AGENCY THEORY, POTENTIAL FOR OPERATIONAL ENGINEERING AND BUYOUT ACTIVITY

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ABSTRACT

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(Under the direction of Professor Richard Bettis)

This corporate governance study investigates the relationships among agency theory, potential for operational engineering and firm underperformance. The empirical setting is a set of PE (private equity) buyouts in the US from 1998 to 2007, building on earlier research on LBOs (leveraged buyouts). I employ direct measures of agency costs to test Jensen's (1986) free cash flows proposition as well as a new proposition by Kaplan (2007), according to whom potential for operational engineering is a predictor of buyout activity in addition to agency conditions. I control for competing risks with a Cox proportional hazards model. My evidence fails to lend strong support for either proposition as an antecedent of buyout activity (direct effects). Finally, I find that, in the context of high asset inefficiencies (high potential for operational engineering) and high board independence, the probability of buyout activity is decreased.

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DEDICATION

To my beloved wife, Jasmine H. Bush.

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ABBREVIATIONS

CapEx	Capital Expenditures
FCF	Free cash flow
LBO	Leveraged buyout
MBO	Management buyout
PE	Private equity
POE	Potential for operational engineering

CHAPTER 1
INTRODUCTION

Firm performance is the central focus of strategic management research (Schendel and Hofer, 1979). The broad question of why firms underperform has been examined in strategic management from several theoretical perspectives, including agency theory (Jensen and Meckling, 1976). According to agency theorists, firms underperform due to the separation of ownership and control and the resulting misalignment of interests between shareholders (principals) and management (agents). To resolve this problem, agency theorists prescribe the redesign of managerial incentives in the form of pay-for-performance compensation that induces managers to focus on shareholder value, and a more concentrated ownership structure as fewer active shareholders with higher equity stakes are more apt to effectively monitor management and curb opportunism (Jensen and Meckling, 1976; Eisenhardt, 1989). Following redesigned managerial incentives and closer board monitoring, the firm is expected to perform to optimal. Kaplan (2007) refers to these agency-related remedies as *governance engineering*.

However, governance engineering may not always fully solve the problem of underperformance for at least two reasons (e.g., Hendry, 2002). The first reason is associated with the specification of objectives, known as multitasking (Holmstrom and Milgrom, 1991). When a principal's goals are complex and multidimensional and

therefore difficult to capture in an outcome-based contract, attempts to specify outcomes may be dysfunctional, as agents will perform to the specific terms linked to incentives, rather than in the more general interests of their principals. The second reason is honest incompetence (Hendry, 2002) by the firm's management team. In agency theory, managers are assumed to be competent and always able to achieve desired outcomes provided incentives are in place.

Yet, in empirical research, the competence of individuals is not guaranteed given bounded rationality (Simon, 1957) and limitations of rational understanding and communication arising from language, culture, and cognition (e.g., Simon, 1991). In situations in which agents are called upon to exercise judgment, or in which the achievement of goals depends on cooperative efforts involving other people, outcomes are not guaranteed regardless of the effort applied (Nilikant and Rao, 1994). The issues of honest incompetence and multitasking may be reduced via advice in the form of mentoring and guidance (Hendry, 2002). Principals may dedicate effort not to monitor for opportunism, but to help agents develop their technical competence via the transfer of skills or to improve the agents' understanding of goals beyond those specified contractually – including circumstances, values, and the broader priorities of principals. Relatedly, the offering of advice to management has been often reported as one of the key duties of boards of directors (e.g., Mace, 1971; Carter and Lorsch, 2004).

An underlying assumption of such an advisory role is that principals must have industry-specific knowledge, operating expertise or expert networks deep enough to be considered areas of valuable advice to agents. Such valuable knowledge possessed by

principals may manifest themselves in the capacity for *operational engineering* (Kaplan, 2007). Potential for operational engineering (POE) refers to the degree to which a firm's operational inefficiency is higher than the competition's, and therefore could be improved. The implication is that principals must know how to identify and act upon potential for operational engineering in order to be capable of providing valuable advice to agents. If this line of reasoning is correct, then firms in which principals and agents implement governance engineering (via redesigned incentives and closer monitoring) and operational engineering (enabled by the advisory role of capable principals) at the same time should be least likely to underperform.

It is noteworthy that operational engineering and governance engineering embody overlapping yet different concepts. They overlap as their absence may lead to similar consequences (underperformance), yet they differ as not all firms with high potential for operational engineering suffer from high agency costs. As an example, there is no separation of ownership and control in a founder-owned and managed firm, yet this firm may underperform even in the presence of profit-maximizing goals as a consequence of honest managerial incompetence.

The empirical setting chosen to examine governance engineering and operational engineering is buyouts. Buyouts constitute an ideal setting where governance engineering is always present, and yet the presence of operational engineering has been disputed as will be explained in detail below. Buyouts are defined as going-private transactions, in which a financial acquirer (or a group of investors led by a financial acquirer) in the form of a private equity partnership purchases the

controlling equity stake in a publicly-traded target, usually with debt financing. This transaction results in the formation of a new privately-held firm with a typically high debt-to-equity ratio, and whose equity is closely held by a small group of large outside investors (including the lead financial acquirer) and a group of managers with high-powered incentives. Thus, buyouts represent a clear-cut example of governance engineering (Kaplan, 2007). Further, the extent to which operational engineering opportunities may be found in buyouts has been the subject of debate (e.g., Rappaport, 1990; Fox and Marcus, 1992). Previously, buyouts were referred to as LBOs (leveraged buyouts) and were considered one of the most controversial features of the US takeover boom of the 1980s (Wiersema and Liebeskind, 1995). By the 2000s, buyouts were referred to as PE (private equity) buyouts.

Buyouts were the focus of a series of empirical studies on the 1980s' LBO wave in the US (e.g., Kaplan, 1989; Singh, 1990; Liebeskind, Wiersema and Hansen, 1992; Long and Ravenscraft, 1993a, 1993b; Phan and Hill, 1995; Wieserma and Liebeskind, 1995). Building on this rich research stream, scholars have started to examine the more recent buyout wave that gained momentum in the 2000s. Kaplan (2007) argues that one of the key differences between 1980s' LBOs and recent PE buyouts is that LBOs is aimed to focus solely on governance engineering, whereas PE buyouts are about operational engineering in addition to governance engineering. An implication of this argument is that, whereas agency proxies were found to be key drivers of buyout activity in the 1980s (Singh, 1990; Opler and Titman, 1993), an additional predictor in the form of potential for operational engineering must be considered in the examination

of the antecedents of recent buyouts. At the heart of this argument are the dramatic changes in US corporate governance since the 1980s, as explained in detail below.

In this study, I examine the interplay between governance engineering and operational engineering in the context of buyouts. In doing so, I aim to address two questions associated with the antecedents of buyout activity. First, whereas the agency costs of free cash flows (Jensen, 1986) have been proposed as one of the key drivers of buyout activity, prior work (e.g., Singh, 1990; Opler and Titman, 1993) has relied on proxies rather than direct measures of agency costs which gauge a firm's potential for governance engineering. In this study, I offer a more direct test of this agency-related argument by using measures such as board independence, CEO duality and insider equity ownership to predict buyout activity. The second question I aim to address with this study centers on Kaplan's (2007) proposition on operational engineering, which has yet to be empirically tested. I thus examine the antecedents of PE buyouts, testing Kaplan's (2007) proposition while controlling for governance-related antecedents.

The remainder of this paper is organized as follows. First, I start with a brief review of the background theory, including corporate governance, agency theory, the role of buyouts, and the concept of potential for operational engineering (POE). Next, I develop a set of hypotheses in the context of extant literature. I then offer a methods section that includes a description of my sample, the statistical technique employed, variables and measurements. Next, I present results of my empirical analysis, including descriptive statistics, results from the event history analysis, and several robustness

checks. Finally, I conclude with a discussion section which includes contributions, implications for theory and practice, limitations and future research directions.

CHAPTER 2

BACKGROUND THEORY

Given this paper's goal to investigate the relationships among corporate governance, potential for operational engineering and firm underperformance in the empirical setting of buyouts, I start with a brief review of the corporate governance literature (in which agency theory is the dominant paradigm) to summarize the governance engineering argument. I then extent this rich research stream to explain how the argument for operational engineering may complement governance engineering to explain firm underperformance in general, and in the context of buyouts in specific.

2.1. Governance Engineering

The argument for governance engineering can be traced back to Berle and Means (1932), who identified problems arising from the separation of ownership and control in large, listed (publicly-traded) firms and argued that management ownership in such firms is too small to make managers interested in profit maximization. This is the incentive-intensity argument also explored by Baumol (1959), Marris (1964) and Williamson (1964), according to whom managers have a natural incentive to increase firm size rather than to focus on profitability. Jensen and Meckling (1976) and Fama and Jensen (1983) developed this argument further into a complete theory which became the subject of extensive empirical examination. Agency theory has then

become the predominant theoretical paradigm in corporate governance research (e.g., Daily, Dalton and Cannella, 2003).

2.1.1. Corporate Governance and Agency Theory

According to agency theorists (e.g., Jensen and Meckling, 1976), the separation of ownership and control in the modern corporation evidences two distinct entities with different interests and risk profiles: management (agents) and shareholders (principals). While shareholders may diversify risks by investing in multiple firms, management is tied to a single organization by virtue of their position (Fama, 1980). This difference in risk profiles means that management and shareholders operate under different sets of incentives. Jensen and Meckling define an agency relationship as "a contract under which one or more persons (the principal[s]) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent" (1976:308). However, it is difficult to specify ex ante contracts that accommodate all possible future contingencies (e.g., Shleifer and Vishny, 1997). Agency theorists make the explicit assumption of self-interested individuals (Jensen and Meckling, 1976) prone to opportunism. From a shareholder's perspective, this may lead to inefficient managerial behavior, such as: making short-term, risk-averse investments (Lambert and Larcker, 1985); empire-building (Amihud and Lev, 1981); shirking (Jensen and Meckling, 1976); exploiting managerial perks (Williamson, 1985); and 'the quiet life' (e.g., Stein, 2003).

To agency theorists, the corporation's board of directors is the primary monitoring device aimed at protecting shareholder interests and alleviating potential

agency problems (Fama and Jensen, 1983; Jensen and Meckling, 1976). Agency theorists posit that the primary responsibility of the board of directors is to ensure that management actions are consistent with shareholder interests (Alchian and Demsetz, 1972; Fama and Jensen, 1983). Thus, the board acts to separate decision management from decision control, keeping for itself the roles of ratification and monitoring (Fama and Jensen, 1983). Additionally, boards of directors also influence firm performance by reducing agency costs arising from noncompliance by management with established goals and procedures, by articulating shareholder objectives, and by focusing the attention of management on performance (Mizruchi, 1983).

However, severe limitations to the degree of discretion conferred to boards of directors have been widely documented (e.g., Mace, 1971; Lorsch and MacIver, 1989) even more recently (e.g., Carter and Lorsch, 2004). Finkelstein and Hambrick (1996) note that boards are not always effective monitors of management, and conclude that the underlying reason relates to the balance of power in the boardroom, which tends to shift toward the dominant CEO (e.g., Kosnik, 1987). Further, Kerr and Bettis (1987) show that boards often do not honor their fiduciary duties.

Corporate governance controls may be internal or external to the firm. Walsh and Seward (1990) argue that boards of directors have two classes of internal controls available: the adjustment of incentives, and dismissal. In case of failure of these internal control mechanisms available to boards, the market for corporate control is supposed to serve as an external mechanism and the discipline of last resort (Manne, 1965; Fama,

1980). However, external controls may also fail given a host of external entrenchment practices available to astute, opportunistic management (Walsh and Seward, 1990).

2.1.2. The Agency Costs of Free Cash Flows

Corporate governance scholars disagree on the effectiveness of the existing mechanisms in the United States (Shleifer and Vishny, 1997). Easterbrook and Fischel (1991) offer an optimistic assessment of the US corporate governance system, whilst Jensen (1989; 1993) argues that US listed corporations embody deeply flawed governance mechanisms. According to Jensen (1986), one of the reasons why governance mechanisms in the US are flawed is the agency costs of free cash flows.

Jensen defines free cash flow (FCF) as "cash flow in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital" (1986:323). Noting that conflicts of interest between principals and agents over payout policies are especially severe when the organization generates substantial free cash flows, Jensen (1986) examines the problem of how to motivate managers to disgorge cash in lieu of investing it in projects yielding returns lower than the cost of capital, or wasting it on other organizational inefficiencies. An underlying assumption is that free cash flows may allow corporate management (agents) to finance low-return or even negative-return projects, which would otherwise not be funded via external sources such as the equity or bond markets. FCF theory implies management in firms with unused borrowing power and large free cash flows are more likely to undertake low-benefit or even value-destroying projects. In order to test FCF propositions, Jensen (1986) examined the US oil industry, which had earned substantial

free cash flows in the 1970s and the early 1980s in the aftermath of substantial increases in oil prices. The author found that, consistent with the agency costs of free cash flow, managers in the US oil industry did not pay out excess cash to shareholders. Instead, they continued to spend heavily on activities such as exploration and development in the 1980s as oil prices collapsed, even though average returns were below the cost of capital.

As a potential solution available to firms with severe agency costs of free cash flow, Jensen (1986) offered debt. Specifically, "levering the firm so highly that it cannot continue to exist in its old form generates benefits. It creates the crisis to motivate cuts in expansion programs and the sale of those divisions which are more valuable outside the firm. The proceeds are used to reduce debt to a more normal or permanent level. This process results in a complete rethinking of the organization's strategy and its structure. When successful, a much leaner and competitive organization results" (1986:328-329).

The leveraged buyout (LBO) wave that swept the US in the 1980s was in line with this reasoning. By taking the buyout target out of public ownership and into private hands with high levels of debt, LBO firms (acquirers) expected to reduce agency costs and deliver superior performance in the buyout target. Following the LBO wave of the 1980s, Jensen (1989) predicted the eclipse of the public corporation and its replacement by superior governance structures such as LBOs, which were associated with lower agency costs of free cash flow as a consequence of more aggressive

executive pay as well as a closer monitoring of management actions by a small but powerful board of directors (Gupta and Rosenthal, 1991).

2.2. Operational Engineering

Kaplan (2007) argues that, whereas governance engineering is a key antecedent of buyouts, an additional antecedent in the form of potential for operational engineering must be considered. At the heart of this argument are the profound changes in US corporate governance since the 1980s as synthesized by Holmstrom and Kaplan (2001).

2.2.1. Internal Control Mechanisms

Internal control mechanisms in US corporations were mostly inactive until the 1970s. Descriptive work on boards of directors tracking back to Mace (1971), Vance (1983) and Whisler (1984) described boards of directors as passive groups of individuals, therefore establishing a considerable gap between what the laws stated boards of directors should do, and what boards actually did. Typical board meetings in the 1960s and 1970s were not regarded as a proper forum for the discussion of issues raised by challenging questions. Mace (1971) and Whisler (1984) pointed to the existence of a tacit code of conduct in the boardroom, in which professional courtesy and corporate good manners suggested that embarrassing questions should not be asked, especially if some of the CEOs subordinates were inside directors. Consequently, any doubts or concerns about policies, operations, or management decisions were typically expressed to the CEO outside board meetings, unless the outside director was prepared to resign. Abrasive questions risked being interpreted as a vote of no-confidence in the CEO, and thus were very rarely asked. This description of

typical board behavior in the 1960s and 1970s is consistent with the conclusions offered by Holmstrom and Kaplan (2001), according to whom corporate managements then tended to be loyal to the corporation rather than to shareholders, focusing on growth rather than shareholder returns. Relatedly, boards tended to be passive and the use of incentive pay by corporate management was limited (Lorsch and McIver, 1989).

After the 1980s LBO wave, however, the use of internal control mechanisms changed significantly in US corporations. First, CEO compensation increased by a factor of six from the 1980s to the 2000s, with a disproportionate increase in equity-based pay. This increase in equity-based compensation led to a hike in CEO pay-to-performance sensitivities by a factor of more than ten times from 1980 to 1999 (Holderness *et al.*, 1999). Second, changes in boards of directors were mandated in the US by new legislation in the form of the Sarbanes-Oxley Act of 2002. A key board-related change was the increased power, responsibility, and independence of the listed firms' audit committee. Holmstrom and Kaplan (2003) argued that the Sarbanes-Oxley Act strengthened internal corporate governance mechanisms of listed firms by affecting board behavior, which became more exposed to pressure to more aggressively monitor management. As a consequence, many US corporations hired board consultants to help implement best practices after the passage of Sarbanes Oxley (Carter and Lorsch, 2004).

2.2.2. External Control Mechanisms

External control mechanisms also became more robust since the 1980s (Holmstrom and Kaplan, 2003). Donaldson (1994) described the rise of shareholder

activism as institutional investors with high ownership stakes publicly state their high expectations with regards to shareholder returns. In addition, the revolution in information technology enabled a faster dissemination of information in capital markets, facilitating the work of institutional investors and also allowing smaller shareholders to cast votes of no-confidence by selling shares when in disapproval of corporate management. Kaplan (1997) noted that the resurgence of general takeover activity in the 1990s was evidence that the market for corporate control proposed by Fama (1980) was as active as ever.

Kaplan also argued that LBOs did not reappear in the 1990s because "we are all [KKR's] Henry Kravis now" (1997:2), explaining that shareholders, managers and boards by then applied the insights and strengths of 1980s' LBOs, including closer board monitoring and more aggressive managerial incentives. If this argument is valid, then buyouts will not reappear in the US because corporations do not need to complete buyouts in order to implement governance engineering. From the early 2000s onwards, however, buyout activity in the US increased sharply despite the presence of significantly more robust mechanisms of corporate governance in place. If this resurgence cannot be explained by governance engineering alone, then the question that follows is what else may explain it.

CHAPTER 3

RESEARCH CONTEXT

Buyouts are a longstanding feature of US financial markets as well as corporate governance, and can be traced back to the first half of the 20th century, when aggressive financiers took control of target firms via financial transactions then called bootstraps (Rickertsen, 2001). Many early buyouts considered as milestone transactions were hostile in nature, such as Victor Posner's takeover of Sharon Steel in 1969. In the 1980s, buyouts gained much media attention in the US under the label of LBO (leveraged buyout). Following the boom-and-bust cycle of the 1980s, buyouts remained somehow subdued in the US throughout much of the 1990s. By the early 2000s, buyouts resurfaced and then attracted intense media attention again, this time under the PE (private equity) label. Like the 1980s LBO wave, the PE buyout boom in the US turned into a bust following the 2007 credit crunch in US financial markets.

3.1. The 1980s' Leveraged Buyout (LBO) Wave

As noted, buyouts predate the 1980s but did not attract the interest of corporate governance scholars before the phenomenon grew in importance as "the $3 million buyout of the mid 1970s [was] replaced by the $1 billion buyout of the mid 1980s" (Lowenstein, 1985:735). 1980s' LBOs were transactions in which the shareholders of a listed firm are bought out by a new group of investors – usually including incumbent management, a specialized buyout firm, commercial banks and public debt holders.

With aggressive compensation arrangements, management typically increased their percentage stake in the buyout company, even though they actually extracted a certain dollar amount of their previous stake in the pre-buyout firm (Kaplan and Stein, 1993). Whereas the acquiring firm typically bought enough equity to secure control in the buyout target, most of the remaining financing was in the form of debt (usually provided by commercial banks) and high-yield subordinated public debt, also known as junk bonds in the 1980s. The use of significant leverage (debt) differentiated LBOs from other types of buyouts.

1980s' LBOs became central to what was then the greatest M&A wave in US history. Between 1981 and 1989, more than 2400 listed corporations with a market value of around $300 billion unadjusted for inflation underwent an LBO (Wiersema and Liebeskind, 1995). Typical LBOs then featured debt-to-capital ratios exceeding 85%, and shareholder premia exceeding 40% (Kaplan, 1991). By the late 1980s, some of the largest companies in the US were being targeted by buyout firms. High-profile 1980s' LBOs included RJR Nabisco, Southland, H.R. Macy and Trans World Airlines – all of which were amongst the top 20 companies of the 1990 Forbes Rank (Opler, 1992).

The 1980s' LBO wave culminated with the RJR Nabisco buyout in 1989 for a then record $24.8 billion unadjusted for inflation. By the early 1990s, the LBO boom became a bust as buyout activity collapsed due several factors including anti-takeover legislation and jurisprudence; overt political pressure against leverage; the collapse of the junk bond market; and a credit crunch (Jensen, 1991; Comment and Schwert, 1995).

In sum, the LBO wave of the 1980s was considered one of the most controversial business phenomena of the 1980s (Wiersema and Liebeskind, 1995) given its highly asymmetrical impact on firm stakeholders (Rappaport, 1990; Fox and Marcus, 1992; Shleifer and Summers, 1988) and the controversy that followed. Bhagat, Shleifer, and Vishny (1990) stated that the main purpose of LBOs in the 1980s was to serve as a temporary financing tool for the implementation of drastic short-run improvements such as divestitures. Firm stakeholders that were apt to be affected negatively in the aftermath of LBOs included employees (who risked being dismissed or witnessing pay or benefit cuts), the government (which would experience a decrease in corporate tax revenues) and bondholders (whose holdings would plummet in value given higher leverage and lower ratings in the buyout target following the LBO). The generally negative press coverage that followed is illustrated in Figure 1.

In addition to the controversy arising from asymmetric outcomes from the perspective of stakeholders, another controversial aspect was that LBOs usually constituted a temporary ownership and governance structure, as the acquirer (buyout firm) typically sold the buyout target after a limited period of time. Buyout firms typically count on one of four exit strategies in order to reach liquidity (Rickertsen, 2001): take the buyout target public again, in what is referred to as reverse buyouts; sell the buyout target to a strategic buyer; sell the buyout target to another buyout firm in what is known as a secondary deal; or issue new debt in exchange for the equity of exiting investors. Kaplan (1991) examined the question of whether buyouts are permanent organizations, or whether they return to public ownership via IPO's (initial

public offerings). The author found that the median firm goes public again within five to six years after the buyout, suggesting that LBOs embody a temporary ownership structure.

3.1.1. Antecedents of 1980s' LBOs

LBOs were the focus of a series of studies following the intense buyout activity in the 1980s (e.g., Kaplan, 1989; Lehn and Poulsen, 1989; Singh, 1990; Muscarella and Vetsuypens, 1990; Smith, 1990; Palepu, 1990; Lichtenberg and Siegel, 1991; Liebeskind, Wiersema and Hansen, 1992; Opler, 1992; Kaplan and Stein, 1993; Long and Ravenscraft, 1993a, 1993b; Hoskisson and Hitt, 1994; Phan and Hill, 1995; Wiersema and Liebeskind, 1995). Scholars offered theoretical arguments and empirically tested at least four potential explanations for 1980s' LBOs as Table 1 shows.

The first potential explanation for 1980s' LBOs was Jensen's (1986, 1989, 1991, 1993) free cash flow (FCF) argument. According to FCF theory, LBOs occurred as a consequence of cash flows that were invested in value-destroying projects rather than returned to shareholders in the form of dividends. Kaplan (1997) noted that, if this argument were correct, then firms should cut capital expenditures in the aftermath of LBOs. Yet, the evidence for this assertion was mixed. Whereas Kaplan (1989) and Kaplan and Stein (1993) found evidence in support of FCF theory, Servaes (1994) found the opposite.

A second, potential explanation for 1980s' LBOs was the shareholder disappointment with conglomerates, and the resulting shift away from unsuccessful

diversification efforts and the return to specialization. Shleifer and Vishny (1990) argued that many corporations had embarked into unrelated diversification in the 1960s and 1970s, and that these corporations could create shareholder value by becoming less diversified in the 1980s. This argument was also in line with Jensen (1986) and his influential work on free cash flow theory, as Jensen (1986) argued that diversification was more likely to destroy than to create value. However, Kaplan (1997) noted that the empirical evidence in support of this argument was mixed, arguing that, whereas US corporations became less diversified in the 1980s, this decrease did not seem significantly large (e.g., Montgomery, 1994; Liebeskind and Opler, 1994).

Several scholars (e.g. Donaldson, 1994; Singh, 1990; Fox and Marcus, 1992) argued that a third potential explanation for 1980s' LBOs was firm undervaluation. Donaldson (1994) explained that the rise of institutional shareholders and the greater availability of information enabled by information technology in capital markets increased the pressure to maximize shareholder value. Donaldson (1994) referred to the 1980s as the decade of confrontation. Kaplan (1997) argued that the undervaluation argument was the most convincing explanation for the 1980s' LBO wave.

A fourth potential explanation was offered and tested by Opler and Titman (1993), who combined Jensen's (1986) FCF argument and the undervaluation argument to explain LBO activity. In their empirical tests, the authors found that the firms most likely to become LBO targets were the ones that combined high cash flows with unfavorable investment opportunities in the form of Tobin's Q. The authors reasoned that it was the interaction of high potential to waste investments in value-destroying

projects (in the form of high free cash flows) and few investment opportunities (in the form of Tobin's Q) that explained LBO activity.

Prior work in strategic management (Singh, 1990) and corporate finance (Opler and Titman, 1993) empirically tested several potential explanations for 1980s' LBOs. Table 2 offers a comparison of the present study with the work by Singh (1990) and Opler and Titman (1993). As will be explained in detail below, the present study builds on extant literature to examine the antecedents of present-day buyout activity by applying more direct measures of agency costs (governance engineering) and testing new theory of buyouts (operational engineering following Kaplan, 2007) while offering a methodological approach that accommodates controls for sample selection bias and competing risks in the form of Cox regression models.

3.1.2. Consequences of the 1980s' LBOs Wave

As consequences of the 1980s' LBO wave, scholars studied the impact of LBOs on the buyout targets' operational performance (e.g., Kaplan, 1989; Long and Ravenscraft, 1993a), the buyout targets' diversification policies (e.g., Wiersema and Liebeskind, 1995), and changes in governance structure in the buyout target after the LBO (e.g., Singh, 1990). From a theoretical standpoint, many of these LBO studies drew from the agency costs of FCF to examine LBOs. Whereas many scholars (e.g., Kaplan, 1991; Jensen, 1993) argued that LBOs addressed agency problems, others (e.g., Rappaport, 1990; Fox and Marcus, 1992) questioned the viability of LBOs as a durable governance form given its adverse impact on firm stakeholders other than shareholders.

3.2. The Private Equity (PE) Buyout Cycle

As noted, buyout activity resurfaced again in the early 2000s under a new label: private equity (PE) buyouts. Rickertsen (2001) argued that this re-labeling was a reaction by buyout firms to the negative press that followed polemical LBO transactions in the late 1980s, when up to a third of all buyouts eventually led to distressed outcomes such as restructurings or even bankruptcies (Kaplan, 1997).

According to figures from Thomson Financial's Securities Data Company (SDC), the PE buyout boom of the 2000s came into existence as the total transaction value of US buyouts increased sharply from $22 billion in 2001 to $353 billion in 2006. By mid 2006, more than 250 US firms in the booming buyouts industry controlled some $800 billion in capital, and observers noted that these buyout firms were preparing for more. Writers at *Buyouts* magazine estimated that nearly $175 billion of new money flowed into US buyout firms in 2005 alone (The Wall Street Journal, 2006). Similar to what was observed in the 1980s, the average size of a PE buyout transaction dramatically increased as the phenomenon gathered momentum. Some high-profile PE buyouts in the US included Chrysler, Toys-R-Us, Neiman Marcus, Hertz and La Quinta Inn. In 2007, the Blackstone Group announced the buyout of Equity Office Properties Trust for $36 billion, breaking KKR's longstanding record set in 1989 with the RJR Nabisco transaction. The impact of buyouts on US business was by then quite significant, as an estimated $1/25^{th}$ of the entire US economy (Hubbard, 2007) as well as 6 million workers representing around 2% of the entire US workforce (Davis, 2007) were under the control of buyout firms.

The amount of capital involved was quite substantial. Buyout opportunities were offered only to institutional investors and wealthy individuals (accredited investors) as required by law. GPs typically charged a 2% management fee per annum and 20% of annual profits in the form of carried interest (two-and-twenty arrangement), which typically led to fabulously rich pay schemes. GP pay became rather controversial by the mid 2000s as the average size and visibility of buyouts increased. Some of the world's wealthiest individuals in 2007 were buyout executives such as Blackstone's Steve Schwarzman (with a net worth of $7.8 billion), KKR's Henry Kravis ($5.5 billion) and Carlyle's David Rubinstein ($2.5 billion) according to Forbes magazine (Douglas, 2007). Adding controversy to PE buyouts was the fact that these partnerships were taxed in the form of carried interest at 15%, similar to long-term capital gains taxes and quite unlike ordinary corporate tax rates of 35%. By the late 1990s and early 2000s, the buyout phenomenon that had previously been essentially US-centered became global as buyout firms searched for targets around the world, developing particularly strong presences in Europe, where buyouts attracted controversial coverage from the popular press as illustrated in Figure 2. Further, Figure 3 shows selected US buyout firms by the 2000s, many of which had also played central roles in the 1980s' LBO wave such as KKR and Clayton, Dubilier & Rice.

Not unlike the previous boom-and-bust cycle of the 1980s, the PE buyout boom peaked in the third quarter of 2007, as the value of buyout transactions by PE firms fell 68% from the previous quarter as a liquidity crisis reached the credit markets that had made such deals possible. Table 3 shows this boom-and-bust cycle.

Given the relative newness of the phenomenon, scholars have examined recent PE buyouts less intensively than the 1980s' LBO wave. A brief review of scholarly work on the recent PE buyout cycle follows. Cumming, Siegel and Wright (2007) provide an overview of the literature, distinguishing between financial returns and 'real' (productivity-related) returns to investors. Guo, Hotchkiss and Song (2007) examined the question of how PE buyouts create value and found increases in operating performance in buyout targets after the completion of the transaction. The authors also found that the improvement of cash flows after the buyout event was higher in targets where the CEO had been replaced. Cao and Lerner (2007) examined the performance of reverse leveraged buyouts (R-LBOs), which are buyout targets that subsequently go public again after a limited time under PE ownership. Further, Kaplan and Schoar (2005) examined the capital inflows and performance of PE partnerships while Davis (2007) studied the impact of PE buyouts on employment in buyout targets.

Commenting on the potential antecedents of recent buyout activity, Kaplan (2007:11) argues that:

> *What makes [today's buyouts] different from the '80s is that most of the big [buyout] firms, though not all, are now committed to operational engineering. That's why most of them now have a pool of former CEOs or operating executives. They bring them in to advice on where there is fat that can be taken out [...]. In the late 1980s and afterward, [...] incentives and board monitoring at public companies have also improved. The buyout firms have responded to such changes by developing industry and operating expertise that they can use to add value to their investments. Many of the firms have differentiated themselves by acquiring the industry knowledge to oversee the strategies and operations of their portfolio companies. And they have also created networks of operating executives—in many cases, highly regarded former CEOs – to ensure that their portfolio firms have the best managers and advice.*

As noted, Kaplan's (2007) proposition on the potential for operational engineering has yet to be empirically tested, controlling for direct measures of agency costs which gauge potential for governance engineering in the context of buyouts. Next, I define explicitly what a buyout is in the context of this study before detailing a set of hypotheses and research design.

3.3. A Definition of Buyouts: Scope of this Study

In this paper, buyouts are defined as going-private transactions in which a financial acquirer (or a group of investors led by a financial acquirer) in the form of a PE (private equity) partnership purchases the controlling equity stake in a publicly-traded target, usually with debt financing. This transaction results in the formation of a new privately-held firm with a typically high debt-to-equity ratio, and whose equity is closely held by a small group of large outside investors (including the lead financial acquirer) and a group of managers with high-powered incentives. Further, it is important to note that the buyout target may be a private firm, a listed firm, or the division of a firm (either public or private). In this paper, I focus solely on whole-firm buyouts of listed firms, which lie at the heart of the debate around the agency costs of free cash flows.

PE firms are usually structured as limited partnerships with one or more general partners (GPs) and one or more limited partners (LPs) in the form of a PE partnership. GPs are in the same legal position as partners in a conventional firm: they have management control, share firm profits in predefined proportions, and have joint

liability for debt. GPs also have authority as agents of the firm to bind all the other partners in contracts with third parties. Like shareholders in a corporation, LPs have limited liability, are only liable on debts incurred by the firm to the extent of their registered investment, and they have no management authority. GPs pay to LPs the equivalent of a dividend on their investment, the nature and extent of which is usually defined in the partnership agreement. Whereas the PE structure described above was already in place during the 1980s' LBO wave, the buyout cycle that started in the early 2000s became known as the PE buyout phenomenon as noted above.

Some buyout firms may engage in other types of activities beyond buyouts, including VC (venture capital), PIPE (private investment in public equity), and special situations such as distressed debt. In this paper, I exclude all of these cases and focus solely on whole-firm buyouts of publicly-traded (listed) firms. Further, several types of buyouts are considered here. As noted above, buyouts may be leveraged (LBOs) or not. Whereas most buyouts involve leverage, some buyout firms may execute transactions with little or no use of leverage. Unlevered buyouts are defined as buyouts with a post-buyout leverage of 30% or less (following Long and Ravenscraft, 1993a) and are also included in this study. Further, MBOs (Management Buyouts) are buyouts in which the managers of a company purchase the company's controlling interest from existing shareholders, usually with the help of a buyout firm. In the present study, MBOs are included. The inclusion of this special type of buyout also raises potential methodological concerns associated with endogeneity, as will be discussed in detail and addressed below.

Further, a practice that did not occur widely in 1980s' LBO wave but became quite widespread with the 2000s' PE buyout cycle was the club deal, in which a group of PE firms pools its assets together and executes the buyout collectively, in a practice that allows PE firms to acquire larger targets and to reduce risks by taking smaller individual investments. In this paper, my definition of buyouts includes club deals. Finally, recapitalizations involve the restructuring a company's debt and equity mix, often with the aim of making a company's capital structure more stable. Because this does not lead to a change in firm ownership, these types of deals are not included in this paper. Now that this study's definition of buyouts is complete, I next present the hypotheses to be tested.

CHAPTER 4

RESEARCH HYPOTHESES

4.1. Governance Engineering

Agency theory is built on the premise that the separation of ownership and control in the modern corporation potentially leads to self-interested actions by entrenched agents and therefore firm underperformance. The potential for this conflict of interest between agents and principals leads to the need for monitoring mechanisms designed to protect shareholders and avoid shareholder expropriation by self-interested agents (e.g., Fama and Jensen, 1983; Jensen and Meckling, 1976). In this study, I seek to draw from the most widely applied measures of agency problems in strategic management (e.g., Dalton *et al.*, 1998). Extant literature reflects two common remedies that mitigate agency costs: board monitoring and incentive alignment.

4.1.1. Board Monitoring

In theory, the firm's board of directors is the primary monitoring device aimed at protecting shareholder interests and alleviating potential agency problems. Agency theorists posit that the primary responsibility of the board is to ensure that management actions are consistent with shareholder interests (Alchian and Demsetz, 1972; Fama and Jensen, 1983).

With regards to board composition, the consensus in the corporate governance literature (e.g., Mizruchi, 1983; Dalton *et al.*, 1998; Holmstrom and Kaplan, 2001;

Cannella, Finkelstein and Hambrick, 2008) is that boards of directors comprised of predominantly outside directors rather than insiders represent a more effective monitoring of managers. This preference for outsider-dominated boards of directors is grounded on agency theory. Outside directors are believed to provide stronger control as a result of their independence from management as inside directors may not be able or willing to monitor the CEO with equanimity (Lorsch and MacIver, 1989). As noted by Dalton *et al.* (1998), however, outside directors who maintain personal or professional relationships with the firm or firm management (affiliated directors) are not independent and not believed to be effective in fulfilling the board's control role. Affiliated directors are those with significant business dealings with the firm, defined by the SEC as involving $60,000 per year or more and can be identified through proxy statements or information services such as the Investor Responsibility Research Center – IRRC (Cannella, Finkelstein and Hambrick, 2008).

In contrast, independent directors are expected to be more effective monitors of management behavior because of their focus on financial performance as a central component of monitoring (Fama and Jensen, 1983); the increased likelihood of CEO dismissal in case of poor performance (e.g., Couglan and Schmidt, 1985); the incentive to protect their personal reputations as directors (Fama and Jensen, 1983); and the likelihood to exercise greater objectivity because they are not as beholden to CEOs as are inside directors (e.g., Walsh and Seward, 1990). In the context of buyouts, if the agency-theoretic logic proposed by Jensen (1986, 1989) is valid, then the firms with the

least independent board of directors are the ones expected to underperform and thus become the target of a buyout. Therefore:

H1: The less board independence in a given firm, the higher the probability that the firm will become the target of a buyout.

As with board composition, agency theorists posit that the CEO should not serve simultaneously as chairperson of the board in an arrangement called CEO duality. According to agency theory predictions, CEO duality promotes CEO entrenchment by reducing board monitoring effectiveness (Finkelstein and D'Aveni, 1994). Powerful individuals with dual CEO and board chair positions may reduce board monitoring effectiveness via a host of activities. First, CEOs with dual positions may influence director selection that further strengthens a CEO's power base (Pfeffer, 1981), which is also seen as a sign of entrenchment (Fama and Jensen, 1983). Second, a powerful CEO that takes the chair position on the board gains control of both the agenda and the debate in board meetings (Cannella and Holcomb, 2005; Finkelstein and D'Aveni, 1994). Third, duality may lead to further entrenchment because board chairs provide outsiders with most of the information about the organization (Mallette and Fowler, 1992).

In the context of buyouts, if the agency-based arguments by Jensen (1986, 1989) hold, then the firms with CEO duality are more likely to underperform due to the decreased capacity for board monitoring, thus becoming the target of a buyout. Therefore:

H2: CEO duality in a given firm increases the probability that the firm will become the target of a buyout.

4.1.2. Incentive Alignment

Agency theorists argue that one way to mitigate agency costs is to increase managerial equity holdings or to grant stock options, thus aligning the interests of managers and shareholders (Jensen and Meckling, 1976). Agency theorists therefore suggest that when managers own substantial equity stakes in the firms they run, they are more likely to act in shareholders' interests given their shared financial interests (e.g., Perry and Zenner, 2000). The reason for this alignment of interests is that managerial stock ownership causes managers' wealth to vary directly with firm performance (Jensen and Murphy, 1990). In the absence of insider equity ownership, managers are more likely to act in a self-serving way by pursuing projects that further their own interests at shareholders' expense.

The same logic has been extended to board members. Several empirical studies rely on directors' and officers' (D&O) equity to capture insider equity ownership (Jensen, 1993). Some directors or board members also serve as officers (managers) in their firms and are thus inside directors. Regardless of whether a given director is an officer or not, all board members are subject to the same alignment incentives as officers. If officers with high equity stakes have the incentive to act in the best interests of shareholders, directors who are not officers but who have high equity stakes in the firm also have the incentive to effectively monitor management behavior. In line with this reasoning, Jensen argued that "the idea that outside directors with little or no equity

stake in the company could effectively monitor and discipline the managers who selected them has proven hollow at best" (1989: 64). Therefore:

H3: The lower the equity ownership stake held by insiders in a given firm, the higher the probability that the firm will become the target of a buyout.

4.2. Potential for Operational Engineering (POE)

Potential for operational engineering refers to the degree to which a firm's operational inefficiency is higher than the competition's, and therefore could be improved. According to Kaplan (2007), the main difference between 1980s' LBOs and the more recent wave of buyouts is the focus on operational engineering. Kaplan (2007:11) argues that in recent-era buyouts, "financial and governance engineering continue to be important. However, most buyout firms try to augment financial and governance engineering with another discipline – what I call operational engineering." An implication of this statement is that, whereas governance engineering in the form of agency-variables was a key driver of buyout activity in the 1980s, an additional antecedent in the form of potential for operational engineering must be considered in the examination of 1990s and 2000s buyouts. If Kaplan's (2007) proposition on the potential for operational engineering is valid, then buyout firms will be especially interested in buyout targets in which acquirers believe to able to affect operational engineering.

The personnel recruiting practices of buyout firms, which had traditionally focused on dealmakers with prior experience in investment banking, have more recently been extended to include former senior executives with operational experience

(Meerkatt *et al.*, 2008; Kaplan, 2007). According to Meerkatt *et al.* (2008), former senior executives with operational experience are apt to have access to social networks enabling *ex ante* buyout opportunities, and also have hands-on experience in working with incumbent managers in setting and implementing *ex post* agendas for operational improvements. The recruitment of operating executives thus enables the pursuit of operational engineering in buyout targets via advice in the form of mentoring and guidance (Hendry, 2002), in addition to the traditional role of monitoring. Buyout firms that employ former operating executives will thus be better positioned to help managements in buyout targets achieve goals by developing their technical competence via the transfer of skills, or to improve their understanding of goals beyond the ones stipulated contractually.

The pursuit of operational engineering in buyout targets is essentially an efficiency debate (e.g., Fox and Marcus, 1992). More generally, examples of efficiency measures in strategic management have included turnover ratios for total assets, receivables, and fixed assets (see Carton and Hofer, 2006, for a review). Specifically in the context of buyouts, typical ways to measure buyout target inefficiency include a low working capital turnover (e.g., Fox and Marcus, 1992; Kaplan, 1988), which is a measure of asset inefficiency. Relatedly, the empirical evidence shows that, at least in the short-term, cash management improves in buyout targets after the buyout is complete (e.g., Kaplan, 1989; Long and Ravenscraft, 1993a). One likely reason is offered by Singh (1990), who argued that potential buyout targets with asset

inefficiencies in the form of higher levels of receivables and lower inventory turnovers are apt to have a lower quality of operational controls and implementation.

Potential buyout targets that underperform operationally in the form of high asset inefficiency therefore will become especially appealing to buyout firms, since the context of operational inefficiencies exacerbate the effects of governance engineering (board independence, CEO duality and insider equity ownership) on the probability of buyout. Therefore:

H4: The higher a firm's asset inefficiency, the stronger the negative relationship between board independence and the probability that the firm will become the target of a buyout.

H5: The higher a firm's asset inefficiency, the stronger the positive relationship between CEO duality and the probability that the firm will become the target of a buyout.

H6: The higher a firm's asset inefficiency, the stronger the negative relationship between insider equity ownership and the probability that the firm will become the target of a buyout.

Figure 4 summarizes the hypothesized relationships laid out above in the form of an empirical model, the implementation of which I describe below.

CHAPTER 5

METHODS

Qualitatively, the hypotheses laid out above were informed by unstructured interviews with buyout market participants – both on the buy side and on the sell side.[1] In the subsections below, I describe the quantitative features of this study, including the sampling, statistical technique, variables and measures employed.

5.1. Sample

This study links three datasets. The first dataset is Thomson Financial's SDC (Securities Data Company), which offers detailed data on IPO and M&A activity amongst other types of information. Given the comprehensiveness of its coverage, SDC has been widely used in prior research in strategic management. Using SDC data, I start with a search for buyouts as transactions coded as "complete deal", "deal is a LBO" and "acquirer is a LBO firm" from 1998 through 2007 inclusive. I exclude buyouts of financial targets in order to keep consistency with prior work (e.g., Opler and Titman (1993). This search yields 1121 buyouts, which include divestitures or divisional buyouts (413 deals), whole-company private-to-private buyouts (622 deals), and whole company public-to-private buyouts (86 deals). Given this study's aim to build on agency-theoretic predictions, I focus on the whole company public-to-private deals only. Whereas divisional buyouts could also be of interest from an agency-theoretic

[1] The interviewees were: Alex Nieberding (CVC Partners), Dennis Schaecher (BOS LLC) and Clay Hamner (Montrose Capital Corporation) on the buy side, as well as Mike Bowers (CoMark) and an anonymous contributor on the sell side.

perspective, data availability is a challenge since US corporations are not required to report separate sets of financials for each one of their subsidiaries or lines of businesses. Next, I then evaluate and confirm that each one of these 86 whole-company buyouts is consistent with the definition provided in this study via press releases and The Wall Street Journal.

The second dataset I use in this study is the Investor Responsibility Research Center (IRRC), which offers data on board structure and executive equity holdings for US publicly-held corporations. Governance data from IRRC is available for 65 of the 86 firms identified as undergoing a whole-company buyout via the SDC search described above. The count of 65 buyout events featured in this study is comparable with other studies in this literature stream, as shown on Table 2. The 65 whole-company US buyouts span 27 different industry segments at 2-digit SIC level, as shown on Table 4. Further, the rapid acceleration of overall buyout activity in the US from 2005 through 2007 is reflected in my dataset as shown on Table 5, which offers a sample description by year.

The third dataset I use in this study is S&P's Compustat, which offers firm-level financial data for US listed firms. Compustat II (Business Segments) offers limited data points from firms' income statements for each of the firm's line of business, which is necessary for developing a control measure of diversification as explained below. Unfortunately, the balance sheet data that could be used to examine divisional buyouts is not provided.

In order to construct a risk set of all US firms that could become a buyout target from 1998 to 2007 inclusive, I merge the governance data available from IRRC with firm financials from S&P's Compustat in the form of a panel dataset. This data merger resulted in a master file with 1459 publicly-traded firms with complete data, totaling 8631 observations. Of the 1459 firms, 65 became the target of a buyout, an additional 260 became the target of (non-buyout) M&A, 18 were delisted, and 1116 were still operating independently at the end of the sample period. Given the need to control for competing risks as explained below, I coded non-buyout M&A transactions and delistings accordingly.

5.2. Statistical Technique

In general, event history analysis is used to analyze the effects of predictor variables on the occurrence or non-occurrence and the timing of specific events (Allison, 1984). In this study, I use the Cox proportional hazards model (Cox, 1972). The Cox proportional hazards model is semi-parametric and therefore more flexible as well as robust in cases in which it is difficult to specify a particular shape of the time dependence of the hazard rate (Blossfeld and Rohwer, 1995).This modeling approach is associated with several advantages as it accounts for both discrete events and continuous timescale data, accommodates left truncation and right censoring simultaneously, allows time-dependent independent variables, accommodates competing risks, and identifies both cross-sectional and longitudinal effects (Allison, 1995). These properties are particularly useful to our data for investigating the antecedents of buyout activity over time. The model can be specified as:

(1) $H(t) = h(t) \exp [\beta X(t)]$

where the hazard rate $H(t)$ is the product of an unspecified baseline rate, $h(t)$, a second term $X(t)$, specifying the values at time t of a vector of independent variables, and β, representing a vector of parameters embodying the effect of each independent variable. The model is proportional in that the hazard is obtained by shifting the baseline hazard as the independent variables change over time. The model assumes that, whatever the shape of the baseline hazard, it is the same for all firms. Therefore, the baseline hazard cancels out, and there are no intercepts.

5.3. Variables and Measurement

In the subsections below, I describe all variables and measurement definitions, including the dependent variable, independent variables and controls.

5.3.1. Dependent Variable

The dependent variable *Buyout* denotes the probability of a buyout occurring at time *t*, given that the event has not occurred prior to that instant. The dependent variable is dummy-coded to indicate whether a buyout has occurred towards the end of each spell. Firms that were still operating as independent entities without becoming the target of a buyout at the end of the sample period (1998-2007) will be treated as right-censored. As noted above, competing risks or outcomes associated with non-buyout M&A transactions as well as delistings from stock exchanges due to bankruptcy or outright liquidation were also coded accordingly. Hazard models accommodate such

competing outcomes by treating them as distinct risks (Cox and Oakes, 1984), which is a statistical approach adequate for buyouts research.

5.3.2. Independent variables

Consistent with the event history design, all data were collected annually. All independent variables reported here are time-varying, and all financial data were collected from S&P's Compustat.

The first independent variable is *Board Independence*, defined as the percentage of board members that are independent and therefore not affiliated directors according to the IRRC. Data were sourced from IRRC, which defines an independent director as someone who is not a former or current employee; a service provider, supplier, or customer (or employee or director thereof); a recipient of charitable funds; or a family member of a director or executive of the firm.

Second, *CEO Duality* is a dummy variable coded as one if the firm's CEO also serves as chairperson at the same firm. Data were provided from IRRC.

Third, *Insider Equity Ownership* is defined as the percentage of equity controlled by the firms' directors and officers as provided by the IRRC.

Fourth, *Asset Inefficiency* combines several inefficiency items as introduced by Carton and Hofer (2006) and applied by others (e.g., van Mourik, 2007). These include: liquidity inefficiency, defined as cash and equivalents (Compustat #1) scaled by net sales (#12); working capital inefficiency, defined as working capital (#179) scaled by net sales (#12); fixed-asset inefficiency, defined as gross property, plant and equipment (#7) scaled by net sales (#12); and total asset inefficiency, defined as total assets (#6)

scaled by net sales (#12). These measures were highly correlated, so I used weights from factor analysis to extract a unified construct. This analysis yielded a one-factor weighted average of asset inefficiency with an eigenvalue of 3.38 that explained 84.5% of the total variance in the four items described above. See Figure 5 for a model of this confirmatory factor analysis.

5.3.3. Control Variables

I start by controlling for antecedents of buyout activity that have been previously tested. The first control variable is *Free Cash Flow*, defined as the firm's free cash flow divided by net sales. I follow Lehn and Poulsen (1989) and define free cash flow as operating income before depreciation (Compustat #13), minus total income taxes (#16), minus the change in deferred taxes from the previous year to the current year (change in #35), minus gross interest expenses on total debt (#15), minus the total amount of preferred dividend requirement on cumulative preferred stock and dividends paid on non-cumulative preferred stock (#19), minus the total dollar amount of dividends declared on common stock (#21).

The second control variable is *Unrelated Diversification*. I follow Wiersema and Liebeskind (1995) in their LBO study and use the Jacquemin-Berry entropy measure of diversification at the 2-digit SIC level. This measure is estimated as:

(2) $$\sum_{i=1}^{N} P_i \ln (1 - P_i)$$

where P_i is the share of total firm sales of the *i*th line of business. Following Palepu (1985) and Wiersema and Liebeskind (1995), unrelated diversification is measured using the 2-digit SIC lines of business of the firm to estimate P_i.

Third, I follow Kaplan and Zingales (1997) and estimate *Tobin's Q* as market value divided by book value of assets, where market value is the firm's market value of common stock (#24 * #25), plus the book value of assets (#6), less the book value of common equity (#60), less deferred taxes on the balance sheet (#74).

Fourth, I also control for *Leverage* defined as the firm's total debt (#9 + #34) divided by total equity (#216) in order to control for the alternative explanation according to which firms that are already highly levered may become a less attractive target for buyout firms.

Fifth, I control for *Taxes* defined as the firm's income tax expenses (#16) scaled by net sales, controlling for the potential explanation offered by Lowenstein (1985).

Finally, I control for *Year Fixed Effects* to account for unobservable macroeconomic effects. I also control for *Industry Fixed Effects* to ensure comparability across potential buyout targets in the same industrial sector at the 2-digit SIC level. For both year and industry fixed effects, I have included *k-1* dummy variables in all models. See Table 6 for a summary of variables and measures.

CHAPTER 6

RESULTS

6.1. Descriptive Statistics

Table 7 presents descriptive statistics and a correlation matrix of the variables. Some notable correlations follow.

First, free cash flow is not significantly correlated with board independence or CEO duality, and it is only weakly correlated with insider equity ownership ($p < .10$). This finding highlights the importance of using direct measures of agency variables (when available) rather than relying on proxies. In light of prior scholarly work on 1980s LBOs employing free cash flows as a proxy of agency cost, one way to interpret this finding is that free cash flow as a proxy measure was adequate in the 1980s but probably less so later on given the evolution of corporate governance mechanisms in the US as described by Holmstrom and Kaplan (2003).

At the same time, it is noteworthy that the correlation between free cash flow and asset inefficiency is very high at -.79 ($p < .001$). This strong, negative correlation may suggest that prior work on buyouts (e.g., Singh, 1990; Opler and Titman, 1993) testing free cash flow theory with proxy measures of agency costs may have rather offered tests of the POE argument instead.

Next, the probability of buyout and Tobin's Q are negatively correlated ($p < .05$), in line with one of the data panels analyzed by Opler and Titman (1993). Further,

board independence and CEO duality are negatively correlated ($p < .001$), consistent with the notion that the separation of the CEO and board chair positions is associated with board independence.

Given some high correlations among the variables, I investigated potential multicollinearity problems, yet found that the maximum variance inflation factor (VIF) value for all models was 4.64, well below the rule-of-thumb threshold of 10 (Neter, Wasserman and Kutner, 1985).

Figure 6 presents a trend analysis examining key agency-theoretic variables (board independence, CEO duality and insider equity ownership). This analysis shows that board independence increased from 1998 to 2007 and CEO duality decreased in the same period, consistent with Holmstrom and Kaplan (2001). However, insider equity ownership remained largely unchanged in this period.

6.2. Event History Analysis

Table 8 reports the main results of the event history analysis examining how governance engineering interacts with asset inefficiency to shape the probability of buyout. All models on Table 8 are highly significant ($p < 0.001$). Model I is the baseline specification comprising control variables only. Model II augments Model I by adding governance engineering variables (board independence, CEO duality and insider equity ownership) in addition to asset inefficiency. Models III through V introduce the direct effects of asset inefficiency, as well as its interaction with each one of the three governance engineering variables.

Hypotheses 1 through 3 test predictions from agency theory according to which board independence, CEO duality and insider equity ownership are associated with the probability of buyout. In Table 8, none of the coefficient estimates for these three variables on Model II are significant, providing no support for H1, H2 or H3.

Hypotheses 4 through 6 state that asset inefficiency moderates the effect of governance engineering variables on the probability of buyout. Specifically, hypothesis 4 predicts that the higher a firm's asset inefficiency, the stronger the negative relationship between board independence and the probability of the firm becoming a buyout target. In Table 8 (Model III), the interaction term is significant and negative ($p < .05$). Because Cox models are non-linear and semi-parametric, a plot is helpful in interpreting this result. Figure 7 shows the baseline survival function for different firms.[2] The plot shows how the interaction effect of asset inefficiency and board independence *decreases* the probability of buyout, providing no support for H4.

Further, hypothesis 5 predicts that the higher a firm's asset inefficiency, the stronger the positive relationship between CEO duality and the probability that the firm will become the target of a buyout. In Table 8 (Model IV), the interaction term is not significant, providing no support for H5. Finally, hypothesis 6 predicts that the higher a firm's asset inefficiency, the stronger the negative relationship between insider equity

[2] The mean firm is a hypothetical firm in which the values for all variables of interest are set equal to the sample's mean. Firm A is a hypothetical firm with high board independence (75^{th}- percentile) and high asset inefficiency (75^{th}- percentile). Firm B is a hypothetical firm with high board independence (75^{th}- percentile) and low asset inefficiency (25^{th}- percentile). Firm C is a hypothetical firm with low board independence (25^{th}- percentile) and high asset inefficiency (75^{th}- percentile). Firm D is a hypothetical firm with low board independence (25^{th}- percentile) and low asset inefficiency (25^{th}- percentile).

ownership and the probability that the firm will become the target of a buyout. In Table 8 (Model V), the interaction term is not significant, providing no support for H6.

There are also some noteworthy patterns of results for control variables. First, Tobin's Q is strongly significant in all model specifications (p <.001), lending support to the undervaluation argument of buyout activity tested by Opler and Titman (1993). My results show that, all else equal, firm undervaluation in the form of a low Tobin's Q in relation to industry peers is a key predictor of buyout activity. In other words, the firms that seem cheaper than competitors are the ones that tend to be bought out. Not surprisingly, buyout firms thus seem to focus on the more inexpensive targets. Second, taxes are marginally significant only in Models III (p < .10), lending no support to the argument that firms with comparatively high tax expenses are more apt to become buyout targets, as proposed by Lowenstein (1985). Finally, year fixed effects and industry year effects are jointly significant in all models.

6.3. Robustness Analyses

I also performed several changes in specification in order to assess the robustness of the models and results discussed above.

6.3.1. Potential Sample Selection

Further, there might be a concern that potential sample selection bias might affect the interpretation of my results. Specifically, I define the risk set of my analysis as the entire universe of publicly-listed firms with available data as reported by S&P's Compustat from 1998 to 2007 inclusive. Yet, IRRC offers governance variables for only a subset of the firms that report financials to S&P's Compustat, comprising 17%

of publicly-traded firms. Firms covered by IRRC tend to be larger, more established organizations. But this potential focus on larger firms would work against the hypotheses laid out above, making the statistical tests more conservative. Therefore, potential sample selection may be a lesser concern in this study.

Despite this consideration, one adequate approach to empirically account for potential sample selection bias is provided by Lee (1983) in the generalization of the Heckman (1979) two-stage selection model. This approach provides a correction for potential selection in the form of the correction variable lambda (λ), which makes the estimates of predictor variables more precise by mitigating the effects of omitted variable bias (Greene, 2000). I follow this approach, which has been applied in strategic management (e.g., Leiblein, Reuer and Dalsace, 2002; Turner, Mitchell and Bettis, 2008), and employ a Cox regression model that predicts the hazard of inclusion in the IRRC dataset for all 8422 firms featured in Compustat in a first-stage model that generates lambda. The correction variable lambda (λ) is defined as:

$$\lambda_{it} = \frac{\phi\,[\phi^{-1}(F_i(t))]}{1 - F_i(t)} \qquad (3)$$

where $F_i(t)$ is the cumulative hazard function for firm *i* at time *t*, Φ is the standard normal density function, and Φ^{-1} is the inverse of the standard normal distribution function (Lee, 1983). However, as Table 9 shows, the implementation of a two-stage model with correction for potential selection bias did not change the results of the main

regressions reported on Table 8. It is also noteworthy that the selection correction variable (λ) is not significant in any of the second-stage analyses as shown on Table 9.

6.3.2. Potential Endogeneity

Finally, I took steps to address potential concerns on how endogeneity may affect the interpretation of the results presented above. For example, it may be argued that self-interested managers may purposefully drive lower employee and asset productivity, which would manifest itself in the form of higher potential for operational engineering, underperformance, and thus in a higher probability of buyout. In this hypothetical case, self-interested management would be aiming for a buyout that would enable them to stay on as managers of the buyout target after the completion of the transaction, but with higher-powered incentives. In order to evaluate this possibility, I sought to determine how many of the 65 buyouts in my sample are MBOs (management buyouts), since the self-interested manager seeking a profitable buyout would only reap personal rewards in the case of an MBO. This approach has been applied by Long and Ravenscraft (1993a), and represents a particularly controversial aspect of buyouts since managers are insiders that have access to privileged information. However, I found that only 7 of the 65 buyouts in my sample are MBOs, and therefore conclude that endogeneity may be a lesser concern in the interpretation of the results of this study.

6.3.3. Alternative Measures

First, the POE measure employed in this study is based on asset inefficiency following Carton and Hofer (2006). Yet, measures based on personnel inefficiency or

productivity may also be considered as potential antecedents of buyout activity (e.g., Fox and Marcus, 1992). I have therefore developed two measures to reflect this concept.

The first one is *Employee Inefficiency*, defined as number of employees per unit of net sales, gauging the level of overall employee productivity in line and support functions of firms. Baker and Wruck (1989) and Palepu (1990) argued that a post-buyout reorganization may lead to stronger operational performance following personnel reductions in the buyout target due to the removal of hierarchical layers, the elimination of communication bottlenecks, a faster flow of information, and a quicker pace of decision-making.

Second, a related albeit different personnel-centered measure is *Overheads Inefficiency* in the form of SG&A (sales, general and administrative expenses scaled by net sales), which gauges personnel productivity in support functions only. As shown on Tables 10 and 11, however, no empirical support was found for either employee or overheads inefficiency as a predictor of buyout activity.

Third, variables associated with the general market conditions affecting overall buyout activity may also influence the regression results presented above. Whereas the year fixed effects employed in my regressions may capture some of these general market conditions, buyout firm-level variables such as the availability of equity and debt capital or recent experience with buyouts in specific industry factors may also influence the results presented above. Therefore, I have included two additional variables. *Dry Powder* gauges the overall availability of equity capital in the buyout

industry available from Thomson Financial. *Credit Spread*, defined as the interest rate spread between US government bonds and junk (speculative) bonds, measures the ease of access to debt financing for buyouts. These data are available from the Federal Reserve Board. However, as Table 12 shows, these additional variables did not improve model fit above and beyond the year fixed effects, which had to be excluded due to multicollinearity.

Next, Table 13 offers a robustness check without the industry fixed effects reported on Table 8. The results are qualitatively unchanged.

Further, I examine more closely on Tables 14 through 18 each one of the four measures employed to build the one-factor construct (asset inefficiency) which gauges POE as utilized on the main regressions on Table 8. As the Pearson correlation coefficients on Table 14 show, each one of the four measures (cash inefficiency, working capital inefficiency, fixed-asset inefficiency and total-asset inefficiency) are highly correlated with the one-factor construct asset inefficiency ($p<.001$). I therefore substitute the one-factor construct for each one of the four measures on Tables 15, 16, 17 and 18. The results show that two of these measures (liquidity inefficiency and working capital inefficiency) *lower* the probability of a buyout event as the coefficients of their direct effects are negative and significant ($p<.05$), whereas another measure (fixed-asset inefficiency) *increases* the probability of a buyout event as its regression coefficient is positive and significant ($p<.05$). These results highlight an opportunity for future research, which I elaborate below.

On Tables 19 and 20, I check for the robustness of the results presented on Table 8 by building on the measure of free cash flows as applied by Lehn and Poulsen (1989). Whereas this measure has been applied in buyout studies and in broader corporate governance studies, it does not include what may be considered a key input in the computation of free cash flows: capital expenditures. I therefore create an adjusted measure of free cash flows by subtracting capital expenditures (scaled by net sales) from the measure employed by Lehn and Poulsen (1989). Pearson correlations with variables of interest are shown on Table 19. On Table 20, I provide Cox regression analyses with this adjusted measure of free cash flows. The results are qualitatively similar to the ones reported on Table 8.

Finally, I also provide robustness checks for the model specification employed in this study. Specifically, prior work in the buyouts literature stream has relied on Logit regressions to examine the antecedents of buyout activity. As mentioned above, these models cannot accommodate competing risks. Yet, the question remains as of whether the results presented above are sensitive to model specification. On Table 21, I re-estimate the regressions of Table 8 with Logit models, and find that the results are qualitatively unchanged. Further, the extreme rareness of buyouts in this sample (65 buyouts in a sample of 1459 firms and 8631 years) may bias the results of Logit regressions. King and Zeng (1999) warn against the use of Logit models in rare-event samples and propose the application of RE (Rare Events) Logit models instead. On Table 22, I re-estimate the regressions of Table 8 with RE-Logit models, and find that the results remain qualitatively unchanged.

CHAPTER 7

DISCUSSION

In this study, I examined the interplay between governance engineering and operational engineering in the context of buyouts. In doing so, I aimed to address two questions associated with the antecedents of buyout activity. First, prior work (e.g., Singh, 1990; Opler and Titman, 1993) relied on proxies rather than direct measures of agency costs which gauge a firm's potential for governance engineering. In this study, I offered a more direct test of the agency-based argument by using measures such as board independence, CEO duality and insider equity ownership to predict buyout activity. The second question I aimed to address with this study centered on Kaplan's (2007) proposition on operational engineering. I thus examined potential antecedents of PE buyouts, testing Kaplan's (2007) proposition while controlling for agency-related antecedents. In empirical tests where I controlled for competing risks with a Cox proportional hazards model, I did not find strong support for either proposition as an antecedent of buyout activity.

This research is associated with potential contributions and implications to corporate governance theory and practice. It is also associated with several limitations, which future research may address. I start by elaborating on contributions and implications as follows.

7.1. Contributions

This research offers at least four contributions to corporate governance research in general and buyouts in specific.

7.1.1. Theory

In this study, I tested a new theory proposed by Kaplan (2007), according to whom POE (potential for operational engineering) is a predictor of buyout activity in addition to agency conditions first proposed by Jensen (1986). Taken as a whole, the evidence I found failed to lend strong support for either proposition as an antecedent of buyout activity in my sample of buyouts events from 1998 through 2007.

Yet, I found statistical significance in one specific instance. In a context of high asset inefficiency (high POE) and high board independence, the probability of buyout is *decreased*. This finding is perhaps not counterintuitive. One potential explanation for this finding is that buyout executives will avoid buying out targets that underperform operationally and have independent boards at the same time because buyout executives are more confident about their ability to address governance problems (board monitoring) than to solve operational problems, which – in addition to requiring expert knowledge and experience – also require significantly more attention and effort by buyout executives to address. Another potential explanation is that buyout executives behave in a risk-averse fashion when considering buyout targets that seem problematic operationally.

Nevertheless, taken as a whole, the lack of strong support for extant theory (FCF-based and POE-based) as derived from my findings is more consistent with the

perspective offered by a manager who was interviewed as part of this study. This interviewee is a successful founder-CEO who decided to sell his manufacturing company to a prestigious buyout firm in the early to mid 2000s. When asked whether the new owners were able to add value in the form of advice in addition to the typical control (monitoring) role, the interviewee reacted quite strongly:

> *You need to understand something. These buyouts guys are some of the smartest people you will ever find, but I would never invite them to come see me on-site and give me advice on how to run my business. They sure know a lot about finance, but they don't have a clue about the simplest of principles on how to run an industrial operation and handle messy issues with employees or clients. They would destabilize my operation if they were allowed to get their hands dirty. This is why I made sure that all our meetings were in hotels or restaurants – before, during and after the buyout.*

7.1.2. Measures

In this study, I employed more direct measures of agency problems in the form of board independence, CEO duality and insider equity ownership, rather than the agency proxy employed in previous work in the form of free cash flows scaled by net sales. Whereas high free cash flows may serve as a measure of agency problems, it is also likely that this measure is associated with other conditions which have little to do with agency problems.

This reasoning is consistent with descriptive statistics in my study, in which free cash flow was not significantly correlated with board independence or CEO duality, and was only weakly correlated with insider equity ownership ($p < .10$). At the same time, the correlation between free cash flow and asset inefficiency was highly

significant (-.79, $p < .001$), suggesting that prior work on buyouts based on proxy measures of agency costs may have rather offered tests of the POE argument instead. In light of prior work on 1980s' LBOs, one way to interpret my findings is that free cash flow as an agency proxy was an adequate measure in the 1980s, but probably in lesser degree from the 1990s onwards given the evolution of US corporate governance as described by Holmstrom and Kaplan (2003). An alternative interpretation of my finding is that free cash flow was never an adequate measure of agency problems to begin with. My study does not offer direct evidence that could answer this question, which would require data from the 1980s onwards.

7.1.3. Methods

This study departs methodologically from prior work on the antecedents of buyout activity. Prior work has relied on logit models to estimate the probability of buyout. Whereas adequate given the nature of the binary dependent variable employed, logit models do not accommodate situations in which competing risks must be taken into account. In this study, I thus control for competing risks of M&A when examining buyout activity with a Cox proportional hazards model. Whereas the FCF- and POE-based arguments may lead to buyout activity, they may also lead to M&A by other financial acquirers (e.g. banks) or even strategic acquirers. If this is valid, then the proportional hazards approach represents a contribution to the buyout research stream.

7.1.4. Phenomenon

Finally, I extend prior work on LBOs in strategic management (Singh, 1990; Wiersema and Liebeskind, 1995) to examine the more recent PE buyout wave. Anecdotal evidence has suggested that the more recent PE buyout wave is rather different from 1980s' LBOs. In the 1980s, the typical buyout transaction was usually hostile, with heavy use of leverage, pursued by one buyout firm, and with the goal to implement governance engineering. By the 2000s, the typical buyout transaction was arguably friendly, with limited use of leverage, pursued jointly by more than one buyout firm, and with the goal to implement operational engineering. The question as of how different 1980s' LBOs are from 2000s' PE buyouts remains ultimately open. This study offers an initial contribution to this question.

7.2. Implications

The empirical results of the present study also lead to implications for theory and practice, as explained below.

7.2.1. Implications for Theory

From a theoretical perspective, this study leads to several implications. An immediate implication that follows from the present study is related to the antecedents of PE buyouts. If the present study leads to the conclusion that FCF theory does not predict which firms become buyout targets, then strategic management researchers may look for alternative explanations for the present-day PE phenomenon. As noted above, it is possible that FCF was germane in explaining buyouts in the 1980s, but became less important from the 1990s onwards given the profound changes in US corporate

governance culminating with the passage of Sarbanes Oxley in 2002. As explained by Holmstrom and Kaplan (2003), internal and external governance mechanisms in US corporations became progressively stronger from the 1990s onwards, prompting Kaplan (1997) to produce a working paper entitled “we are all Henry Kravis now”.

The second implication is linked with the consequences of private equity ownership in situations where the new owners are more interested in short-term financial gains than long-term firm competitiveness. Whilst most research on buyouts evaluates consequences from the perspective of key stakeholders of the firm such as equity investors, management, employees, bondholders and tax authorities, the discussion has yet to focus on the consequences to the firm as an on-going concern. This question is of central importance to strategic management scholars. The present study raises the question that buyouts may be associated with financial improvements only rather than operational improvements. If private equity buyouts lead to financial improvements only, then the economic logic of these transactions must be questioned since they have no effect on firm competitiveness.

A third implication concerns the relationship of risk and return, a topic of interest in strategic management (e.g. Bowman, 1980; March and Shapira, 1987; Andersen, Denrell and Bettis, 2005). A source of controversy in PE buyouts is the significant use of leverage and the resulting increase in risk in the buyout target. PE buyouts offer an interesting context into which the debate on the relationship between risk and return may be extended. Relatedly, a study commissioned by the Yale Investments Office showed how buyouts, in the absence of operational improvements,

simply increase risk in the buyout target without offering much in return. This study of 542 buyouts from 1987 to 1998 documented a gross return to investors of 48% per year, equivalent to a 36% return net of PE management fees and general partner compensation. This return would have widely surpassed the return of comparably-sized investments in the S&P 500 stock index, which delivered 17% per year in the same period. However, this comparison does not adjust for the high levels of leverage typically associated with PE buyouts. Comparably-timed, comparably-sized and comparably-leveraged investments in the S&P 500 would have produced an impressive 86% annual return in the same period, widely surpassing PE returns. Potential accusations of biased sampling in this study are counterweighted by the fact that the data were gathered from PE firms soliciting business from Yale. David Swensen, the longtime chief investment officer of the Yale Endowment, concludes that (2005:135):

> *Pure financial engineering represents a commodity, easily available to marketable securities investors through margin accounts and futures markets. Buyout managers deserve scant incremental compensation for adding debt to corporate balance sheets.*

However, this debate is far from over as Groh and Gottschalg (2006) found opposite results in a study of 199 US buyouts from 1984 to 2004. I echo Cumming, Siegel and Wright (2007) to state that more research is warranted on the intriguing relationship between risk and return in the context of PE buyouts.

A fourth implication relates to an implicit assumption underlying the FCF argument: the notion that managers are self-interested and will rationally take courses of action that serve their interests, sometimes at the expense of shareholder interests.

Yet, managerial behavior has also been examined from other perspectives. For example, bounded rationality (e.g. Simon, 1997) offers an alternative explanation for dysfunctional managerial behavior such as overinvestments in listed corporations. Specifically, managers may overinvest in value-destroying opportunities not because of the combination of self-interest and opportunism as proposed by Jensen (1986) in his classic FCF argument, but due to human decision-making processes based on heuristics and biases such as overconfidence (e.g. Kahneman, Slovic and Tversky, 1982).

The analysis of overconfidence relates several branches of the psychology literature (Malmendier and Tate, 2005), including the tendency of individuals to consider themselves above average on positive characteristics (e.g. Kruger, 1999); the tendency of individuals to be too optimistic about their own future prospects (e.g., Weinstein, 1980); and the tendency of top managers to be highly likely to face low-frequency and noisy feedback – which are key predictors of biased decision making (e.g., Nisbett and Ross, 1980). Top-level executive decisions such as large-scale investments, merger agreements, or capital restructuring are relatively rare events in the life of one company, and each project has many distinct features which make comparison to past experiences difficult (Malmendier and Tate, 2005). From this perspective, the oil managers that *ex post* seemed to have overinvested in capital expenditures in the mid 1980s may have simply suffered from the adverse consequences of inaccurate oil price forecasts in the context of long investment cycles that, once started, are hard to be stopped or reversed.

Finally, moving beyond the specific context of buyouts, this study may also lead to implications related to the broader question of why firms underperform. If the role of agency-theoretic arguments (combined with POE) in explaining firm underperformance are found to be limited in the context of buyouts, then these relationships should also be re-examined in a broader set of contexts in corporate governance, such as bankruptcies.

7.2.2. Implications for Practice

The present study also evidences implications to practitioners in strategic management. In describing ways in which academic researchers may successfully translate their work into articles that are relevant for managers, McGahan (2007) highlighted the value of showing that a widely used management practice violates important principles. This study on buyouts leads to the implication that PE buyouts may be difficult to reconcile with an important principle in strategic management, according to which a key component of a firm's strategy is the economic logic of actions undertaken by management (e.g. Hambrick and Frederickson, 2005). Specifically, if little empirical support is found for Kaplan's (2007) proposition on operational engineering, then buyout-related benefits are more likely to be purely financial rather than operational in line with Swensen (2000), potentially leading to the questioning of the economic logic of buyouts as a governance structure. Whereas operational engineering may lead to enhanced firm competitiveness, financial engineering in the form of more debt may not.

A second implication from a practical perspective follows from an intriguing question, namely whether the operational improvements potentially associated with

buyouts can be obtained without taking the target private in the first place (Jensen, Kaplan, Ferenbach, Feldberg, Moon, Hoesterey, Davis and Jones, 2006). At the heart of this debate is the extent to which internal governance mechanisms may serve as substitutes to their external counterparts (e.g. Walsh and Seward, 1990). This is an intriguing question yet to be resolved from a practitioner's perspective.

Relatedly, a third practical implication concerns a closer examination of PE firms, which grew in importance rapidly as the buyout phenomenon disseminates throughout the US. Strategic management scholars may be interested in examining in PE firms the very same agency problems that some PE executives claim to solve in buyout targets. As noted, the relationship between general partners (GPs) and limited partners (LPs) is prone to severe agency problems. Poorly structured PE arrangements often produce misaligned interests between GPs and LPs. As an example, some GPs may receive carried interests of 20% of partnership profits regardless of buyout performance, creating the incentive to increase buyout volume without worrying about returns (e.g. Swensen, 2000). It is thus not surprising to note that the relationship between GPs and LPs remains a high-potential domain for scholars interested in corporate governance.

7.3. Limitations and Opportunities for Future Research

This research is also associated with limitations that future research may address. A first limitation as well as opportunity for future research relates to my dataset. As noted, the data are time-varying and target-level. Yet, it is possible that additional antecedents of buyout activity may also involve dyad-level (buyout target

and acquirer) elements. In these cases, other research methods such as state-based sampling (e.g., Folta and O'Brien, 2004) are more adequate.

A second limitation as well as opportunity also relates to the fact that my data source includes listed (publicly-traded) whole-firms only, given the agency-theoretic backdrop of this study. Whereas I focus on going-private (public to private) buyouts, buyout transactions are also a common practice in private firms. This limits the generalizability of my results. Indeed, for some types of private firms such as family businesses, buyouts are sometimes the most viable path for a succession plan leading to a change in ownership (Rickertsen, 2001). Further, the characteristics of private-to-private buyouts are quite unique (e.g., Malone, 1989; Zahra, 1995). Future research may therefore examine the antecedents of buyouts of privately-held firms. This research opportunity could requite primary data sources.

A third potential avenue for future research follows from a key assumption that underlies the present work, namely that buyout firms would actively seek candidate targets with high potential for operational engineering. A related, equally intriguing question relates to what actually happens to operations in the buyout target after the transaction is complete. Whereas this question is beyond the scope of the present study which focuses on the antecedents of buyouts, the question on the consequences of buyouts is also of high importance to corporate governance scholars. Specifically, an alternative way to test Kaplan's (2007) proposition would be to focus on post-buyout operations. This research opportunity would necessitate data sources that span pre- and

post-buyout observations, which could be challenging given the nature of going-private transactions.

Finally, corporate governance researchers interested in buyouts might also consider the development of new theory, if a combination of the traditional agency-theoretic arguments and the more recent POE proposition fails to be associated with strong empirical support. A common theme that emerged anecdotally is how partners at buyout firms may behave opportunistically when screening and chasing potential buyout targets. If this is valid, then a social networks perspective might be useful in further examining buyout activity. Whereas economic drivers have traditionally been used to explain buyout activity in the extant literature, little research has considered firms' embeddedness in social and economic contexts that may enable buyouts. In a broader context, some researchers (e.g., Haunschild, 1993; Haunschild and Beckman, 1998) have examined the role of social context and organizational embeddedness in M&A transactions. These theoretical considerations have yet to be extended to the buyouts literature.

Table 1. 1980s' LBOs: Theoretical Antecedents and Empirical Evidence

Antecedent and Key Contribution	**Underlying Mechanism**	**Empirical Evidence**
Agency costs of free cash flows (Jensen, 1986; 1989; 1991; 1993)	• In line with FCF theory, Jensen (1986, 1989, 1991, 1993) argues that high cash flows enable agents to invest in value-destroying projects • Companies that invest in value-destroying projects will be punished in capital markets and become buyout targets	• Singh (1990) found that cash flow to net sales is a predictor of buyout activity in a sample of 1980s' MBOs
Unsuccessful diversification (Shleifer and Vishny, 1990)	• In line with agency theory, unrelated diversification provides agents with an avenue for empire-building (Amihud and Lev, 1981) • Shareholder disappointment with conglomerates led to a shift away from unsuccessful diversification (Shleifer and Vishny, 1990)	• Opler and Titman (1993) found evidence in partial support of this argument
Firm undervaluation (Singh, 1990; Fox and Marcus, 1992; Donaldson, 1994)	• In line with agency theory and the market for corporate control (e.g., Fama, 1980), agents engage in behavior that decreases firm value • Institutional shareholders expose undervalued firms, turning these into buyout targets	• Opler and Titman (1993) found evidence in partial support of this argument in a study of 1980s' LBOs
Free cash flows and undervaluation (Opler and Titman, 1993)	• The FCF argument interacts with the undervaluation argument to explain buyout activity	• Opler and Titman (1993) found evidence in partial support of this argument in a study of 1980s' LBOs

Table 2. Comparison of this Study with Prior Work

	Singh (1990)	**Opler and Titman (1993)**	**This Study**
Data Sources	• Buyouts: SEC files and private lists from two investment banks • Transaction-level data: Wall Street Journal Index and SEC filings • Target financials: Compustat	• Buyouts: ADP M&A, S&P News, Dow Jones Broad Tape, and private list from Bronwyn Hall • Target financials: Compustat • Diversification data: TRINET	• Buyouts: SDC • Target financials: Compustat • Diversification data: Compustat II (Business Segments) • Board-level variables: IRRC
# of Observations	• 65 listed firms undergoing an MBO (management buyout) • 130 control firms	• 170 listed firms undergoing an LBO (leveraged buyout) • 3320 control firms	• 65 listed firms undergoing LBO • 1459 firms in total • 8631 firm-years in total (buyout firms plus control firms)
Time Period	• 1980-1987	• 1980-1990	• 1998-2007
Methodology	• Logistic regression	• Logistic regression	• Cox regression
Control for Industry	• Matched sample: 2 control firms for each buyout firm	• Entire universe of firms with available data	• Entire universe of firms with available data
Control for Competing Risks	• No	• No	• Yes
Agency Measures	• Proxy measures	• Proxy measures	• Direct measures

Table 3. Buyout Cycles

Year	All Buyout Transactions		Divestiture Buyouts		Private-to-Private Buyouts		Public-to-Private Buyouts	
	# Deals [-]	Avg. Value [$ millions]	# Deals [-]	Avg. Value [$ millions]	# Deals [-]	Avg. Value [$ millions]	# Deals [-]	Avg. Value [$ millions]
1981	4	393	1	NA	3	393	-	0
1982	-	0	-	0	-	0	-	0
1983	1	442	-	0	1	442	-	0
1984	8	423	-	0	8	423	-	0
1985	1	116	1	116	-	0	-	0
1986	3	259	1	NA	1	35	1	484
1987	3	116	2	116	-	0	1	NA
1988	10	338	1	NA	4	211	5	388
1989	7	7,848	1	NA	3	75	3	10,439
1990	6	1,183	3	843	2	NA	1	1,863
1991	10	260	4	58	6	530	-	0
1992	13	69	5	37	8	94	-	0
1993	10	94	4	159	5	39	1	10
1994	18	452	8	598	9	160	1	NA
1995	23	467	11	98	11	70	1	4,643
1996	22	211	6	201	14	98	2	569
1997	38	223	12	209	20	177	6	292
1998	40	285	15	202	21	355	4	368
1999	42	290	16	272	20	327	6	261
2000	67	197	22	228	39	133	6	250
2001	22	127	9	209	12	15	1	77
2002	28	292	16	386	10	81	2	23
2003	23	786	9	1,116	13	320	1	342
2004	96	420	43	346	46	377	7	718
2005	165	312	62	294	95	244	8	502
2006	278	1,343	95	756	167	303	16	3,716
2007	368	2,511	128	741	205	316	35	6,301
2008	261	860	86	441	164	81	11	2,981
Total	**1,567**	**1,001**	**561**	**477**	**887**	**246**	**119**	**3,159**

Table 4. Sample Description by Industrial Sector

2-digit SIC	Description	Number of Buyouts
13	Oil and gas extraction	1
20	Food and kindred products	2
23	Apparel and other textile products	1
27	Printing and publishing	2
28	Chemicals and allied products	2
33	Primary metal industries	1
35	Industrial machinery and equipment	1
36	Electrical and electronic equipment	5
37	Transportation equipment	3
38	Instruments and related products	3
39	Miscellaneous manufacturing industries	1
48	Communications	2
49	Electric, gas, and sanitary services	2
50	Wholesale trade of durable goods	2
51	Wholesale trade of nondurable goods	1
53	General merchandise stores	3
54	Food stores	1
56	Apparel and accessory stores	1
57	Furniture, home furnishings and equipment stores	1
58	Eating and drinking places	2
59	Miscellaneous retail	6
70	Hotels, rooming houses, camps, and other lodging	2
73	Business services	9
75	Automotive repair, services, and parking	1
80	Health services	4
82	Educational services	2
87	Engineering and management services	4
Total		**65**

Table 5. Sample Description by Year

Year	**Number of Buyouts**
1998	0
1999	4
2000	8
2001	1
2002	1
2003	1
2004	3
2005	5
2006	12
2007	30
Total	**65**

Table 6. Variables and Measures

Variable	**Type of Variable**	**Measure**
Buyout	Dependent	Probability of a buyout (by any type of buyout firm) occurring at time *t*, given that the event has not occurred prior to that instant
Board Independence	Independent	Percentage of board members that are independent and therefore not affiliated directors according to the IRRC
CEO Duality	Independent	Dummy variable coded as one if the firm's CEO also serves as chairperson at the same firm
Insider Equity Ownership	Independent	Percentage of equity controlled by the firms' directors and officers as provided by the IRRC
Asset Inefficiency	Independent	Construct obtained from factor analysis of four inefficiency measures: liquidity inefficiency (cash and equivalents #1 scaled by net sales #12); working capital inefficiency (working capital #179 scaled by net sales #12); fixed-asset inefficiency (property, plant and equipment #7 scaled by net sales #12); and total asset inefficiency (total assets #6 scaled by net sales #12). The factor analysis yielded a one-factor weighted average with an eigenvalue of 3.38 that explained 84.5% of total variance
Free Cash Flow	Control	Free cash flow divided by firm sales. Free cash flow is operating income before depreciation (#13), minus total income taxes (#16), minus the change in deferred taxes from the previous year to the current year (change in #35), minus gross interest expenses on short and long-term debt (#15), minus the total amount of preferred dividend requirement on cumulative preferred stock and dividends paid on non-cumulative preferred stock (#19), minus the total dollar amount of dividends declared on common stock (#21)
Unrelated Diversification	Control	Jacquemin-Berry entropy measure of diversification at the 2-digit SIC level
Tobin's Q	Control	Market value divided by book value of assets. Market value is the firm's market value of common stock (#24 * #25), plus book value of assets (#6), less book value of common equity (#60), less deferred taxes on the balance sheet (#74)
Leverage	Control	Total debt (#9 plus #34) divided by total equity (#216)
Taxes	Control	Income tax expenses (#16) scaled by net sales (#12)
Year Fixed Effects	Control	Dummy variables that equal one if the buyout was completed in the given year, and zero otherwise
Industry Fixed Effects	Control	Dummy variables that equal one if the buyout was completed in the given 2-digit SIC industrial sector, and zero otherwise

Table 7. Descriptive Statistics and Correlation Matrix

Independent Variables	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Buyout	.008	.086									
2. Free cash flow	.051	1.936	.00								
3. Unrelated diversification	.145	.242	-.01	.01							
4. Tobin's Q	2.107	1.701	-.03*	-.01	-.14***						
5. Leverage	.775	3.151	-.01	.00	.05***	-.01					
6. Taxes	.032	.084	.01	-.01	-.02†	.17***	-.02				
7. Board independence	67.239	16.754	.00	-.01	.07***	-.04***	.00	.00			
8. CEO duality	.320	.466	.02	-.01	-.11***	.02*	-.04**	.00	-.11***		
9. Insider equity ownership	10.733	14.342	.01	-.02†	-.06***	.01	.02†	-.02†	-.41***	.04***	
10. Asset inefficiency	2.562	6.782	.00	-.79***	-.03**	.04**	.00	-.09***	.01	-.01	.00

n = 8631. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 8. Main Results of Cox Regression

Independent Variables	Model I (Controls)	Model II (H1-H3)	Model III (H4)	Model IV (H5)	Model V (H6)
Free cash flow	2.235 (2.295)	2.481 (2.355)	2.029 (2.335)	2.306 (2.315)	2.627 (2.357)
Unrelated diversification	.076 (.144)	.067 (.146)	.069 (.146)	.082 (.147)	.064 (.145)
Tobin's Q	-1.462*** (.368)	-1.493*** (.377)	-1.532*** (.378)	-1.531*** (.380)	-1.494*** (.378)
Leverage	-.029 (.129)	-.031 (.128)	-.026 (.129)	-.033 (.129)	-.029 (.130)
Taxes	.337 (.227)	.370 (.251)	.436† (.253)	.407 (.251)	.355 (.249)
Year fixed effects	30.21***	28.14***	28.69***	28.55***	28.56***
Industry fixed effects	64.81***	63.79***	64.03***	64.50***	64.21***
Board independence	---	.095 (.154)	.089 (.154)	.088 (.154)	.096 (.154)
CEO duality	---	.023 (.127)	.027 (.127)	.038 (.128)	.026 (.127)
Insider equity ownership	---	.126 (.123)	.140 (.125)	.119 (.123)	.092 (.131)
Asset inefficiency	---	-.059 (.479)	-.226 (.494)	-.135 (.493)	-.068 (.456)
Asset inefficiency * board independence	---	---	-.484* (.244)	---	---
Asset inefficiency * CEO duality	---	---	---	.402 (.353)	---
Asset inefficiency * insider equity ownership	---	---	---	---	-.358 (.409)
Log Likelihood, L(β)	-376.03	-375.48	-373.94	-374.87	-375.05
Model χ^2	131.95***	133.03***	136.11***	134.26***	133.89***
Number of observations	8631	8631	8631	8631	8631
Number of firms	1459	1459	1459	1459	1459
Number of events	65	65	65	65	65

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
Wald chi-square statistics for the null hypothesis of equal year and industry effects.

Table 9. Robustness: Two-Stage Cox Regression (Selection Correction)

Independent Variables	Stage I	Stage II: Model I (Controls)	Stage II: Model II (H1-H3)	Stage II: Model III (H4)	Stage II: Model IV (H5)	Stage II: Model V (H6)
Free cash flow	-.010 (.225)	2.233 (2.294)	2.436 (2.307)	2.037 (2.333)	2.297 (2.314)	2.619 (2.353)
Unrelated diversification	.124*** (.035)	.056 (.151)	.049 (.152)	.051 (.152)	.063 (.153)	.044 (.151)
Tobin's Q	-.235*** (.357)	-1.431*** (.373)	-1.442*** (.381)	-1.504*** (.353)	-1.501*** (.385)	-1.461*** (.383)
Leverage	-.024 (.033)	-.021 (.129)	-.025 (.127)	-.019 (.128)	-.026 (.128)	-.021 (.129)
Taxes	.051* (.023)	.335 (.227)	.333 (.250)	.436† (.252)	.406 (.249)	.352 (.249)
Lambda (λ)	---	.014 (.030)	.013 (.030)	.013 (.031)	.014 (.031)	.015 (.031)
Year fixed effects	1933.31***	4.71	4.58	4.78	4.56	4.56
Industry fixed effects	79.50***	64.78***	63.70***	63.99***	64.43***	64.11***
Board independence	---	---	.095 (.154)	.090 (.154)	.089 (.154)	.098 (.159)
CEO duality	---	---	.026 (.127)	.028 (.127)	.039 (.128)	.027 (.127)
Insider equity ownership	---	---	.124 (.124)	.138 (.126)	.116 (.123)	.086 (.133)
Asset inefficiency	---	---	-.062 (.479)	-.231 (.493)	-.141 (.493)	-.074 (.456)
Asset inefficiency * board independence	---	---	---	-.482* (.244)	---	---
Asset inefficiency * CEO duality	---	---	---	---	.404 (.353)	---
Asset inefficiency * insider equity ownership	---	---	---	---	---	-.369 (.415)
Log Likelihood, L(β)	-10787.72	-375.91	-375.37	-373.85	-374.77	-375.05
Model χ^2	1850.98***	132.18***	133.26***	136.30***	134.47***	133.89***
Number of observations	37939	8631	8631	8631	8631	8631
Number of firms	8422	1459	1459	1459	1459	1459
Number of events	1459	65	65	65	65	65

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
Wald chi-square statistics for the null hypothesis of equal year and industry effects.

Table 10. Robustness: Cox Regression with Employee Inefficiency

Independent Variables	Model I (Controls)	Model II (H1-H3)	Model III (H4)	Model IV (H5)	Model V (H6)
Free cash flow	2.235 (2.295)	2.449 (2.361)	2.416 (2.360)	2.435 (2.358)	2.502 (2.372)
Unrelated diversification	.076 (.144)	.068 (.146)	.070 (.146)	.068 (.146)	.069 (.146)
Tobin's Q	-1.462*** (.368)	-1.496*** (.378)	-1.494*** (.377)	-1.501*** (.378)	-1.511*** (.378)
Leverage	-.029 (.129)	-.031 (.128)	-.031 (.128)	-.032 (.128)	-.029 (.131)
Taxes	.337 (.227)	.369 (.251)	.365 (.241)	.369 (.251)	.372 (.252)
Year fixed effects	30.21***	28.08***	27.88***	28.02***	27.47***
Industry fixed effects	64.81***	54.76***	55.09***	54.56***	56.43***
Board independence	---	.097 (.154)	.089 (.157)	.097 (.158)	.085 (.155)
CEO duality	---	.024 (.127)	.024 (.128)	.016 (.129)	.020 (.127)
Insider equity ownership	---	.126 (.124)	.127 (.123)	.128 (.123)	.131 (.123)
Asset inefficiency	---	-.065 (.481)	-.066 (.482)	-.062 (.481)	-.065 (.482)
Employee inefficiency	---	.024 (.159)	.046 (.176)	.055 (.129)	.060 (.144)
Employee inefficiency * board independence	---	---	-.037 (.136)	---	---
Employee inefficiency * CEO duality	---	---	---	.289 (.820)	---
Employee inefficiency * insider equity ownership	---	---	---	---	.178 (.174)
Log Likelihood, L(β)	-376.03	-375.47	-375.44	-375.35	-374.94
Model χ^2	131.95***	133.06***	133.13***	133.24***	134.13***
Number of observations	8631	8631	8631	8631	8631
Number of firms	1459	1459	1459	1459	1459
Number of events	65	65	65	65	65

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
Wald chi-square statistics for the null hypothesis of equal year and industry effects.

Table 11. Robustness: Cox Regression with Overheads Inefficiency

Independent Variables	Model I (Controls)	Model II (H1-H3)	Model III (H4)	Model IV (H5)	Model V (H6)
Free cash flow	2.235 (2.295)	2.817 (2.285)	2.782 (2.284)	2.798 (2.283)	2.856 (2.302)
Unrelated diversification	.076 (.144)	.098 (.148)	.100 (.148)	.098 (.148)	.098 (.148)
Tobin's Q	-1.462*** (.368)	-1.581*** (.383)	-1.579*** (.382)	-1.586*** (.383)	-1.591*** (.383)
Leverage	-.029 (.129)	-.025 (.132)	-.024 (.132)	-.025 (.131)	-.022 (.135)
Taxes	.337 (.227)	.449† (.246)	.445† (.245)	.449† (.245)	.449† (.248)
Year fixed effects	30.21***	27.98***	27.76***	27.88***	27.36***
Industry fixed effects	64.81***	56.81***	57.01***	56.55***	58.28***
Board independence	---	.084 (.155)	.076 (.157)	.086 (.155)	.074 (.155)
CEO duality	---	.017 (.127)	.017 (.128)	.008 (.122)	.014 (.127)
Insider equity ownership	---	.121 (.125)	.122 (.125)	.123 (.125)	.125 (.124)
Asset inefficiency	---	-.291 (.517)	-.293 (.516)	-.288 (.517)	-.283 (.518)
Employee inefficiency	---	.007 (.158)	.032 (.177)	.052 (.188)	.045 (.146)
Overheads inefficiency	---	.370 (.238)	.371 (.238)	.371 (.239)	.359 (.239)
Overheads inefficiency * board independence	---	---	.039 (.136)	---	---
Overheads inefficiency * CEO duality	---	---	---	.055 (.130)	---
Overheads inefficiency * insider equity ownership	---	---	---	---	-.169 (.177)
Log Likelihood, L(β)	-376.03	-374.32	-374.28	-374.24	-373.86
Model χ^2	131.95***	135.36***	135.44***	135.54***	136.29***
Number of observations	8631	8631	8631	8631	8631
Number of firms	1459	1459	1459	1459	1459
Number of events	65	65	65	65	65

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
Wald chi-square statistics for the null hypothesis of equal year and industry effects.

Table 12. Robustness: Cox Regression with Dry Powder and Credit Spread

Independent Variables	**Model I** (Controls with year fixed effects)	**Model II** (Controls with dry powder and credit spread)	**Model III** (H1-H3 with year fixed effects)	**Model IV** (H1-H3 with dry powder and credit spread)
Free cash flow	2.235 (2.295)	2.201 (2.273)	2.481 (2.355)	2.467 (2.342)
Unrelated diversification	.076 (.144)	.079 (.144)	.067 (.146)	.074 (.145)
Tobin's Q	-1.462*** (.368)	-1.490*** (.369)	-1.493*** (.377)	-1.525*** (.379)
Leverage	-.029 (.129)	-.019 (.132)	-.031 (.128)	-.019 (.132)
Taxes	.337 (.227)	.348 (.225)	.370 (.251)	.393 (.251)
Year fixed effects	30.21***	---	28.14***	---
Dry powder	---	.007** (.002)	---	.007** (.002)
Credit Spread	---	-1.096* (.477)	---	-1.092* (.476)
Industry fixed effects	64.81***	57.27***	63.79***	56.92***
Board independence	---	---	.095 (.154)	.085 (.152)
CEO duality	---	---	.023 (.127)	.037 (.127)
Insider equity ownership	---	---	.126 (.123)	.121 (.123)
Asset inefficiency	---	---	-.059 (.479)	-.119 (.483)
Log Likelihood, L(β)	-376.03	-379.89	-375.48	-379.35
Model χ^2	131.95***	124.22***	133.03***	125.31***
Number of observations	8631	8631	8631	8631
Number of firms	1459	1459	1459	1459
Number of events	65	65	65	65

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
Wald chi-square statistics for the null hypothesis of equal year and industry effects.

Table 13. Robustness: Cox Regressions without Industry Fixed Effects

Independent Variables	Model I (Controls)	Model II (H1-H3)	Model III (H4)	Model IV (H5)	Model V (H6)
Free cash flow	-.001 (.233)	-.206 (.572)	-.302 (.606)	-.244 (.833)	-.234 (.771)
Unrelated diversification	-.029 (.234)	-.021 (.134)	-.033 (.135)	-.018 (.134)	-.016 (.135)
Tobin's Q	-.954** (.307)	-.978** (.309)	-1.019*** (.312)	-.998** (.314)	-.969** (.309)
Leverage	-.069 (.118)	-.070 (.117)	-.069 (.121)	-.070 (.117)	-.070 (.118)
Taxes	.091 (.078)	.105 (.079)	.195 (.124)	.136 (.132)	.077 (.103)
Year fixed effects	34.87***	33.07***	32.91***	33.09***	33.22***
Board independence	---	-.015 (.147)	-.014 (.146)	.017 (.147)	-.017 (.137)
CEO duality	---	.081 (.121)	.082 (.121)	.090 (.122)	.081 (.121)
Insider equity ownership	---	.148 (.112)	.152 (.112)	.147 (.112)	.137 (.116)
Asset inefficiency	---	-.161 (.378)	-.317 (.409)	-.232 (.418)	-.123 (.375)
Asset inefficiency * board independence	---	---	-.466* (.234)	---	---
Asset inefficiency * CEO duality	---	---	---	.230 (.328)	---
Asset inefficiency * insider equity ownership	---	---	---	---	-.147 (.318)
Log Likelihood, L(β)	-415.13	-413.71	-412.14	-413.44	-413.59
Model χ^2	53.73***	56.59***	59.72***	57.13***	56.82***
Number of observations	8631	8631	8631	8631	8631
Number of firms	1459	1459	1459	1459	1459
Number of events	65	65	65	65	65

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
Wald chi-square statistics for the null hypothesis of equal year and industry effects.

Table 14: Robustness: Correlation Table for Asset Inefficiency Measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Free cash flows								
2. Board independence	-.01							
3. Insider equity ownership	-.02†	-.41***						
4. CEO duality	-.01	-.11***	.04***					
5. Asset inefficiency (POE)	-.79***	.01	.00	-.01				
6. Cash inefficiency	-.84***	.01	.02	.01	.96***			
7. Working capital inefficiency	-.82***	.00	.02*	.02	.93***	.99***		
8. Fixed-asset inefficiency	-.82***	.03**	-.05***	-.01	.72***	.68***	.64***	
9. Total-asset inefficiency	-.82***	.01	-.01	-.01	.98***	.94***	.92***	.81***

n = 8631. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 15. Robustness: Cox Regression with Liquidity Inefficiency

Independent Variables	Model I (Controls)	Model II (H1-H3)	Model III (H4)	Model IV (H5)	Model V (H6)
Free cash flow	2.235 (2.295)	.715 (2.599)	.066 (2.524)	.227 (2.067)	-.010 (2.417)
Unrelated diversification	.076 (.144)	.044 (.145)	.052 (.145)	.050 (.146)	.049 (.145)
Tobin's Q	-1.462*** (.368)	-1.441*** (.379)	-1.466*** (.375)	-1.445*** (.378)	-1.459*** (.376)
Leverage	-.029 (.129)	-.015 (.121)	-.001 (.120)	-.011 (.121)	-.001 (.119)
Taxes	.337 (.227)	.556* (.261)	.618** (.250)	.575* (.252)	.646 (.244)
Year fixed effects	30.21***	28.04***	28.66***	28.30***	28.94***
Industry fixed effects	64.81***	60.45***	61.42***	60.99***	62.02***
Board independence	---	.103 (.154)	.114 (.155)	.102 (.154)	.016 (.158)
CEO duality	---	.035 (.127)	.026 (.127)	.079 (.136)	.018 (.128)
Insider equity ownership	---	.126 (.122)	.244† (.133)	.126 (.122)	.136 (.123)
Liquidity inefficiency	---	-2.013† (1.022)	-2.208* (1.095)	-2.122† (1.143)	-1.989† (1.088)
Liquidity inefficiency * board independence	---	---	1.233† (.669)	---	---
Liquidity inefficiency * CEO duality	---	---	---	.632 (.678)	---
Liquidity inefficiency * insider equity ownership	---	---	---	---	-1.186* (.510)
Log Likelihood, L(β)	-376.03	-373.62	-372.55	-373.27	-371.41
Model χ^2	131.95***	136.76***	138.90***	137.46***	141.18***
Number of observations	8631	8631	8631	8631	8631
Number of firms	1459	1459	1459	1459	1459
Number of events	65	65	65	65	65

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
Wald chi-square statistics for the null hypothesis of equal year and industry effects.

Table 16. Robustness: Cox Regression with Working Capital Inefficiency

Independent Variables	Model I (Controls)	Model II (H1-H3)	Model III (H4)	Model IV (H5)	Model V (H6)
Free cash flow	2.235 (2.295)	.324 (2.332)	-.694 (1.223)	.372 (2.644)	-.585 (1.385)
Unrelated diversification	.076 (.144)	.038 (.146)	.052 (.146)	.040 (.146)	.041 (.146)
Tobin's Q	-1.462*** (.368)	-1.450*** (.373)	-1.494*** (.358)	-1.469*** (.380)	-1.469*** (.359)
Leverage	-.029 (.129)	-.007 (.109)	-.010 (.111)	-.010 (.110)	-.001 (.110)
Taxes	.337 (.227)	.577* (.224)	.641*** (.174)	.550* (.243)	.633** (.189)
Year fixed effects	30.21***	27.60***	27.12***	27.68***	28.00***
Industry fixed effects	64.81***	57.92***	57.53***	57.29***	59.36***
Board independence	---	.096 (.154)	.109 (.155)	.093 (.154)	.030 (.161)
CEO duality	---	.045 (.127)	.041 (.127)	.022 (.148)	.039 (.127)
Insider equity ownership	---	.148 (.123)	.262* (.126)	.146 (.123)	.146 (.122)
Working capital inefficiency	---	-2.852** (.923)	-2.789** (.853)	-2.711** (.903)	-2.610** (.926)
Working capital inefficiency * board independence	---	---	1.357* (.588)	---	---
Working capital inefficiency * CEO duality	---	---	---	-.618 (.661)	---
Working capital inefficiency * insider equity ownership	---	---	---	---	-.702 (.612)
Log Likelihood, L(β)	-376.03	-370.96	-369.12	-370.55	-370.43
Model χ^2	131.95***	142.09***	145.77***	142.91***	143.15***
Number of observations	8631	8631	8631	8631	8631
Number of firms	1459	1459	1459	1459	1459
Number of events	65	65	65	65	65

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
Wald chi-square statistics for the null hypothesis of equal year and industry effects.

Table 17. Robustness: Cox Regression with Fixed-Asset Inefficiency

Independent Variables	Model I (Controls)	Model II (H1-H3)	Model III (H4)	Model IV (H5)	Model V (H6)
Free cash flow	2.235 (2.295)	1.427 (2.001)	1.402 (2.129)	1.484 (2.200)	1.162 (2.266)
Unrelated diversification	.076 (.144)	.084 (.126)	.085 (.146)	.075 (.146)	.097 (.146)
Tobin's Q	-1.462*** (.368)	-1.393*** (.362)	-1.392*** (.365)	-1.449*** (.376)	-1.456*** (.377)
Leverage	-.029 (.129)	-.041 (.122)	-.039 (.124)	-.052 (.116)	-.036 (.121)
Taxes	.337 (.227)	.232 (.201)	.228 (.211)	.243 (.221)	.208 (.231)
Year fixed effects	30.21***	29.75***	29.91***	29.49***	28.67***
Industry fixed effects	64.81***	65.27***	64.90***	62.22***	54.14***
Board independence	---	.090 (.153)	.089 (.155)	.096 (.156)	.053 (.163)
CEO duality	---	.022 (.126)	.021 (.126)	.049 (.131)	.024 (.128)
Insider equity ownership	---	.141 (.124)	.120 (.132)	.135 (.124)	.144 (.126)
Fixed-asset inefficiency	---	.920*** (.234)	.889** (.247)	.486 (.439)	.087 (.543)
Fixed-asset inefficiency * board independence	---	---	-.155 (.343)	---	---
Fixed-asset inefficiency * CEO duality	---	---	---	.376 (.264)	---
Fixed-asset inefficiency * insider equity ownership	---	---	---	---	-.535* (.260)
Log Likelihood, L(β)	-376.03	-371.32	-371.22	-369.90	-368.18
Model χ^2	131.95***	141.37***	141.57***	144.20***	147.64***
Number of observations	8631	8631	8631	8631	8631
Number of firms	1459	1459	1459	1459	1459
Number of events	65	65	65	65	65

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
Wald chi-square statistics for the null hypothesis of equal year and industry effects.

Table 18. Robustness: Cox Regression with Total-Asset Inefficiency

Independent Variables	Model I (Controls)	Model II (H1-H3)	Model III (H4)	Model IV (H5)	Model V (H6)
Free cash flow	2.235 (2.295)	2.345 (2.344)	2.485 (2.358)	2.226 (2.265)	2.066 (2.355)
Unrelated diversification	.076 (.144)	.064 (.146)	.063 (.144)	.081 (.147)	.062 (.148)
Tobin's Q	-1.462*** (.368)	-1.461*** (.381)	-1.468*** (.381)	-1.489*** (.382)	-1.583*** (.385)
Leverage	-.029 (.129)	-.034 (.127)	-.032 (.129)	-.041 (.125)	-.024 (.127)
Taxes	.337 (.227)	.331 (.249)	.326 (.248)	.363 (.245)	.420 (.257)
Year fixed effects	30.21***	28.06***	28.55***	28.35***	28.17***
Industry fixed effects	64.81***	63.96***	64.51***	64.61***	62.68***
Board independence	---	.095 (.154)	.097 (.155)	.082 (.154)	.089 (.156)
CEO duality	---	.026 (.127)	.027 (.127)	.047 (.128)	.038 (.127)
Insider equity ownership	---	.126 (.124)	.096 (.128)	.117 (.123)	.150 (.126)
Total-asset inefficiency	---	.121 (.446)	.083 (.406)	.082 (.481)	-.162 (.519)
Total-asset inefficiency * board independence	---	---	-.327 (.345)	---	---
Total-asset inefficiency * CEO duality	---	---	---	.424 (.338)	---
Total-asset inefficiency * insider equity ownership	---	---	---	---	-.534* (.210)
Log Likelihood, L(β)	-376.03	-375.46	-374.96	-374.70	-372.78
Model χ^2	131.95***	133.09***	134.07***	134.61***	138.44***
Number of observations	8631	8631	8631	8631	8631
Number of firms	1459	1459	1459	1459	1459
Number of events	65	65	65	65	65

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
Wald chi-square statistics for the null hypothesis of equal year and industry effects.

Table 19. Robustness: Descriptives with FCF Adjusted for Capital Expenditures

Independent Variables	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Buyout	.008	.086									
2. Adjusted free cash flow	-.030	2.101	.00								
3. Unrelated diversification	.145	.242	-.01	.01							
4. Tobin's Q	2.107	1.701	-.01	-.01	-.14***						
5. Leverage	.775	3.151	.00	.00	.05***	-.01					
6. Taxes	.032	.084	.01	-.01	-.02†	.17***	-.02				
7. Board independence	67.239	16.754	.00	-.01	.07***	-.04***	.00	.00			
8. CEO duality	.320	.466	.02	-.01	-.11***	.02*	-.04**	.00	-.11***		
9. Insider equity ownership	10.733	14.342	.01	-.02†	-.06***	.01	.02†	-.02†	-.41***	.04***	
10. Asset inefficiency	2.562	6.782	.00	-.89***	-.03**	.04**	.00	-.09***	.01	-.01	.00

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
Wald chi-square statistics for the null hypothesis of equal year and industry effects.

Table 20. Robustness: Cox Regressions with FCF Adjusted for Capital Expenditures

Independent Variables	Model I (Controls)	Model II (H1-H3)	Model III (H4)	Model IV (H5)	Model V (H6)
Adjusted free cash flow	4.231 (2.581)	4.476† (2.659)	3.963 (2.624)	4.163 (2.648)	4.771† (2.686)
Unrelated diversification	.065 (.144)	.056 (.146)	.058 (.147)	.071 (.147)	.051 (.144)
Tobin's Q	-1.567*** (.373)	-1.598*** (.354)	-1.637*** (.386)	-1.633*** (.382)	-1.607*** (.385)
Leverage	-.028 (.131)	-.028 (.129)	-.022 (.129)	-.030 (.129)	-.027 (.132)
Taxes	.523* (.252)	.557* (.277)	.613* (.277)	.575* (.275)	.553* (.277)
Year fixed effects	30.25***	28.24***	28.83***	28.57***	28.70***
Industry fixed effects	65.48***	64.57***	64.86***	65.15***	64.99***
Board independence	---	.103 (.154)	.096 (.154)	.095 (.154)	.106 (.154)
CEO duality	---	.021 (.127)	.025 (.127)	.034 (.128)	.024 (.127)
Insider equity ownership	---	.129 (.123)	.138 (.125)	.117 (.123)	.086 (.132)
Asset inefficiency	---	-.067 (.482)	-.222 (.496)	-.124 (.492)	-.078 (.459)
Asset inefficiency * board independence	---	---	-.476† (.247)	---	---
Asset inefficiency * CEO duality	---	---	---	.367 (.357)	---
Asset inefficiency * insider equity ownership	---	---	---	---	-.397 (.409)
Log Likelihood, L(β)	-375.08	-374.54	-373.09	-374.04	-374.00
Model χ^2	133.84***	134.93***	137.83***	135.94***	136.01***
Number of observations	8631	8631	8631	8631	8631
Number of firms	1459	1459	1459	1459	1459
Number of events	65	65	65	65	65

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
Wald chi-square statistics for the null hypothesis of equal year and industry effects.

Table 21. Robustness: Logit Regressions

Independent Variables	Model I (Controls)	Model II (H1-H3)	Model III (H4)	Model IV (H5)	Model V (H6)
Free cash flow	.361 (.936)	.403 (1.157)	.110 (.743)	.388 (1.039)	.430 (1.186)
Unrelated diversification	-.131 (.131)	-.113 (.134)	-.126 (.137)	-.110 (.134)	-.111 (.137)
Tobin's Q	-.832** (.242)	-.859** (.248)	-.891*** (.255)	-.871** (.253)	-.857*** (.248)
Leverage	-.103 (.071)	-.091 (.068)	-.091 (.074)	-.088 (.068)	-.091 (.068)
Taxes	.121 (.118)	.147 (.137)	.231 (.161)	.174 (.169)	.144 (.141)
Board independence	---	.156 (.154)	.152 (.151)	.154 (.154)	.155 (.154)
CEO duality	---	.172 (.119)	.174 (.119)	.180 (.122)	.173 (.118)
Insider equity ownership	---	.200* (.100)	.196† (.101)	.197† (.100)	.196† (.096)
Asset inefficiency	---	-.199 (.376)	-.355 (.507)	-.181 (.485)	-.173 (.118)
Asset inefficiency * board independence	---	---	-.463† (.278)	---	---
Asset inefficiency * CEO duality	---	---	---	.208 (.378)	---
Asset inefficiency * insider equity ownership	---	---	---	---	-.054 (.238)
Wald χ^2	18.84***	23.54***	23.89***	24.20***	24.31***
Pseudo R^2	.018	.025	.029	.026	.025
Number of observations	8631	8631	8631	8631	8631
Number of firms	1459	1459	1459	1459	1459
Number of events	65	65	65	65	65

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
Wald chi-square statistics for the null hypothesis of equal year and industry effects.

Table 22. Robustness: Rare-Events Logit Regressions

Independent Variables	Model I (Controls)	Model II (H1-H3)	Model III (H4)	Model IV (H5)	Model V (H6)
Free cash flow	-.449 (.936)	-.285 (1.157)	-2.027** (.743)	-.773 (1.039)	-.304 (1.186)
Unrelated diversification	-.119 (.131)	-.099 (.134)	-.113 (.137)	-.093 (.134)	-.099 (.137)
Tobin's Q	-.770** (.242)	-.794** (.248)	-.756** (.255)	-.782** (.253)	-.794** (.248)
Leverage	-.162* (.071)	-.142* (.068)	-.146* (.074)	-.136* (.068)	-.141* (.068)
Taxes	.091 (.118)	.101 (.137)	.095 (.161)	.091 (.169)	.093 (.141)
Board independence	---	.148 (.154)	.139 (.151)	.142 (.154)	.149 (.154)
CEO duality	---	.173 (.119)	.177 (.119)	.184 (.122)	.173 (.118)
Insider equity ownership	---	.216* (.100)	.207* (.101)	.212* (.100)	.237* (.096)
Asset inefficiency	---	.054 (.376)	.251 (.507)	.060 (.485)	.119 (.389)
Asset inefficiency * board independence	---	---	-.534† (.278)	---	---
Asset inefficiency * CEO duality	---	---	---	.293 (.378)	---
Asset inefficiency * insider equity ownership	---	---	---	---	.060 (.238)
Pseudo R^2	.018	.025	.029	.026	.025
Number of observations	8631	8631	8631	8631	8631
Number of firms	1459	1459	1459	1459	1459
Number of events	65	65	65	65	65

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$
Wald chi-square statistics for the null hypothesis of equal year and industry effects.

Figure 1. Popular Press Coverage on Buyouts in the US



Figure 2. Popular Press Coverage on Buyouts in Europe





Figure 3. Selected US Buyout Firms



Figure 4. Empirical Model

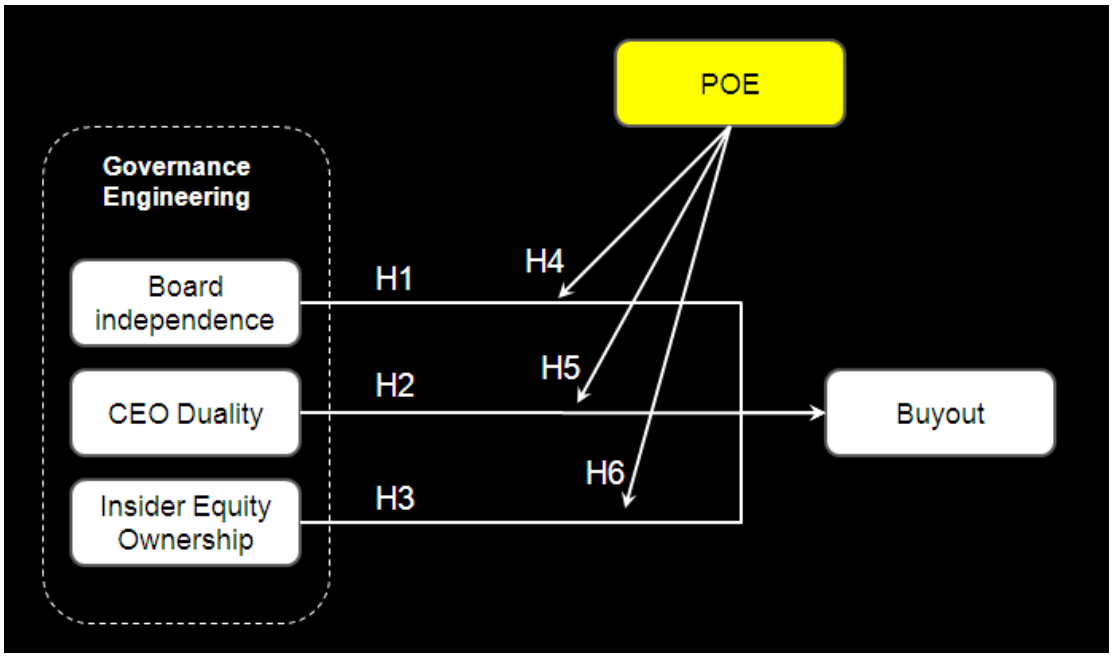


Figure 5. Confirmatory Factor Analysis

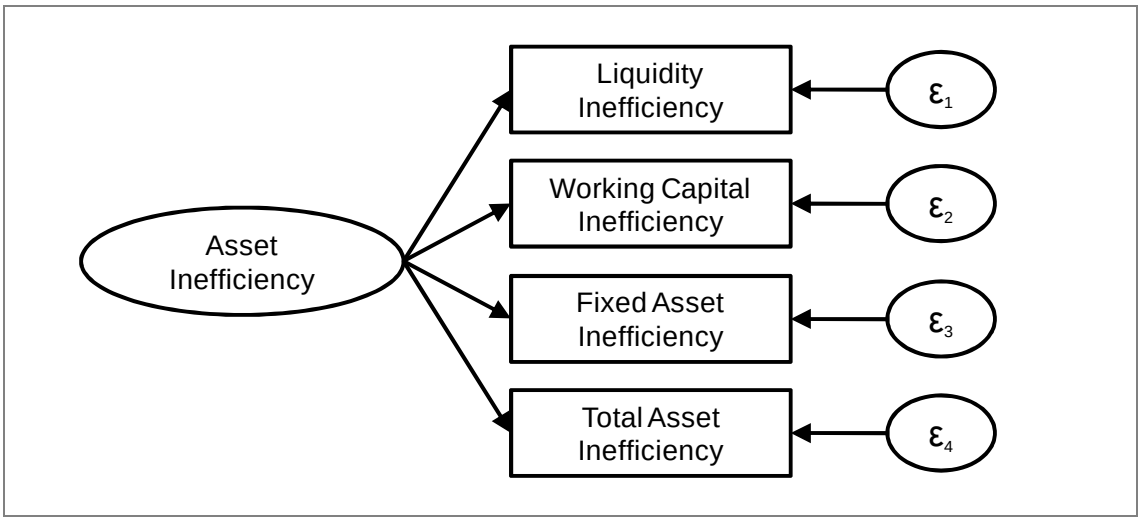
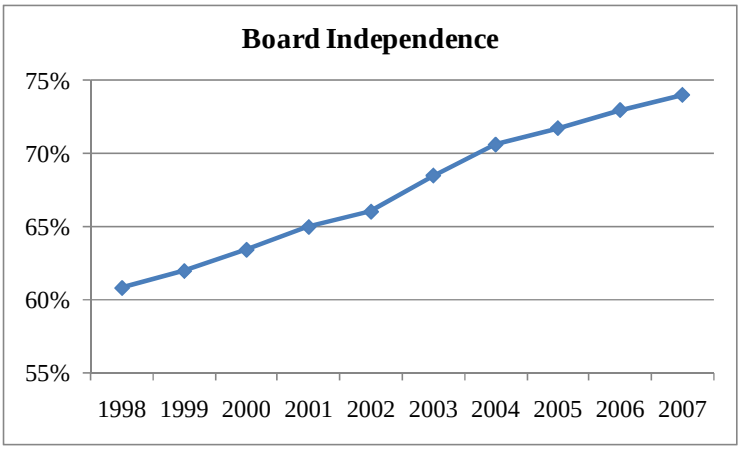
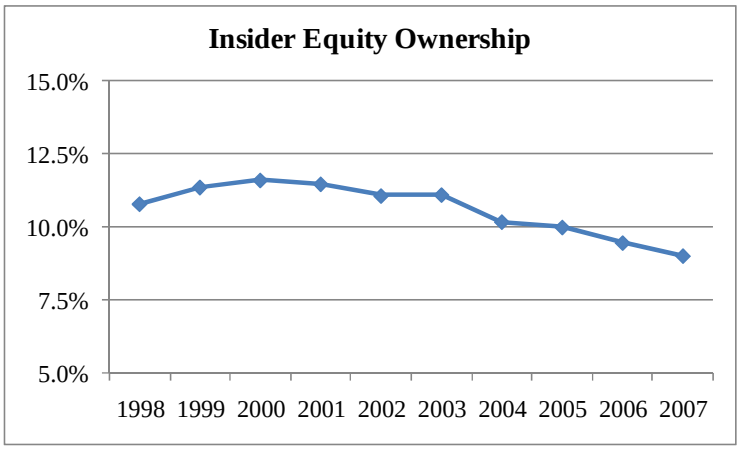


Figure 6. Trend Analysis of Agency Variables





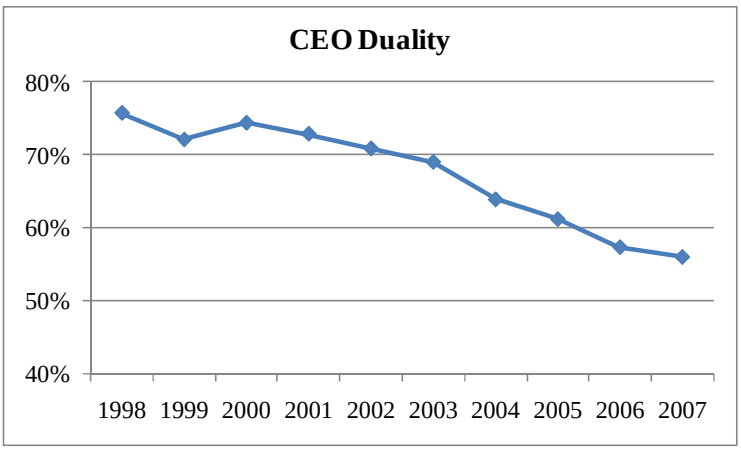
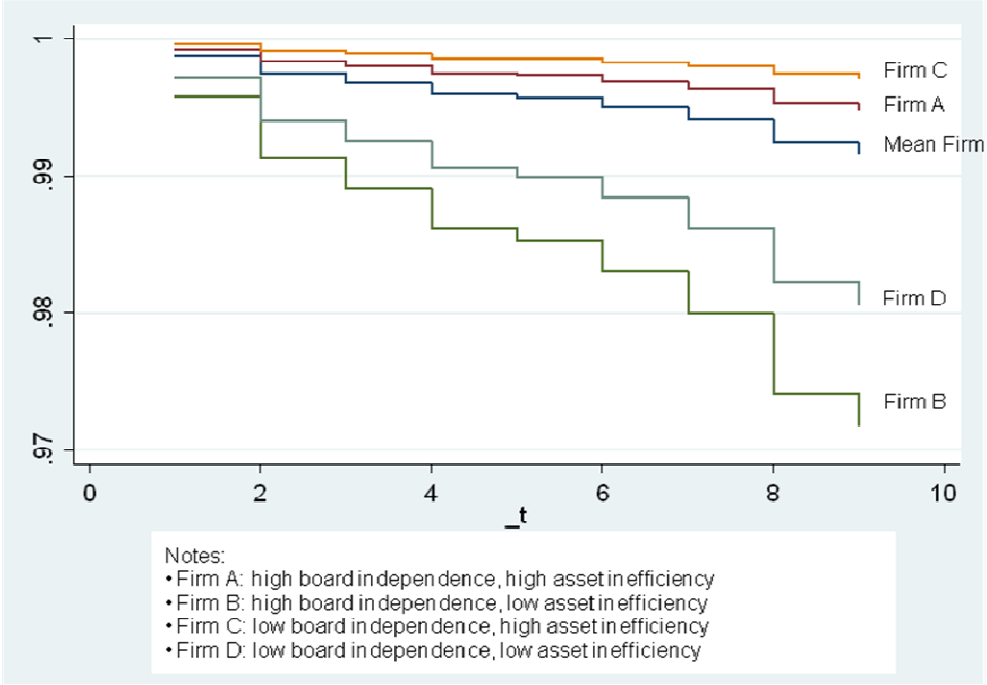


Figure 7: Baseline Survival Function for Model III on Table 8



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