doing so, I propose that stable

institutional investors may possess greater motivation and ability to monitor management in the post-IPO context than short-term institutional investors. Moreover, I suggest that stable institutional investors may allow newly public firm executives to make the investments necessary to ensure post-IPO firm survival.

This study attempts to answer the question of, “Does the amount of IPO firm equity held by institutional investors with stable investment portfolios influence post-IPO firm survival?” As such, this study considers the role that post-IPO institutional investment time horizons play in influencing IPO firm adaptation to the rigors of public trading. In doing so this study contributes to multiple agency theory by demonstrating that some principals, in this case institutional investors with long-term investment horizons are better equipped to monitor newly public firms than those with shorter-term investment horizons in order to ensure IPO firm survival. Moreover, we contribute to multiple agency theory by considering the manner in which institutional investment portfolio stability interacts with other managerial monitoring mechanisms that may produce similar agency and time horizon benefits in order to test the theory developed in this study.

In the section that follows I develop theory and hypotheses which address the influence of this unique institutional investment characteristic in the post-IPO context. Next I discuss our sample and analytic procedures. I then proceed to discuss the results of our hypotheses tests and, discuss our findings and contributions. I conclude by discussing limitations of this study and opportunities for future research.

2. Theoretical Framework and Hypothesis

Newly public firms exhibit a higher rate of failure than their more seasoned counterparts. For example research by Fama and French (2004) shows the probability of survival for newly public firms is less than that of firms with greater experience on public equity exchanges. High rates of IPO firm failure negatively influence the wealth of investors and entrepreneurs. Accordingly, developing an understanding of factors that impact the failure rates of newly public firms represents a topic of interest to entrepreneurs, stockholders, and society in general.

Fischer and Pollock (2004) posit that the high failure rates typical of the IPO transition stem from the fact that newly public firms face a variety of challenges as they adapt to a new institutional environment. For instance, moving from the private to public arena may require a change of organizational goals and performance objectives. Indeed, public investors may be less tolerant of performance volatility and possess shorter time horizons than private investors (Price Waterhouse, 1995). This suggests that managers of newly public firms need to adapt to the objectives and challenges presented by public shareholders (Fischer & Pollock, 2004). Agency theory suggests that, newly public firms face greater potential for agency problems than pre-IPO firm because of the separation between ownership and control results from the issuance of additional equity share (Jensen & Meckling, 1976). As such, newly public firms must learn to cope with increased formal governance procedures and reporting requirements of the Securities and Exchange Commission (Husick & Arrington, 1998; Price Waterhouse, 1995).

A variety of factors have been linked to the high failure rates of newly public firms. For example, research suggests that firm size (Bhabra & Pettway, 2003; Hensler, Rutherford, & Springer, 1997), age (Hensler et al., 1997) and financial performance (Bhabra & Pettway, 2003; Platt, 1995) are negatively related to post-IPO firm failure. More recently research has shown that average management team tenure and IPO deal network embeddedness are also negatively related to post-IPO firm failure (Fischer & Pollock, 2004). The nature of equity ownership in IPO firms represents another stream in this line of research. Extant research in this area has generally focused on venture capital ownership. Studies in the area suggest that venture capital ownership enhances post-IPO firm survival chances by providing newly public firms with resources and monitoring (Jain & Kini, 2000). Moreover, research suggests that CEO and management ownership reduce the likelihood of post IPO firm failure by aligning the interests of management with the long term survival of the firm (Fischer & Pollock, 2004; Hensler et al., 1997).

Despite the wealth of research on post-IPO firm survival, a paucity of research exists that examines the influence of institutional ownership on post-IPO firm survival. This is surprising when considering that multiple studies have suggested that the characteristics of IPO investors are likely to play a key role in determining the actions of newly public firms (Fischer & Pollock, 2004; Higgins & Gulati, 2006). The addition of institutional investment to a firm's ownership group is likely to influence the objectives and operations of newly public firms. The transition from private to public markets, a.k.a. initial public offering (IPO), represents a significant developmental stage in the life of a firm (Daily, Certo, Dalton, & Roengpitya, 2003). Indeed, the IPO represents a point of transition from one institutional environment to another (Fischer & Pollock, 2004). This transformational event effectively resets that organizational clock (Fischer & Pollock, 2004), thereby creating a

context in which the actions of principals such as institutional investors, and agents such as IPO firm executives are highly likely to impact long term organization outcomes.

A primary challenge presented by the IPO transition for newly public firms is to learn how to keep institutional investors satisfied. Failure to keep such professional money managers satisfied is likely to result in some form of intervention on their part (Sanders & Carpenter, 2003). Indeed, failure to keep institutional investors satisfied can result in multiple actions being taken by institutional investors to discipline firm executives such as executive replacement (Boeker, 1992; Puffer & Weintrop, 1991) and reducing executive compensation (Rajagopalan & Finkelstein, 1992; Wiseman & Gomez-Mejia, 1998). Another action institutional investors can take to demonstrate their dissatisfaction is to 'vote with their feet' (Parrino, Sias, & Starks, 2003). In other words, institutional investors can sell their holdings, resulting in a decreased stock price. As stock price decreases from this selloff, the board of directors is increasingly likely to act to remove the executives (Fredrickson, Hambrick, & Baumrin, 1988) and firm executives are less likely to receive bonuses and be able to cash in stock options. As a consequence, IPO firm executives are likely to be keenly aware of the potential impacts institutional investor selloff of their firm's stock may have on their individual earnings and career prospects.

Prior studies suggest that this type of short-term investment behavior is particularly likely in the IPO context (Higgins & Gulati, 2006; Rock, 1986). However, while institutional investor stock sell off represents a possible action for institutional investors the tendency for individual institutional investors to engage in this behavior is likely to vary from one institutional investor to another (Bushee & Noe, 2000; Tihanyi et al., 2003). Indeed, prior research demonstrates that institutional investors vary substantially in the degree to which they churn their portfolio of investments (Bushee, 1998). In the section that follows I develop hypotheses regarding the survival benefits of having institutional investors that exhibit stability in their investment portfolio for newly public firms. For the purposes of this study, institutional investor stability represents the extent to which an institutional investor does not turn over, or churn its portfolio of investments.

2.1 Institutional Investor Stability

As noted previously, one source of the challenges facing newly public firms stems from the increased potential for agency problems arise (Certo, Daily, Cannella, & Dalton, 2003). The notion that the potential for agency problems to arise as firms transition from being privately held to publicly traded is reflected in the myriad of structural and reporting requirements IPO firms must comply with before making their equity offerings. For example, IPOs require firms to issue additional shares of their equity, which may result in increased ownership dispersion. This is due in large part to the fact that entrepreneurs often undertake IPOs in order to liquidate their shares (Brau & Fawcett, 2006), which increases the separation between ownership and control. Agency theory suggests that as the separation between ownership and management becomes more extensive, the interests of manager and stockholders are more likely to diverge (Eisenhardt, 1989; Fama & Jensen, 1983b). Indeed, the SEC reporting and disclosure requirements necessary for public listing are intended to reduce the occurrence and severity of agency problems.

A traditional agency theory perspective suggests that the presence of institutional investors should serve to alleviate this problem (David, Hitt, & Gimeno, 2001). Indeed, research conducted on institutional ownership within larger corporations often ascribes to the notion that institutional investment will discipline managers to focus on the long-term strategic objectives of the organization (Useem, 1996). Yet, recent research which draws upon multiple agency theory logic suggests that not all institutional investors exhibit the same investment objectives, particularly with regard to their investment time horizons (Connelly et al., 2010; Hoskisson et al., 2002). Multiple agency theory suggests that the principals and agents of the traditional agency theory vary in their interests and that these differences in interests shape the decisions they make (Hoskisson et al., 2002). Consistent with this view, research demonstrates that the differences in institutional investor, managerial, and director time horizons influence firm strategic decisions (Arthurs et al., 2008; Connelly et al., 2010; Hoskisson et al., 2002).

Drawing upon multiple agency theory logic we suggest that the amount of stable institutional investment in a newly public firm enhances the survival prospects of newly public firms through their monitoring of firm management. Stable institutional investors are likely to possess greater ability and motivation to monitor management given the long-term nature of their investment time horizon. This is due to the fact that they may capture the value created by long-term firm investment decisions (David et al., 2001). Moreover, institutional investor stability may reduce the pressure IPO firm executives feel from the threat of institutional investor stock selloff. As a result, IPO firm executive may be able to dedicate more cognitive resources strategic and operational decision making, as well as to facilitating the organizational changes required by the IPO transition.

As a result, executives of firms with stable institutional investment may be more comprehensive in the decisions they make. Conversely, the lower the stability of institutional investors investing in a newly public firm, the higher the pressure felt by top management to focus on short-term earnings management. The greater the pressure felt by top managers, the more likely they will be to take mental shortcuts and engage in limited search to arrive at their strategic and operational choices, thereby reducing the effectiveness of their decisions. Accordingly, we argue that stable institutional investors' tendency to own a firm's stock for a long period of time will encourage and enable managerial resources to focus on strategic and operational issues instead of pressuring them to focus on managing investor and analyst concerns regarding short-term performance fluctuations (Bushee, 1998; Fischer & Pollock, 2004; Higgins & Gulati, 2006).

The monitoring benefits of stable institutional investment is likely to be particularly valuable in the context of IPO firms, where institutional investors often depend on short-term arbitrage opportunities for their portfolio gains (Aggarwal, 2003). Such pressure from typical IPO institutional investors is likely to pressure newly public firm executives to emphasize short-term financial gains. In contrast, stable institutional investment may serve to buffer newly public firms from short-term pressures typical of the IPO context as a result of stable institutional investor willingness to tolerate short-term performance disappointments. As a result, newly public firm executives with stable institutional investment will likely be better able to focus on the long-term operations and strategy of the firm that are necessary to ensure firm survival. Thus, I hypothesize the following:

Hypothesis 1: The amount of IPO firm equity held by stable institutional owners is negatively related to the likelihood of newly public firm failure.

2.2 Institutional Investment Portfolio Stability and Outside Director Control: A Contingency Approach

Drawing upon multiple agency theory I suggest that newly public firms with high amounts of stable institutional investment experience a lower likelihood of post-IPO failure. I have highlighted the agency and time horizon benefits as the mechanism through which stable institutional investment creates the hypothesized survival effect. However, alternative mechanisms might create similar hypothesized survival effects. For example, it is possible that stable institutional investors may focus their portfolios on specific types of investments that meet their investment objective. As such, it is possible that institutional investment portfolio stability may represent an outgrowth of such objectives and thus reflect the type of firms that stable institutional investors are investing in, rather than the monitoring mechanisms I discussed in developing Hypothesis 1.

My view is that the agency and time horizon benefits that I have articulated, as well as the investment objectives of institutional investors likely operate jointly to influence the likelihood of post-IPO firm failure. Accordingly, my intent is not to challenge the idea that institutional investor portfolio stability may reflect the chosen investment strategies and risk tolerances of institutional investors. Rather, I wish to demonstrate that this institutional investment characteristic also influences the likelihood of post-IPO firm failure through its role in monitoring managers to focus on the long term objectives of the organization. In order to determine whether stable institutional investment in fact impacts post-IPO firm failure by encouraging managers to focus on long-term objectives rather than managing short-term earnings, we investigate how the amount of stable institutional investment interacts with other governance mechanisms that may also discipline newly public firm executives to possess long term time horizon.

Traditional formulations of agency theory suggest that outside director control of the board of directors remedies the agency problem (Fama & Jensen, 1983a). Research on corporate board structure utilizing traditional agency theory suggests that board independence from management facilitates board monitoring (Daily, Dalton, & Cannella, 2003). Implicit in such studies is the assumption that outside directors possess a more long-term orientation than inside directors. Research utilizing multiple agency theory challenges this assumption in several ways. For example, some research suggests that outside directors tend to over rely upon short-term financial information because they often lack knowledge of the firm and industry (Lorsch & MacIver, 1989). Such reliance focuses outside directors on short-term investments.

In contrast, inside directors often possess a greater understanding of their firm and industry allowing them to make higher quality long-term decisions (Zahra, 1996). Moreover inside directors, as employees of their newly public firms, will be impacted by the survival or failure of their firm whereas outside directors do not (Arthurs et al., 2008). Consistent with this view, research has found that inside directors emphasize long-term strategic decisions in the IPO context (Hoskisson et al., 2002).

Drawing upon this logic I posit that outside director control of the board will encourage a short-term focus among newly public firms. As such outside director interests are likely to conflict with those of stable institutional investors. This view is consistent with recent research which suggests that given their ties to their

respective firms, inside directors act to reduce underpricing in IPO firms, whereas a greater proportion of outsiders increases it (Arthurs et al., 2008). Accordingly, we suggest that outside director control of the board will serve to reduce the effects of stable institutional investment on IPO firm survival by encouraging a focus on short-term financial results rather than long-term strategic and operational issues. Accordingly, I hypothesize the following:

Hypothesis 2: Outside director control of the board reduces the negative relationship between the amount of IPO firm equity held by stable institutional owners and the likelihood of newly public firm failure.

3. Methods

3.1 Data and Sample

The theory and hypotheses in this study were tested on a sample of firms that went public during the calendar year of 1997. This sample was selected largely because the theoretical arguments developed in this study focus on the challenges faced by newly public firms. Selecting IPO firms from 1997 allowed each IPO firm to be tracked for several years following its IPO to develop measures of post-IPO firm survival and also allow for the control of temporal IPO market fluctuations.

The sample for this study was drawn from the *Securities Data Corporation (SDC) Global New Issues* database provides information on. Based upon this initial sample, IPO prospectuses were identified from *EDGAR* resulting in 379 firms. Each of these 379 firms issued stock to public markets (i.e. NASDAQ, NYSE, AMEX) for the first time. Additionally, each firm was headquartered in the United States at the time of its IPO. Meeting this criterion controls for potential cultural differences that are beyond the scope of this study. In line with prior research on IPOs (Ritter, 1991), each firm must not have been classified as a corporate spin-off, unit issue, mutual to stock conversion, real estate investment trust or leveraged buy-out. The sample data analyzed in this study consisted of data collected from the calendar period of 1998-2001.

4. Measures

4.1 Dependent Variable

Data on firm failure was gathered from the *Center for Research on Securities Pricing (CRSP)* data base. *CRSP* records a delisting code for firms who de-list from a stock exchange. Because firms may de-list from a stock exchange for a variety of reasons (merger, acquisition, etc) that do not correspond to firm failure, prior research has utilized delisting codes ranging from 500 to 585. These codes indicate a firm's inability to meet the requirements for listing on an exchange as a measure of firm failure (Fischer & Pollock, 2004). Based upon this same range of *CRSP* delisting codes we coded firm survival (0) or firm failure (1) for each of the years in the study period. As was appropriate for our statistical analytic technique, and consistent with prior studies examining IPO firm failure (Fischer & Pollock, 2004), a firm was dropped from the sample after delisting, and the remaining firms were right-censored.

4.2 Independent Variables

The data used to create this measure were drawn from the *CDA/Spectrum Institutional Ownership Database (CDA)* from Thomson Financial Publishing accessible through *Wharton Research Data Systems*. CDA collects ownership information on all institutions required to file an SEC form 13-f. As Higgins and Gulati (2006:9) note, "The Spectrum database 'reverse'-compiles this information so that information may be obtained for companies invested in, rather than the company doing the investing".

In order to capture the stability of the institutional investment in each of our sample IPO firms I first identified each of the individual institutional investors that owned equity in at least one of our sample firms. Next, I created a measure of portfolio stability to address the variability of each of the identified institutional investor's portfolio holdings that we adapted from Bushee (1998). The formula to calculate this measure can be expressed as follows:

$$PS_i = (\sum W_k - \sum \Delta W_k) / \sum W_k$$

where,

W_k is the two year total of the quarterly portfolio weights (shares held times stock price at quarter's end) in firm k reported at the end of each quarter;

ΔW_k is the two year total of the absolute value of quarterly portfolio weight changes in firm k reported at the end of each quarter;

Portfolio stability (PS_i) thus represents the percentage of an institutional investor's equity portfolio that does not

change during the prior two years.

I then used the portfolio stability (PS_i) measure of individual institutional investors discussed above to capture the degree of stability of each IPO firm's institutional investment. First, for each sample firm we created a sum of weighted average of institutional investor portfolio stabilities (APS_k). I assigned the weights for these averages based upon the percentage of IPO firm institutional investment owned by each individual institutional investor. The formula to calculate this variable can be expressed as follows:

$$APS_k = \sum [PS_{ik} * (I_{ik}/I_k)]$$

where,

PS_{ik} represents the portfolio stability of firm k 's i^{th} institutional investor;

I_{ik} represents the number of shares in firm k owned by institutional investor at the year's end;

I_k represents the total shares of firm k 's stock owned by institutional investors at the calendar year's end.

To create the final measure of the amount of stable institutional investment in each IPO firm used in testing our hypotheses ($IIPS_k$), I weighted the average level of institutional investor portfolio stabilities (APS_k) by the total percentage of IPO firm equity owned by institutional investors. The mathematical formula to express this can be represented as follows:

$$IIPS_k = APS_k * (I_k / S_k)$$

where,

I_k represents that total shares of firm k 's stock owned by institutional investors at the year's end;

S_k represents the number of shares of firm k 's common stock outstanding at the year's end.

This final measure of the nature of institutional investment, i.e. *institutional investment portfolio stability* ($IIPS_k$) was added to one, logged (natural logarithm), and updated annually. Additionally, this variable was lagged on year in accordance with the temporal ordering of our hypotheses.

4.3 Outside Director Control

Drawing upon the corporate governance literature, I created two commonly utilized proxies for managerial monitoring (Dalton, Daily, Ellstrand, & Johnson, 1998) the percentage of outside directors represented on the board of directors, and the separation of the titles of CEO and Chairperson of the board of directors. The separation of the title of CEO from the chairperson of the board, and outside director representation represent two common board structural elements that foster board independence from management (Johnson, Dailey, & Ellstrand, 1996). Recent research suggests that such structural elements of the board of directors play a key role in shaping managerial and board attention (Tuggle, Sirmon, Reutzel, & Bierman, 2010). Descriptions of these two variables follow. I utilized a common measure of outside director independence from management, the percentage of members of the board of directors who are not employed by focal firm or the *percentage of outside directors*. I also examined the separation of the titles of CEO and chairperson of the board was measured by creating a dichotomous variable, *CEO-chairperson separation*. This variable was coded (1) if the CEO and chairperson titles were not held by the same individual, and coded (0) if the same individual held both titles.

4.4 Control Variables

Prior research suggests that the influence of organizational change is time-dependent (Amburgey, Kelly, & Barnett, 1993; Fischer & Pollock, 2004). Accordingly, I control for the number of years that passed since the time of each sample firm's IPO. Multiple studies suggest that venture capital may influence IPO related outcomes (Braun, Brown, & Osteryoung, 2004; Daily, Certo, & Dalton, 2005; Higgins & Gulati, 2003; Jain & Kini, 2000). As such, I also control for *venture capital* (VC) backing by creating a dichotomous variable indicating whether (1) or not (0) a firm is venture backed at the time of its IPO.

I also controlled for aspects of IPO performance. I did this first by controlling for *IPO proceeds*, which represent the financial resources garnered as a result of the IPO. Prior research suggest firms with greater IPO proceeds may be more capable of funding firm growth and expansion (Fischer & Pollock, 2004; Jain & Kini, 2000). I calculated this variable by taking the natural logarithm of the product of the total number of shares offered and the share price at the end of the first day of trading. I also controlled for IPO underpricing. IPO underpricing represents both money left on the table for the IPO firm and a means to achieve organizational legitimacy (Daily, Certo et al., 2003; Pollock, Gulati, & Sadler, 2002). I measure *IPO underpricing* by taking the natural log of one plus the percentage change in stock price between the initial price set for the stock and the closing price of the stock on the first day of trading (Pollock et al., 2002).

Newly public firms face a liability of market newness (Certo, 2003). Given their entrepreneurial nature, IPO firms often also experience a liability of newness referred to by institutional theorists (Freeman, Carroll, & Hannan, 1983; Singh, Tucker, & House, 1986). As such, I control for *firm age*. To measure firm age I calculated the natural logarithm of one plus the firm's age at the time of its IPO. Institutional theory also suggests that small firms may suffer from a the liability of smallness (Baum & Oliver, 1991; Freeman et al., 1983). Accordingly, I controlled for *firm size* by calculating the natural log of one plus firm revenues. This variable was lagged one year, logged to correct for skewness (natural log of 1+firm revenues), and updated annually.

Underwriters may play a key role in certifying IPO firms to public markets (Carter, Dark, & Singh, 1998; Carter & Manaster, 1990). In order to control for *underwriter prestige* I utilized the often relied upon Carter-Manaster measure of underwriter prestige (Ritter & Welch, 2002). To correct for skewness, I took the natural logarithm of this variable.

Firms in high technology industries may experience greater growth as well as higher failure rates than those in low technology industries. Accordingly, I controlled for firm industry with a dummy variable indicating whether a firm was classified as participating in a *high technology* industry or not (Certo, Covin, Daily, & Dalton, 2001; Fischer & Pollock, 2004).

I also control for firm profitability. This measure was created by calculating 100 times firm return on assets (*ROA*). I drew the data on firm income and assets necessary to create this variable from *Compustat*. This variable was updated annually, logged (Note 1), and lagged one year. Finally, I control for average TMT tenure by taking the natural log of 1 plus the average of executive tenures with an IPO firm as reported in the IPO prospectus. Firms possessing TMTs with substantial experience working together may be better able to coordinate and implement firm growth initiatives (Eisenhardt & Schoonhoven, 1990; Kor & Mahoney, 2000; Penrose, 1959).

4.5 Method of Analysis

To test the hypotheses regarding post-IPO firm failure I utilized Cox proportional hazard analysis (Allison, 1984; Yamaguchi, 1991). Event history analysis, or Hazard analysis is concerned with the patterns and correlates of event occurrence (Yamaguchi, 1991). Hazard analysis is particularly well suited to analyze longitudinal data where the outcome of interests represents a discrete event, and the timing of that event's occurrence is of central interest (Allison, 1984; Yamaguchi, 1991). A Cox proportional hazard model was selected over other forms of hazard analysis for multiple reasons. First, I chose a Cox model because the interval between the IPO date and the end of the first fiscal year are not equal across sample firms, which unlike other forms of hazard analysis, relaxes this assumption. Second, proportional hazards models do not require researchers to specify the how time influences the outcome of interest. Third, Yamaguchi (1991) notes that proportional hazards model represents a popular approach in terms of analyzing the timing of event occurrence.

5. Results

Table 1 displays the variable descriptive statistics and a correlation matrix of the variables used in this study. The final sample consisted of 379 firms, 71 of which were counted as failures during the study window. Consistent with prior studies of post IPO firm failure, instances of firm delisting because of merger or acquisition were included in the sample up to the point that they were acquired, and censored thereafter (Fischer & Pollock, 2004).

Table 1. Means, standard deviations, and correlations

#	Variable	Mean	s. d.	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Failure	0.054	0.227													
2	Years since IPO	2.340	1.092	0.161												
3	VC backing	0.334	0.472	-0.005	0.009											
4	IPO Proceeds	17.526	0.974	-0.099	0.017	-0.137										
5	Underpricing	0.106	0.385	0.012	-0.004	-0.046	0.397									
6	Firm age	2.374	0.881	-0.038	0.161	-0.159	0.128	-0.088								
7	Firm size	4.320	1.650	-0.047	0.143	-0.217	0.571	-0.013	0.342							
8	Underwriter Reputation	1.916	0.414	-0.178	0.036	0.138	0.552	0.032	0.127	0.429						
9	Hi-Tech Industry	0.452	0.498	-0.014	0.015	0.217	-0.028	0.098	-0.139	-0.081	-0.046					
10	ROA	6.025	0.207	-0.155	-0.106	-0.162	0.109	0.005	0.071	0.191	0.074	-0.058				
11	Avg. TMT Tenure	1.562	0.723	-0.117	0.027	-0.157	0.040	-0.053	0.581	0.182	0.052	-0.114	0.107			
12	Percentage Outsiders	0.622	0.209	-0.025	-0.006	0.279	0.002	-0.002	-0.065	-0.089	0.118	0.081	-0.070	-0.165		
13	CEO-Chair Separation	0.462	0.499	-0.046	0.016	0.144	-0.075	-0.074	-0.038	-0.096	0.075	0.170	-0.055	-0.085	0.237	
14	Inst. Inv. Port. Stab.	0.182	0.123	-0.132	0.105	0.068	0.464	0.083	0.163	0.407	0.358	-0.021	0.082	0.078	0.084	0.012

* All correlations greater than |.052| are statistically significant at $p < .05$

Table 2. Cox regression coefficient estimates of IPO firm failure

Variable	Model 1	Model 2	Model 3
Years since IPO	0.534 ***	0.517 ***	0.513 ***
VC backing	0.297	0.374	0.438
IPO Proceeds	-0.153	0.011	0.013
Underpricing	1.433	1.467	1.480
Firm age	0.148	0.139	0.180
Firm size	0.031	0.139 †	0.140 †
Underwriter Reputation	-1.315 ***	-1.258 ***	-1.245 ***
Hi-Tech Industry	-0.413	-0.470 †	-0.477 †
ROA	-0.456 *	-0.636 ***	-0.621 ***
Avg. TMT Tenure	-0.763 ***	-0.748 ***	-0.821 ***
Percentage Outsiders	-0.640	-0.464	0.565
CEO-Chair Separation	-0.383	-0.416	-0.242
Institutional Investment Portfolio Stability		-5.536 **	-5.342 **
IIPS*Percentage Outsiders			14.758 **
IIPS*CEO-Chair Separation			-1.350
<i>n</i>	1304	1304	1304
# IPO Firm Failures	71	71	71
Wald chi-square	154.69	158.73	163.99
Chi-square p-value	0.000	0.000	0.000

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 2 presents the results of the Cox regression analyses. Model 1 displays the results of the control variables. The effect of years since the IPO ($p < .001$) is positively related to firm failure. Contrastingly, underwriter reputation ($p < .001$), profitability ($p < .05$), and average TMT tenure ($p < .001$) are negatively related to post-IPO

firm failure. Model 2 displays the results corresponding to the test of Hypothesis 1 (H1). In support of H1 I found a negative relationship between *institutional investment portfolio stability* and firm failure ($p < .01$).

Model 3, presents the results of our test for interactions between *institutional investor portfolio stability* and proxies for outside director control. In order to conduct a test of hypothesis 2, I utilized the approach for testing interactions outlined by Cleves, Goulds, and Gutierrez (2004) that relies upon the interpretation of the sign of the cox regression coefficients. The coefficient of the interaction term between *institutional investor portfolio stability* and *CEO-chair separation* in model 3 is not statistically significant. However, consistent with the weakening effect of percentage outside directors on the relationship between stable institutional investment and post-IPO firm failure the interaction coefficient of *institutional investment stability and percentage outside directors* is positive and statistically significant ($p < .01$). This suggests that as *percentage outside directors* increases, the effect of *institutional investment stability* on firm failure is reduced.

6. Discussion

This study extends extant research in the areas of institutional investment and IPOs by examining the influence of the portfolio stability of institutional investors in newly public firms on their post-IPO survival. I suggest that extant research examining the influence of institutional investment on firm performance has overlooked two theoretically important issues. First, I argue that the effects of institutional investment on firm performance may be masked in larger established firms given their inertia and bureaucracy. I am unaware of any studies that consider the influence of institutional investment on post-IPO firm survival. Rather, extant studies on the influence of institutional investment on organizational performance have largely examined the influence of institutional investment in large, well established organizations and fail to find a consistent relationship. In order to address this empirical gap we examined the effects of institutional ownership in the post-IPO context. Second, I posit that differences in the temporal interests of institutional investors shape their effectiveness in monitoring management. In order to examine these issues this study focused on examining the role that the institutional investment portfolio stability plays in facilitating IPO firm adaptation to the rigors of public trading.

6.1 Theoretical Implications

The findings of this study have important theoretical implications for understanding the performance of newly public firms and the effects of institutional ownership. The results of this study generally support our thesis regarding the benefits of stable institutional investor monitoring with regard to the survival prospects of newly public firms. Specifically, I explore how differences in institutional investment portfolio stability enhance the ability of newly public firms to adapt to the rigors of public trading. I argued and found support for the claim that the amount of stable institutional investment in a firm contributes to managerial monitoring, thereby reducing the likelihood of post-IPO firm failure.

This study also contributes to the growing body of research on multiple agency theory. The results of this study provide support for multiple agency theory propositions regarding the importance of taking into account principal difference in terms of interests with regard to investment time-horizons when considering the influence of principals and agents on organizational outcomes. The partial support for our proposition regarding outside director board control further supports multiple agency theory by challenging the agency theory assumption that outside directors possess a more long-term orientation than inside directors. Combined, these findings contribute to a growing body of research that highlights the importance of taking into account the heterogeneity of institutional owner interests when examining organizational outcomes (Bushee, 1998; Connelly et al., 2010) and extends this body of research by demonstrating how they influence a key firm performance outcome, firm survival.

6.2 Managerial Implications

Gaining the support of entities that ensure a firm's survival represents one of top management's most important jobs (Pfeffer & Salancik, 1978). The findings of this study possess significant implications for the managers of IPO firms regarding this important role. Specifically, the results of this study demonstrate that the support of institutional investors with stable investment portfolios enhances the survival of newly public firms. As a result, entrepreneurs, underwriters, and venture capitalists may want to carefully consider the nature of the institutional investors they target with their offerings.

Moreover, this study provides implications for board staffing during the IPO transition. Consistent with prior studies (Arthurs et al., 2008), our findings suggest that the benefits of board independence may be offset by reducing newly public firm performance. Specifically, our results suggest that the survival benefits provided by stable institutional investment may be offset by poor choices regarding the proportion of outside directors to

inside directors on post-IPO boards.

6.3 Limitations

The examination of IPO firms provides several advantages for researchers. Perhaps the most important advantage for organizational scholars is the ability to track these firms over their entire lives as publicly-traded entities. However, as IPO firms are generally considered to be successful entrepreneurial organizations, we suggest caution in generalizing these findings to other types of entrepreneurial firms. Moreover, researchers should also be cautious of extrapolating these results to more seasoned publicly-traded firms, or to firms that underwent their IPOs under different market conditions.

The design and analytic tools used in this study do not preclude the possibility of alternative mechanisms being responsible for the relationships observed in this study. Specifically, it is possible that the pattern of relationships between institutional investment stability and firm failure is an outgrowth of the investment strategies and objectives implemented by the institutional investor and as such represents a bi-product of the institutional investor's risk/reward profile. In an attempt to address this issue, where possible I collected longitudinal data, and lagged them one year. I also controlled for a variety of factors which extant research suggests may influence the outcomes of interest in this study. Moreover, I utilized contingency logic to demonstrate that managerial monitoring was at least one mechanism influencing post-IPO failure by developing and testing hypotheses regarding the moderating influence of institutional investor portfolio stability on the effects of other sources monitoring on post-IPO failure. While I cannot completely rule out alternative explanations, the pattern of contingency effects found in this study lends partial support to my theoretical arguments.

6.4 Future Research

A potential extension to this work could involve determining the influence of institutional investor portfolio behaviors on other types of firms and on other forms of firm performance. Examining these issues in more detail might allow us to better understand the relationship between institutional investment portfolio stability and firm performance. Finally, future research may consider the impact of institutional investor portfolio behaviors on the effectiveness of strategic actions such as merger, acquisitions, and strategic alliances. For instance, future research might examine how institutional investment portfolio stability influences the benefits of mergers, acquisitions, geographic diversification, or product diversification, etc. Research in this area would increase our understanding of how institutional ownership shapes the success of organizational strategic actions.

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Note

Note 1. Because the range of this variable extended into negative numbers I took the natural logarithm of 1 plus the absolute value of the sample minimum ROA value added to firm ROA.