ESSAYS IN AGENCY, INCENTIVES AND CONTRACTING

by

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To my parents and
in loving memory of my grandmother

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ABSTRACT

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This dissertation examines issues in agency, incentives and contracting. The first two essays examine the relation between managerial power and supplier value while the third essay examines the behavior of investors in religious funds and fund performance.

In Essay One, I find that supplier wealth is adversely affected around top management turnover events of customers. The negative wealth effect on suppliers is stronger with greater market power of customers. In contrast, suppliers' market power has no own wealth effects. The results suggest that contractual incompleteness in a long-term product market relationship exposes suppliers to breach of implicit contracts by new management of customers, and this risk increases with market power of customers. I further find that suppliers have a lower industry-adjusted market-to-book ratio after a

customer's management turnover event relative to a control group matched by industry and asset size.

In Essay Two, I hypothesize and find strong evidence that stock payment in non-diversifying mergers negatively impacts the wealth of bidder suppliers, especially under circumstances where control loss of the bidder is most severe, such as when the target has institutional block-holders and the bidder do not. Furthermore, the retention likelihood of bidder suppliers is significantly reduced by 12.7% when the bidder has no block-holders to counter-balance the target's control blocks under stock financing in non-diversifying mergers. Interestingly, I also find that stock payment to the target's control blocks generate positive announcement returns to the bidder suppliers in diversifying mergers. Hence, stock payment to the target's control blocks can have beneficial or detrimental wealth effect on the bidder suppliers, depending on whether they face direct replacement threats from the target suppliers.

In Essay Three, I find that investors in religious funds exhibit flat flow-to-performance sensitivity, as would be predicted by the doctrine of religious loyalty. Furthermore, church-sponsored funds experience positive fund flows when past return is negative. Religious funds significantly under-perform major market indices and the secular socially responsible funds, and their poor performance is related to their higher industry concentration. Lastly, I find no evidence that church's sponsorship affects industry concentration of the fund and its performance.

CHAPTER 1

Introduction

Economists have long recognized that a corporation is a nexus of contracts between shareholders and stakeholders (e.g. Coase, 1937; Jensen and Meckling, 1976; Williamson, 1985). Under the "nexus of contracts" perspective of the firm, agency conflicts exist between shareholders and stakeholders since actions that maximize shareholder value might not be the same actions that maximize stakeholder value. This agency conflict is particularly severe in long-term contracts due to the heavy reliance on implicit contracting. Under the incomplete contracts theory, future contingencies are hard to predict and costly to specify, *ex-ante*. Hence, stakeholders engaged in a long-term contracting relationship with the firm must rely heavily on the use of implicit contracting. As strongly espoused by Shleifer and Summers (1998), stakeholders must therefore trust the incumbent management to deliver on implicit promises without legal enforcement.

To the extent that long-term contracting facilitates relationship-specific investments and reduce contracting costs, management must commit to building trust with stakeholders. As the ability of management to deliver on trust is strongly influenced by their controlling power, corporate decisions that result in control loss of management should have a detrimental wealth effect on the firm's stakeholders, even if such decisions enhance shareholder value. The adverse wealth effect on stakeholders of control loss of

management should be especially severe under circumstances where stakeholders would require protection of implicit contracts.

The controlling power of management and wealth implications on stakeholders is an important research area relatively unexplored in the finance literature. It is an area worth studying in great detail as it involves understanding the dynamics of power balance among managers, shareholders and stakeholders. By studying the wealth implications on each firm participant of changes to the power structure among contracting parties, we can gain further insights into how financing choices, investment decisions, product market strategies, labor relationships, and the boundaries of the firm respond in order to protect each firm participant from value expropriation by the others.

1.1 Extant Literature

In research that examine agency conflicts between shareholders and debt-holders, only a few studies focus on the shift in power from shareholders to managers and the wealth consequences on debt-holders of this gain in managerial controlling power. For example, Klock, Manis and Maxwell (2005) find that anti-takeover provisions lower the cost of debt financing. To the extent that anti-takeover provisions enhance managerial power to resist takeovers, the authors conclude that these governance structures also protect debt holders from change-in-control transactions. In another study, Chava, Livdan and Purnanandam (2007) show that firms with the lowest takeover defense pay higher spreads on their bank loans, in further support that weak managerial power to resist takeovers has adverse wealth implications on debt-holders who demand a higher risk premium, *ex-ante*.

In the area of labor, the study by Bertrand and Mullainathan (2003) show that managers protected by the passage of state anti-takeover laws pay workers higher wages in order to enjoy a quiet life of avoiding difficult decisions, costly efforts and stakeholder conflicts. Recent finance studies have also shown a growing interest in studying the motives behind the adoption of Employee-Share-Ownership Plan (ESOP) and wealth implications of ESOP adoptions on workers and shareholders as large ESOP adoptions shift power away from shareholders or managers to workers. For example, Kim and Ouimet (2008) find that ESOP adoption leads to a higher firm value when the plan is small, and interpret their results to imply that most of the productivity gains generated by ESOPs accrue to employees (shareholders) when employees have substantial (small) control rights.

Surprisingly, in the area of product market relationship with suppliers, there is a lack of studies that examine the controlling power of management and wealth implications on suppliers. Suppliers are a group of stakeholders especially vulnerable to control dilution of management since a product market relationship involves long-term implicit contracting. By studying the link between managerial controlling power and wealth effect on suppliers, we can gain insights on how governance structures or corporate decisions that affect managerial power can impact the ability of the firm to induce long-term product market relationships with suppliers. The first two essays of this dissertation attempt to fill this gap in the current finance literature.

1.2 Dissertation Focus

The primary shared goal of Chapters Two and Three is to use suppliers as the specific group of stakeholders to analyze the important research question of how control dilution of management can affect the wealth of the firm's suppliers. Chapter Two uses turnover of top executives as a measure of total power loss of management to study the wealth implications on the firm's suppliers. On the other hand, Chapter Three focuses on management that remains with the firm, but has its controlling power diluted. Using mergers, I examine how control dilution of bidder management through the use of stock financing can affect the wealth of bidder suppliers.

Chapter Four departs from the common theme of the previous two chapters. Instead, it examines the preferences of investors in religious funds through their flow-to-performance sensitivity. It also investigates the effects of distribution channels on investor behavior by separating the religious funds into church-sponsored and non-church-sponsored funds. Since investor behavior directly motivates the actions of fund managers, it further examines the performance of these funds.

Lastly, Chapter Five concludes.

CHAPTER 2

Management Turnover and Wealth Effects on Suppliers

2.1 Introduction

The literature on top management turnover has found that removal of poorly performing management benefits shareholders. For example, Denis and Denis (1995) find that firm performance improves subsequent to the forced dismissal of a top executive. Weisbach (1995) finds that top management changes are associated with a higher likelihood of divesting poorly performing acquisitions. Moreover, the corporate governance literature also finds that a key mechanism by which governance structures can improve firm value is through disciplining managers. For example, Gompers, Ishii and Metrick (2003) construct a governance index based on 24 anti-takeover provisions as a proxy for shareholder power (or the ease of removing incumbent management) and find that firms with stronger shareholder rights have higher firm value. Bebchuk and Cohen (2005) find that a staggered board reduces firm value by seven times more than other firm-specific anti-takeover provisions as its presence insulates incumbents from removal.

However, it is not clear that stakeholders of a firm would benefit from management turnover, even if it is disciplinary in nature. Anecdotes of new management hurting suppliers or workers are plentiful. For example, when Harold Geneen was ousted and Rand Araskog succeeded as the chief executive officer of the debt-ridden ITT

Corporation in 1978, Araskog sold off subsidiaries and retrenched workers[1]. The British supermarket giant, Tesco[2], has engaged in an aggressive price competition strategy and pushed its suppliers hard on price and payment terms, especially since Andrew Higginson became its chief financial officer in 1997.

Despite these anecdotes and the importance of stakeholders to a firm, the finance literature has focused primarily on the impact of top management turnover on shareholder value. To the extent that state anti-takeover laws protect management from disciplinary turnover, the study by Bertrand and Mullainathan (2003) is the closest in spirit to examining how a reduced likelihood of management turnover affects workers' wealth. The authors show that insulated management opts for a "quiet" life by paying workers higher wages. To the best of my knowledge, no studies have examined the effect of management turnover on supplier wealth, which would then directly affect the firm's ability to induce long-term product market relationships with suppliers.

In this chapter, I study the effects of management turnover on supplier wealth. Under the implicit contracts hypothesis, contractual incompleteness exposes suppliers to potential breach of implicit contracts by new management of customers. Hence, management turnover, even if it is disciplinary in nature, would have an adverse wealth effect on suppliers because the new management needs not honor implicit agreements between the suppliers and previous management. Breaching of implicit contracts is also a most direct way to generate profits. Furthermore, suppliers would be more at risk of

[1] See the book titled "The ITT wars: an insider's view of hostile takeovers" by Rand Araskog.
[2] See article at http://www.cfo.com/article.cfm/3014279?f=singlepage

breach of implicit contracts when the customer has stronger market power. Lastly, the profitability of suppliers would decrease after management turnover event of a customer since implicit promises are no longer being delivered by the customer.

In contrast, under a competing value creation hypothesis, disciplinary management turnover can benefit both shareholders and stakeholders because a value-dissipating manager is ousted in pursuit of a better ability manager who can create market share and increase the overall size of the firm. Furthermore, even if management turnover is voluntary, the exit of a top executive gives the firm a valuable option to find a better manager. This option value, however, is higher under forced management turnover as the likelihood of finding better replacements increases when poorly performing executives exit. In sum, the value creation hypothesis would predict a positive wealth effect on suppliers which increases with poorer performance of the departing executive. Moreover, the market power of customers would have no negative wealth impact on suppliers. Finally, the profitability of suppliers would increase after management turnover event of a customer since the overall size of the customer firm increases under a better manager.

I find strong evidence for the implicit contracts hypothesis. Using event study methodology[3], the mean cumulative abnormal return (CAR) to suppliers around announcements of death, resignation or dismissal of top executives[4] of customers is statistically negative and economically significant, and is independent of the prior

[3] I follow the approach of Brown and Warner (1980, 1985) in using the market model with the CRSP equally-weighted market index as the market proxy to compute the cumulative abnormal return (CAR).
[4] Top executives include officers with the titles of chief executive officer (CEO), chief financial officer (CFO), chief operating officer (COO), chairman, vice-chairman, president or vice-president.

performance of the resigned or dismissed executive. Firstly, using 41 sudden deaths of top executives of customers over the sample period 1993 to 2006, the mean supplier CAR is -2.57% around the event window which starts from three days before to one day after the announcement, and is statistically significant at the 5% level. In sharp contrast, customer firms experiencing these sudden deaths of their top executives have a significantly positive mean CAR of 1.44% over the event window. Hence, the negative supplier CAR cannot be driven by positive correlation with the stock price reaction of customers as the mean customer CAR is positive.

Next, using 520 cases of resignation or dismissal of top executives of customers affecting 1575 suppliers, I find that both customer and supplier CAR are significantly negative at -1.05% and -0.44% over the event window, respectively. Furthermore, the mean supplier CAR is of similar order of negative magnitude whether the prior profitability of the firm, as measured by the return on assets or the market-to-book ratio, is above or below the industry median. However, the magnitude of negative supplier CAR almost doubles when the customer's market power increases from below the 25th percentile to above the 75th percentile. This pattern is consistently observed for various market power proxies such as the firm's market shares of sales or assets and the sales-based or asset-based Herfindahl index. In contrast, the mean supplier CAR exhibits no obvious relation with the supplier's own market power.

Using multivariate analysis and controlling for various customer and supplier firm characteristics, I confirm that the market power of a customer has a significantly adverse

announcement returns effect on its suppliers around the customer's management turnover event. The average sensitivity of supplier CAR to the customer's sales-based Herfindahl index is -0.05, i.e., the mean supplier CAR will decrease by 5% as the customer's industry changes from perfectly competitive to monopolistic. Consistent with the event study results, the supplier's market power has no own announcement returns effect. This is not too surprising in view of the fact that the median supplier commands 0.5% market share of sales while the median customer has 11.6% market share of sales in its industry. Hence, the market power of customers would be a stronger driver of a supplier's wealth than the supplier's own market power.

Lastly, I use a differences-in-differences approach to examine the change in profitability of suppliers around the event of a customer's top management resignation or dismissal. These suppliers form the treatment group. A control group of suppliers with no changes in top management of customers throughout the sample period is then matched by industry[5] and asset size to suppliers in the treatment group. Restricting the sample to close matches by asset size[6] and examining the supplier's profitability for three years before and after a customer's top management turnover event, suppliers that experienced a customer's management turnover event have a significantly lower industry-adjusted market-to-book (MB) ratio, post-event, than suppliers in the control group. The loading on the interaction term between a post-event dummy with a customer's management

[5] Matching is done using 2-digit Standard Industry Classification (SIC) codes.
[6] The ratio of assets of the treated unit to the assets of the control unit cannot exceed 4:1. As the ratio gets smaller, the matched pair becomes more similar in relative asset size but the sample size also decreases. The ratio of 4:1 is used as a tradeoff between sample size and close matching by asset size.

turnover dummy is -1.6 when the relative asset size between the treated and untreated supplier does not exceed a ratio of 1.5:1.

However, examining the suppliers' industry-adjusted return on assets (ROA), the loading on the interaction term is not statistically significant, despite being negative. As the MB ratio is a forward-looking measure that incorporates future growth opportunities of the firm, while the ROA is a backward-looking accounting measure based on realized profitability, the MB ratio is a more appropriate measure of firm value based on market expectations. Since implicit promises can constitute valuable intangible growth options to suppliers, the results are consistent with the interpretation that the market expects new management to renege on implicit agreements with suppliers.

This chapter is closely related to studies on management turnover. One line of research uses event study methodologies to examine the effect of CEOs on firm performance, focusing on the abnormal stock price reaction around the announcement of top management turnover (ex. Reinganum, 1985; Warner et al., 1988; Weisbach, 1988; Bonnier and Bruner, 1989; Khanna and Poulsen, 1995; and Denis and Denis, 1995). However, the decision to replace top executives is correlated with past firm characteristics and future growth prospect, and the announcement wealth effect can be confounded by these correlations, making inferences difficult. Another line of research evaluates the stock price reaction to announcements of sudden death of managers (ex. Johnson et al., 1985; Borokhovich et al, 2006).

A third branch of research examines the change in profitability of the firm around management turnover events (ex. Denis and Denis, 1995; Weisbach, 1995; Bennedsen et al., 2008). In particular, Bennedsen et al. (2008) use the death of CEOs and the CEO's immediate family members for Danish firms to evaluate the change in firm profitability around these events. I follow these studies in (a) using event study methodologies but focus instead on the impact of top management turnover on supplier wealth rather than shareholder value, and in (b) examining the change in profitability of suppliers around management turnover events of customers.

This chapter also contributes to the literature that examines firm characteristics and implicit contracting. Studies on the relation between financial structure and implicit contracting have examined how the firm uses lower leverage as a commitment device to induce implicit contracting with customers or suppliers (ex. Titman, 1984; Maksimovic and Titman, 1991; Kale and Shahrur, 2007). In research on ownership blocks and implicit contracting, Fee, Hadlock and Thomas (2006) find that equity ownership between trading partners is used to mitigate contractual incompleteness in product market relationships. In an earlier study, Allen and Philips (2000) find a significantly positive relation between the magnitude of equity ownership between a supplier-customer pair and asset specificity. I extend the literature by showing the effects of management turnover on implicit contracting. One implication of my results is that frequent management turnover would increase the cost of inducing implicit contracting with trading partners.

The remainder of this chapter is organized as follows. Section 2.2 develops the hypotheses and empirical predictions while Section 2.3 describes the empirical design and proxies. The data and descriptive statistics are presented in Section 2.4 and the empirical results are discussed in Section 2.5. Finally, Section 2.6 concludes.

2.2. Development of Hypotheses and Empirical Predictions

In this section, I develop the two competing hypotheses and derive their empirical predictions.

2.2.1 Management Turnover and Implicit Contracts

The motivation for the implicit contracts hypothesis comes from the recognition that product market relationships are long-term contracts between shareholders and suppliers. Since future contingencies are hard to predict, contracting parties often have to rely on implicit contracting or trust (Shleifer and Summers, 1988) to govern long-term relationships. Under the separation of ownership and control in a modern corporation (Berle and Means, 1932), the manager represents the shareholders in negotiating contracts with stakeholders. To the extent that the trustworthiness of a corporation to protect implicit contracts without legal enforcement can act as a valuable asset to induce relationship-specific investments by stakeholders, the current management must build trust with stakeholders. Since trust is relationship-specific to the contracting parties, management turnover disrupts the trust built with the incumbent management, and stakeholders fear holdups by the new management due to the nature of implicit contracting.

Under the implicit contracts hypothesis, replacement of both outstanding and poor-performing management should predict a negative effect on supplier's wealth as trust is non-transferable and suppliers fear breach of implicit contracts by the new management in both cases.

Prediction 1a: Announcement of management turnover would have a *negative* wealth effect on the firm's suppliers. The announcement wealth effect on suppliers would have no relation with the prior profitability of the firm.

Furthermore, suppliers are more vulnerable to breach of implicit contracts by new management of customer if the customer has stronger market power. As a customer commands a larger market share of sales in its industry, its suppliers would not be able to replace sales with the customer by trading with smaller competitors. The market power of a customer also increases with greater industry concentration as there will be fewer competitors for the suppliers to trade with. Conversely, a supplier is less vulnerable to breach of implicit contracts by new management of customers if the supplier has stronger market power. Lastly, the profitability of a supplier after a customer's management turnover event would be significantly lower than that pre-event, as implicit agreements are being breached and the wealth of suppliers is transferred to shareholders.

Prediction 1b: The greater the market power of a firm, the more negative the wealth effect would be on its suppliers around the announcement of management turnover at the

firm. In contrast, the greater the market power of a supplier, the less negative its own wealth effects would be around the announcement of management turnover of a customer.

Prediction 1c: The profitability of a supplier post- management turnover of a customer would be lower than that pre- management turnover of the customer.

2.2.2 Management Turnover and Value Creation

Management turnover gives shareholders the option to select a higher ability manager who can create market share, increase firm size and benefit both shareholders and stakeholders with an overall bigger pie. This option value is higher under disciplinary management turnover as the likelihood of finding better management increases with poorer performance by the predecessor. This value creation hypothesis predicts that top management turnover would have an overall positive wealth effect on the firm's suppliers, and this positive wealth effect would be stronger when poorly-performing management is replaced.

Prediction 2a: Announcement of top management turnover would have a *positive* wealth effect on the firm's suppliers. The announcement wealth effect on a firm's suppliers would exhibit an inverse relation with the prior profitability of the firm under the old management.

Next, this hypothesis would not predict a negative wealth effect of a firm's market power on its suppliers around management turnover announcements. A firm with greater

market power has less fear of competitors gaining market share while the firm undergoes management changes. Hence, market power of a firm cannot hurt its suppliers during management turnover events. Furthermore, suppliers can benefit from the greater market power of a customer as the overall size of pie is larger. Lastly, the supplier's profitability after a customer's management turnover event would be greater than that pre-event since firms expend costly resources to find a better replacement than the predecessor.

Prediction 2b: The market power of a firm would have no negative wealth effect on its suppliers around announcements of management turnover at the firm.

Prediction 2c: The profitability of a supplier after a customer's management turnover event would be greater than that pre-event.

2.3 Empirical Test Design and Proxies

In the first part of this section, I design empirical tests to distinguish between the two competing hypotheses. In the second part of this section, I construct the empirical proxies.

2.3.1 Empirical Test Design

2.3.1.1 Event Study Methodology

To examine the stock price reaction of suppliers around announcements of management turnover of a customer, I compute the CAR using the market model as described in

Brown & Warner (1980, 1985) with the CRSP equally-weighted index as the market proxy. Event period CAR is examined for the [-3, +1] window which starts from three trading days prior to one trading day after the announcement date. First, I examine the supplier CAR around announcements of sudden death of a customer's top executives. Next, I repeat the analysis for announcements of resignation or dismissal of a customer's top executives. I then sort the resignation or dismissal sample into two groups based on whether the prior profitability of the customer is above or below its industry median and examine the supplier CAR for each group. I further re-sort this sample based on the prior market power of customer or supplier.

2.3.1.2 OLS Regressions

Univariate analysis does not allow inclusion of other firm controls that can affect the supplier CAR. Hence, multivariate analysis based on OLS specification in (2.1) is used.

$$SSCAR_{[-3,+1]} = \alpha + \beta_1 . PROFIT_{cust} + \beta_2 . MktPow_{cust} + \beta_3 . MktPow_{ss} + \beta_4 . PROFIT_{ss} + \lambda' . X_{cust} + \delta' . X_{ss} + \varepsilon \quad \text{.....(2.1)}$$

where $SSCAR_{[-3,+1]}$ is the supplier CAR over the [-3, +1] window; $PROFIT_{cust}$ and $PROFIT_{ss}$ measure the industry-adjusted profitability of the customer and supplier in the year preceding management turnover, respectively; $MktPow_{cust}$ and $MktPow_{ss}$ are the prior market power of customer and supplier, respectively; X_{cust} is a vector of covariates representing customer firm characteristics and X_{ss} is a vector of covariates representing supplier firm characteristics. Year dummies are included to control for time variation.

2.3.1.3 Differences-in-Differences Methodology

To examine the change in profitability of suppliers affected by top management turnover events of customers relative to a control group of suppliers with no changes of top management at customer firms, I use a differences-in-differences methodology. The basic regression I estimate is (2.2).

$$PROFIT_{i,t} = \alpha_i + \delta_t + \beta_1 . CUSTTO_i + \beta_2 . POST_{i,t} + \beta_3 POST_{i,t} * CUSTTO_i + \lambda' . X_{i,t} + \gamma' . Z_{i,t} + \varepsilon_{i,t} \quad ...(2.2)$$

where $PROFIT_{i,t}$ is the profitability of supplier i; α_i controls for supplier fixed effects; δ_t represents a vector of year dummies; $CUSTTO_i$ is an indicator that takes on unity if the supplier belongs to the treatment group, and zero if supplier belongs to the control group; $POST_{i,t}$ is a dummy that takes on unity after a customer's management turnover event, and zero otherwise; $X_{i,t}$ is a vector of covariates representing supplier firm characteristics; $Z_{i,t}$ is a vector of covariates representing the average firm characteristics of all customers of the supplier; and $\varepsilon_{i,t}$ is an error term. The coefficient of interest is β_3 which estimates the differential effects on profitability for a supplier in the treatment group relative to its match in the control group after a customer's top management turnover event. The profitability of suppliers is examined for three years pre- and post-event.

The treatment and control group are formed as follows. A supplier is assigned to the treatment group if it is affected by a customer's top management turnover at any time during the sample period. On the other hand, a supplier is assigned to the control group if none of its customers experiences any top management turnover throughout the sample

period. Next, each supplier from the treatment group is matched to one supplier from the control group of the same industry[7] and closest in asset size. Matching is done without replacement. Unmatched suppliers in the treatment or control group are dropped. To eliminate large differences in asset size between a treated supplier and its counterfactual, their relative asset size cannot exceed a ratio of 4:1.

2.3.2 Empirical Proxies

2.3.2.1 Firm Profitability

I construct two proxies for firm profitability commonly used in the literature. First, I use the median industry-adjusted return on assets (iaROA) where the return on assets is computed as the sum of net income before extraordinary income plus interest expenses plus income tax expenses, and divided by lagged book value of assets. Industry is defined by the 4-digit SIC codes. The iaROA is a backward-looking measure as it is constructed based on historical accounting profitability. To incorporate market expectations of future firm's prospect, I also use the median industry-adjusted market-to-book (iaMB) ratio of assets as a forward-looking measure of firm profitability. The market-to-book ratio is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. Profitability proxies are winsorized at 1% and 99%.

[7] Industry is defined by the 2-digit Standard Industrial Classifications (SIC) codes when matching.

2.3.2.2 Market Power

I construct four proxies for the market power of a firm. First, I use the sales-based Herfindahl index computed as the sum of the square of a firm's fractional sales in its industry across all firms in the industry. Next, I construct the asset-based Herfindahl index computed as the sum of the square of a firm's fractional asset size in its industry across all firms in the industry. Both Herfindahl indices measure the market power of a firm arising from its industry concentration. The third proxy is the firm's market share of sales in its industry computed as the firm's sales divided by the total sales of its industry. The last proxy is the firm's market share of assets in its industry computed as the firm's assets divided by the total assets of its industry. Again, market power proxies are winsorized at 1% and 99%.

2.3.2.3 Firm-Specific Controls

I control for supplier's as well as customer's firm characteristics that can affect the stock price reaction of suppliers. The logarithm of assets is used as a measure of firm size. Firms with higher R&D expenses will have more intangible assets and can be more sensitive to the information asymmetry resulting from management turnover. Moreover, the use of R&D intensity as a proxy for asset specificity is prevalent in the literature on transaction costs economics (see review by Boerner and Macher, 2001). Hence, I control for the R&D expenses divided by lagged assets.

Kale and Shahrur (2007) show that decreased leverage can be used as a commitment device to induce relationship-specific trades with suppliers. Furthermore, a more levered

firm has higher financial distress risk that can be exacerbated by the uncertainty around management turnover events. I control for the debt level of a firm computed as the sum of short-term debt plus long-term debt of the firm, and divided by lagged assets. Additionally, the level of capital expenditure could proxy for investment intensity of the firm. I control for the amount of capital expenditures divided by lagged assets.

2.4 Data Sources and Descriptive Statistics

2.4.1 Data Sources

The main databases are the Compustat Industrial Annual, Compustat Industry Segments, Execucomp and the Center for Security Prices (CRSP) database. Firm characteristics are obtained from the Compustat Industrial Annual database. Customer-supplier pairs are identified from the Compustat Industry Segments. Information on management turnover is obtained from Execucomp and news articles. Stock prices and returns as well as the market indices are obtained from CRSP. Utilities and financial firms are excluded. Suppliers that are subsidiaries of customers are also excluded. Sample period is from 1993 to 2006. The detailed construction of the final dataset is described below.

2.4.1.1 Identifying Customer-Supplier Pairs

I follow the approach in Fee, Hadlock and Thomas (2006) to identify customer-supplier pairs. First, I select all firms listed on Compustat with non-missing values reported for assets and fiscal year-end stock prices. Then, I retain firms that are also listed in Execucomp. To identify whether these firms have suppliers, I check the Compustat Industry Segments. Firms are required to report the names of all customers accountable

for over 10% of their annual sales. Customer names and sales generated from these customers are reported in the Compustat Industry Segments. I treat all disclosed customers to be major trading partners of the reporting firm (the supplier). I manually match each customer name to its CUSIP in Compustat. For customer names that are abbreviated, I used visual inspection and industry affiliation to determine whether the customer is listed in Compustat. For the remaining unmatched customer names, I check their corporate websites and the Directory of Corporate Affiliations to determine if the customer is a subsidiary of a listed firm. If so, the customer is assigned to its parent's CUSIP. Unmatched customers are then excluded.

2.4.1.2 Management Turnover Data

As mentioned earlier, customers listed in the Compustat Industry Segments must also be listed in the Execucomp database in order to be retained in the sample. I use the Execucomp database to identify the names of officers with the titles of chief executive officer (CEO), chief financial officer (CFO), chief operation officer (COO), chairman or vice-chairman, president or vice president (VP) for customer firms. I then identify the year where these top executives are no longer listed under the firm, and search Factiva or Google for news articles on the death, retirement, resignation or dismissal of these executives. The first public announcement date is then retained. Firms where news articles cannot be found are excluded.

I include only unexpected deaths and exclude top executives who died after prolonged illnesses as their deaths would be anticipated. I also exclude top executives who retired

because firms usually announce in advance of the intention of their top executives to retire, making it difficult to identify the exact first announcement date. Additionally, most executives retire nearing retirement age and the market would have factored in the pending retirement of these executives from their age. Hence, I retain cases where top executives died unexpectedly, resigned or were ousted.

2.4.2 Descriptive Statistics

For the sample period 1993 to 2006, 9267 unique customer-supplier pairs with 24,738 relationship-years are identified from the Compustat Industry Segments where the customer is also listed in Execucomp, as shown in Table 2.1. From this sample, there are 789 and 4627 unique customers and suppliers, respectively. Among the customers, there are 520 cases of resignation or dismissal, and 41 cases of sudden deaths of top executives. On average, each customer has 1.4 suppliers and each supplier has 4.9 customers. A median supplier generates 13% of net sales from trades with a customer. In contrast, a median customer spends only 0.13% of net sales on input purchases from a supplier.

[INSERT TABLE 2.1]

The median customer has 2914 million in assets and is almost 29 times larger than the average supplier who has 100 million in assets. In terms of market capitalization, the median customer is almost 42 times larger than the median supplier while the median supplier is about 1.6 times larger than the median firm in Compustat [8]. Next, the median customer spends 0.9% of total assets on R&D while the median supplier spends 2.1%.

[8] Summary statistics for the median firm in Compustat are generated after excluding financial firms and utilities.

The median firm in Compustat spends 0.0% of assets on R&D. In terms of leverage, the median customer has a debt-to-asset ratio of 0.24 which is comparable to the median firm in Compustat. In contrast, the median supplier has a lower debt-to-asset ratio of 0.19. Additionally, the median customer spends 6.1% of total assets as capital expenditure compared to 4.6% by the median supplier.

As for market power, the median customer and supplier has 11.6% and 0.5% market share of sales, respectively. Similar patterns are observed when market power is measured by the market share of assets. In terms of industry concentration, the median customer and supplier belongs to industries with comparable industry concentration as measured by their sales-based and asset-based Herfindahl indices. As for profitability, the median customer is more profitable than the median supplier as measured by the industry-adjusted and non-adjusted ROA or MB ratio. The non-adjusted (industry-adjusted) MB ratio for the median customer and supplier are 2.07 (0.25) and 1.80 (0), respectively. Lastly, Panel C of Table 2.1 shows that the treatment and control group are comparable across various firm characteristics when the relative asset size of a match is small.

2.5. Empirical Results

In this section, I discuss the event study results followed by the multivariate analyses using OLS regressions. Lastly, the differences-in-differences results are presented.

2.5.1 Event Study Results

From Table 2.2, using a sample of 41 deaths of top executives of customers affecting 71 suppliers, I find that the mean supplier CAR is significantly negative at -2.57% for the [-3, +1] window with a p-value of 0.041. The negative supplier CAR could be driven by the negative CAR of customers if the stock prices of a customer-supplier pair are positively correlated. However, the mean customer CAR over the [-3, +1] window is 1.44% and significantly positive at less than 1% level. The negative supplier CAR provides preliminary evidence consistent with the implicit contracts hypothesis.

[INSERT TABLE 2.2]

From Figure 2.1, the supplier CAR decreases on Day 0 while the customer CAR increases. The plots confirm that the negative supplier CAR cannot be driven by the stock price reaction of customer.

[INSERT FIGURE 2.1]

Next, using 520 cases of top management turnover of customers affecting 1575 suppliers, Table 2.3 shows that both the customer and supplier CAR are significantly negative at -0.44% and -1.05%, respectively, over the [-3, +1] window under the Patell Z test. Furthermore, customer CAR is also negative in the pre- and post- announcement period. This suggests that the management turnover decision is correlated with other value-relevant news about the customer. For example, news related to poor performance of the customer might have preceded or coincided with its turnover announcement. Hence, the

prior profitability of the customer could be driving its abnormal stock price reaction and not its management turnover event, *per se*.

[INSERT TABLE 2.3]

However, if the supplier CAR is driven by other value-relevant news about the customer rather than the turnover event, we would expect the supplier CAR in the pre-announcement window to be strongly and significantly negative since it would be highly correlated with the customer CAR. Yet, the pre-announcement supplier CAR is not statistically significant despite its negative magnitude. Furthermore, the supplier CAR is positive, albeit insignificant, in the post-announcement period whereas the customer CAR remains strongly and significantly negative post-announcement. Hence, it is unlikely that the supplier CAR over the [-3, +1] window is driven by other value-relevant news about the customer.

[INSERT FIGURE 2.2]

From Figure 2.2, the plots confirm that the customer CAR is negative in the pre- and post-announcement period whereas the supplier CAR exhibits no similar trend.

[INSERT TABLE 2.4]

Using the turnover sample, Panel A of Table 2.4 shows that the mean supplier CARs over the [-3, +1] window are significantly negative at -0.63% and -0.44% when the customer's prior ROA is above and below its industry median, respectively. Similarly, Panel B shows that the mean supplier CARs over the event window are also significantly negative

at -0.56% and -0.65% when the customer's prior MB ratio is above and below the industry median, respectively. Hence, management turnover of a firm has a negative announcement returns impact on its suppliers independent of the firm's prior profitability.

[INSERT TABLE 2.5]

Next, from Panel A of Table 2.5, the mean supplier CARs are negative for all four quartiles of customer's market share of sales, but its negative magnitude almost doubles as the market power of customer increases from below the 25th percentile (lowest quartile) to above the 75th percentile (highest quartile). The supplier CAR is -0.57% for the lowest quartile and -1.07% for the highest quartile. From Panel B, the mean supplier CAR becomes more negative as the customer's market share of assets increases. Similar patterns are observed in Panel C and D where the market power of customer is measured by the sales-based and asset-based Herfindahl index, respectively.

[INSERT TABLE 2.6]

From Table 2.6, using the same four measures of market power, I do not find consistent evidence that the supplier CAR becomes less negative as the supplier's own market power increases. For example, supplier CAR is -1.12% when the customer's sales-based Herfindahl falls in the 25th-50th percentile, and is more negative than the supplier CAR of -0.43% when the customer's sales-based Herfindahl is above the 75th percentile. This could be explained by the fact that suppliers are, on average, much smaller in size and has weaker market share relative to their customers. Thus, the market power of customers would be a stronger driving factor of supplier CAR than the supplier's own market power.

2.5.2 Multivariate Analyses

I now discuss the results using multivariate analyses. From OLS regressions in Table 2.7, I find no relation between supplier CAR and the prior industry-adjusted MB ratio of customer and supplier after controlling for market power and other firm controls. In other words, supplier CAR is independent of pre-event profitability of the customer.

[INSERT TABLE 2.7]

Next, controlling for the supplier's market power and the customer's and supplier's industry-adjusted MB ratio as well as other firm characteristics, the supplier CAR shows a negative relation with the customer's Herfindahl indices and market share measures, and is statistically significant at the 5% and 10% level, respectively. The sensitivity of supplier CAR to the customer's sales-based Herfindahl and market share of sales is -0.046 and -0.025, respectively. Interpreting the first result, supplier CAR over the event window will decrease by 4.6% as the customer's industry concentration changes from perfectly competitive to monopolistic. Similarly, supplier CAR will decrease by 0.25% as the customer's market share of sales increase by 10%. Consistent with previous event study results, supplier's market power has no own wealth effect.

Additionally, supplier CAR exhibits a weak significantly negative relation with the debt-to-assets ratio of customer. Intuitively, a highly levered customer is more vulnerable to financial distress and instability in top management aggravates the financial distress risk. Suppliers, as close trading partners, suffer some negative externalities due to the exacerbation of financial distress risks of customers by management turnover events.

Supplier CAR also exhibits a significantly negative relation with the customer's capital expenditure. Investment-intensive firms could be more vulnerable to fluctuations in operating income, and instability in top management aggravates such fluctuations.

2.5.2.1 Robustness check

Table 2.7 uses customer-supplier-year panel regressions. However, a customer can have more than one supplier in a fiscal year and the same customer firm controls are repeated for each supplier-year. Such panel regressions might bias upwards the significance of the coefficient estimates. As a robustness check, I aggregate all suppliers of a customer into a value-weighted portfolio where the weight is the particular supplier's revenue generated from the customer divided by the total expenditure spent on input purchases from all suppliers by the customer. Hence, there is only one supplier CAR observation for each customer-year after aggregation.

[INSERT TABLE 2.8]

From Table 2.8, the significance level of the loadings decreases, as expected. However, the negative relation between supplier CAR and the customer's Herfindahl measures persists at 5% level of significance. Moreover, supplier CAR continues to exhibit a negative relation with the customer's market share proxies but the statistical significance level exceeds 10%.

2.5.3 Changes in Profitability of Suppliers Using Differences-in-Differences Approach

From Table 2.9, using the industry-adjusted MB ratio as a profitability proxy, the loading on the interaction term between the POST and CUSTTO dummy is negative, but insignificant, when no restriction is imposed on the relative asset size of the matched pair. When the relative asset size ratio does not exceed 4:1, the loading on the interaction term becomes significantly negative at -1.2. With a maximum relative asset size ratio of 2:1, the loading on the interaction term is -1.5 after controlling for the supplier's and customer's firm characteristics. In sum, suppliers subjected to a customer's top management turnover events have a lower industry-adjusted MB ratio, post-event, relative to suppliers with no changes in customer's top management.

[INSERT TABLE 2.9]

However, when the industry-adjusted ROA is used as the profitability proxy, the loading on the interaction term is insignificant regardless of the relative asset size of the matched pair. As the MB ratio is a forward-looking measure that while the ROA is a backward-looking accounting measure, the results implies that the market expects lower valuation for suppliers in the treatment group relative to suppliers in the control group after a customer's management turnover event, even if post-event accounting profitability is not significantly affected yet. The results are consistent with the interpretation of market expectations that implicit agreements between the firm and its suppliers are unlikely to be delivered by the new management.

2.6 Conclusion

In this chapter, I examine the effects of top management turnover on the wealth of a firm's suppliers. Under the implicit contracts hypothesis, contractual incompleteness in a long-term product market relationship exposes suppliers to potential breach of implicit contracts by new management of customers. This is because trust built with the departing management is non-transferable to the new management. Hence, top management turnover, even if it is disciplinary in nature, has a negative wealth impact on the firm's suppliers.

In contrast, under the value creation hypothesis, management turnover gives the firm an option to find a better manager who can create market share and increase the overall size of the firm to benefit both shareholders and stakeholders. This option value increases under disciplinary management turnover as the likelihood of finding a better manager is higher when the predecessor has poorer performance. The value creation hypothesis predicts a positive wealth effect on a firm's suppliers around management turnover events, especially if poorly-performing management is removed.

I find strong evidence in support of the implicit contracts hypothesis. The abnormal stock price reaction of suppliers is significantly negative around announcements of death, resignation or dismissal of top executives of customers. Supplier CAR continues to be negative and significant independent of the prior profitability of customers. Furthermore, the negative announcement returns impact on suppliers is larger with greater market power of customers. In contrast, I find no evidence that the mean supplier CAR becomes

less negative as the supplier's own market power increases. Using OLS regressions, I confirm that the market power of customers is a more important driving factor of supplier wealth around management turnover events of customers than the supplier's own market power. I also confirm that the supplier CAR has no relation with the prior profitability of customers.

Lastly, using a differences-in-differences approach, suppliers that experienced a customer's management turnover event have a significantly lower industry-adjusted MB ratio, post-event, relative to a control group of suppliers matched by industry and asset size. Hence, consistent with the implicit contracts hypothesis, management turnover adversely affects the wealth of suppliers.

Figure 2.1

Plots of cumulative abnormal return around death of customer's top executives

Figure 2.1a and 2.1b present the plots of the cumulative abnormal return (CAR) of suppliers and customers, respectively, around announcements of sudden death of customers' top executives with the titles of chief executive officer (CEO), chief financial officer (CFO), chief operating officer (COO), chairman, vice-chairman, president or vice-president. Day 0 is the announcement day. The supplier and customer CAR are computed using the market model following the approach of Brown and Warner (1980, 1985) with the CRSP equally-weighted market index as the market proxy. The mean supplier (customer) CAR is plotted for ten days pre- and post-announcement. The sample consists of 41 customers with 71 suppliers for the sample period 1993 to 2006. Financial firms and utilities are excluded. Suppliers who are subsidiaries of the customers are also excluded.

Figure 2.1a: Mean Supplier CAR

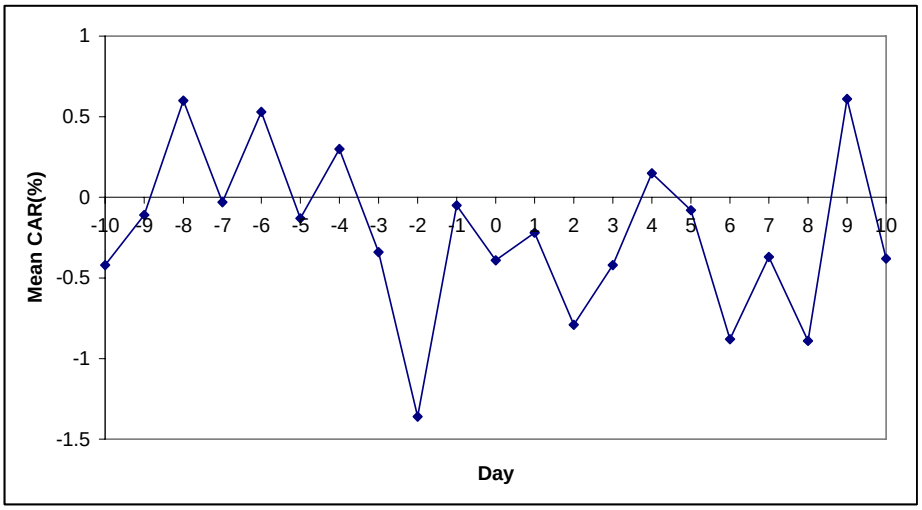

Figure 2.1b: Mean Customer CAR

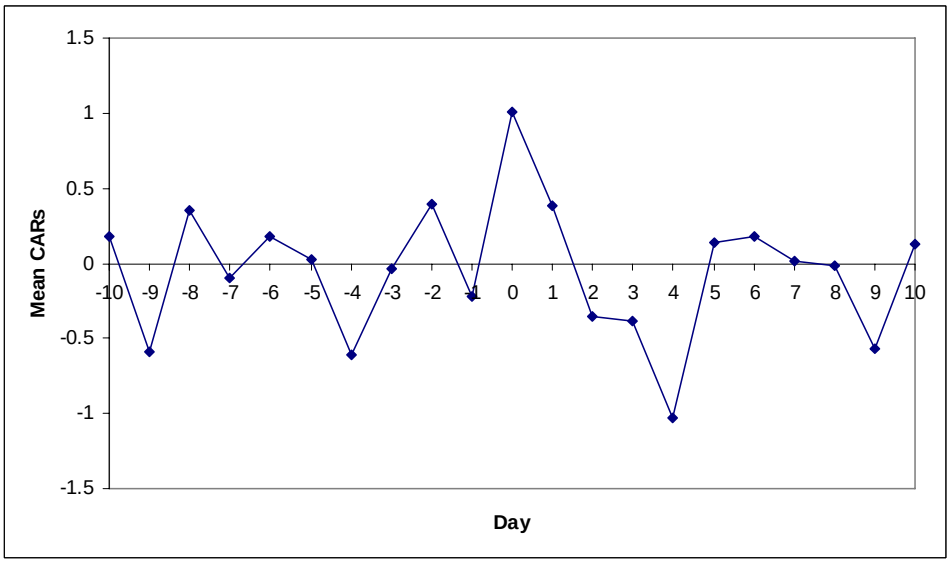

Figure 2.2

Plots of cumulative abnormal return around turnover of customer's top executives

Figure 2.2a and 2.2b present the plots of the cumulative abnormal return (CAR) of suppliers and customers, respectively, around announcements of resignation or dismissal of customers' top executives with the titles of chief executive officer (CEO), chief financial officer (CFO), chief operating officer (COO), chairman, vice-chairman, president or vice-president. Day 0 is the announcement day. The supplier and customer CAR are computed using the market model following the approach of Brown and Warner (1980, 1985) with the CRSP equally-weighted market index as the market proxy. The mean supplier (customer) CAR is plotted for ten days pre- and post-announcement. The sample consists of 520 customers with 1575 suppliers for the sample period 1993 to 2006. Financial firms and utilities are excluded. Suppliers who are subsidiaries of the customers are also excluded.

Figure 2.2a: Mean Supplier CAR

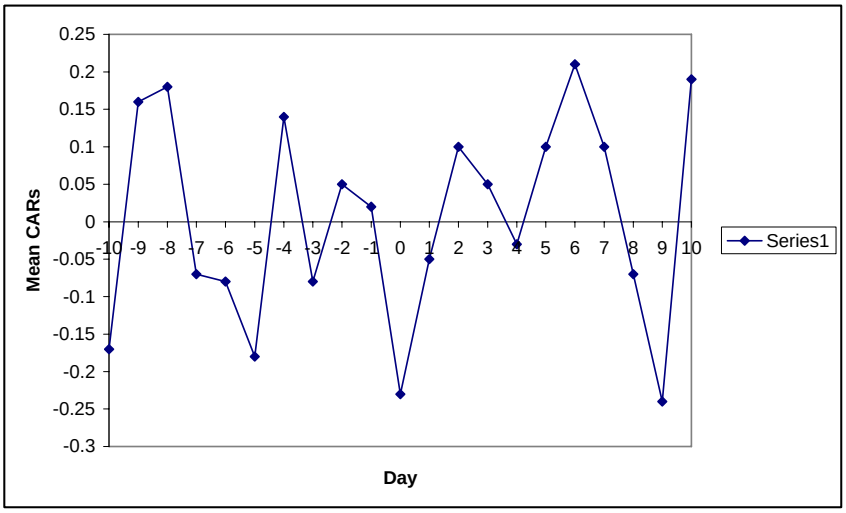

Figure 2.2b: Mean Customer CAR

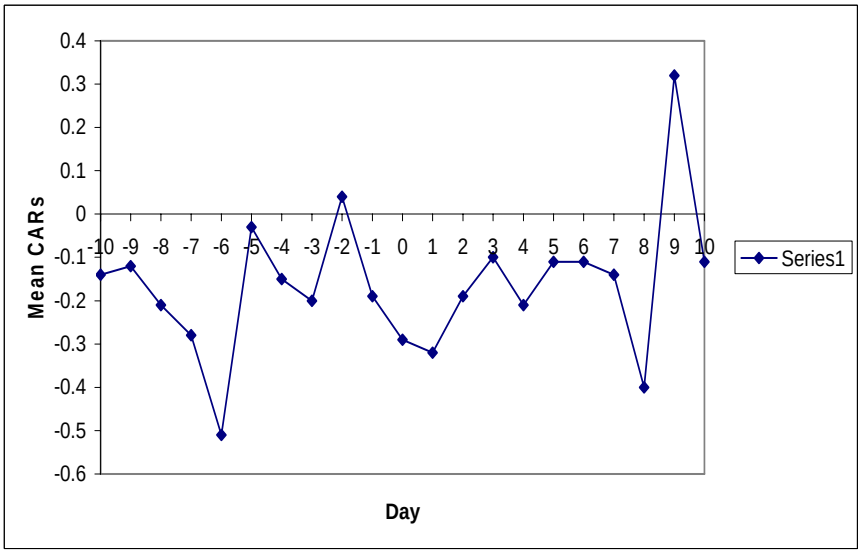

Table 2.1
Descriptive statistics

Customers and suppliers are identified from the Compustat industry segment files and only customers that are also listed in Execucomp are retained. Financial firms and utilities are excluded. Suppliers that are subsidiaries of customers are also excluded. Sample period is from 1993 to 2006. Asset refers to the book value of total assets. Market capitalization is the number of shares outstanding multiplied by stock price. R&D is the R&D expenses scaled by lagged asset of the firm. Debt is the sum of long-term and short-term debt divided by lagged asset of the firm. CAPEXP is the capital expenditure divided by lagged assets. Market share of sales is the ratio of the firm's sales to the total sales of its industry where industry is defined by the 4-digit Standard Classification Industry (SIC) codes. Market share of assets is the ratio of the firm's assets to the total assets of its industry. Sales-based Herfindahl index is computed by summing the square of a firm's fractional sales in its industry across all firms in the industry. Asset-based Herfindahl index is computed by summing the square of a firm's fractional assets in its industry across all firms in the industry. ROA is the return on assets and computed as the sum of net income before extraordinary income plus interest expenses plus income tax expenses, and divided by assets. iaROA is the median industry-adjusted ROA. Market-to-book ratio of assets (MB) is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt plus current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. iaMB is the median industry-adjusted MB. Panel A presents customer and supplier firm characteristics. Panel B presents the number of customers, suppliers and customer-supplier pairs. Panel C describes the firm characteristics of suppliers in the treatment and control groups. Suppliers that experience a customer's top management turnover at any time during the sample period are assigned to the treatment group while suppliers that do not experience any customer's top management turnover and can be matched to the treated suppliers by 2-digit SIC codes and asset size are assigned to the control group. Each supplier in the treatment group is matched to only one supplier in the control group. Size ratio is the relative asset size of the matched pair. Top management includes officers with the titles of chief executive officer, chief financial officer, chief operating officer, chairman, vice-chairman, president or vice-president. Panel D shows the correlation matrix for customer and supplier firm characteristics.

Panel A: Firm characteristics of customers and suppliers

	Mean	Median	Standard Deviation
Assets of customers (millions)	9385	2914	12614
Assets of suppliers (millions)	1029	100	3892
Assets of all Compustat firms (millions)	1345	80	5215
Market Capitalization of customers (millions)	16276	4293	37913
Market Capitalization of suppliers (millions)	1569	112	9792
Market Capitalization of all Compustat firms (millions)	1572	69	10926
R&D expenses of customers	0.047	0.009	0.095
R&D expenses of suppliers	0.148	0.021	3.571
R&D expenses of all Compustat firms	0.103	0.000	4.790

Debt level of customers	0.270	0.238	0.334
Debt level of suppliers	0.404	0.190	5.531
Debt level of all Compustat firms	0.514	0.240	12.73
CAPEX of customers	0.082	0.061	0.090
CAPEX of suppliers	0.090	0.046	0.384
CAPEX of all Compustat firms	0.114	0.050	1.133
Market share of sales of customers	0.200	0.116	0.223
Market share of sales of suppliers	0.052	0.005	0.135
Market share of sales of all Compustat firms	0.066	0.007	0.151
Market share of assets of customers	0.199	0.110	0.225
Market share of assets of suppliers	0.050	0.005	0.131
Market share of assets of all Compustat firms	0.066	0.007	0.152
Sales Herfindahl index of customers	0.234	0.186	0.180
Sales Herfindahl index of suppliers	0.235	0.189	0.177
Sales Herfindahl index of all Compustat firms	0.243	0.195	0.179
Asset Herfindahl index of customers	0.230	0.191	0.183
Asset Herfindahl index of suppliers	0.232	0.188	0.189
Asset Herfindahl index of all Compustat firms	0.250	0.198	0.188
ROA of customers	10.76%	10.74%	10.16
ROA of suppliers	0.15%	6.67%	24.30
ROA of all Compustat firms	1.04%	7.28%	23.91
iaROA of customers	5.34%	2.93%	11.27
iaROA of suppliers	-3.06%	0.05%	21.82
iaROA of all Compustat firms	-4.01%	0.00%	21.53
MB of customers	2.94	2.07	3.22
MB of suppliers	3.16	1.80	8.48
MB of all Compustat firms	3.82	1.59	46.00
iaMB of customers	0.97	0.25	3.04
iaMB of suppliers	1.06	0.00	8.35
iaMB of all Compustat firms	1.97	0.00	45.96

Panel B: Customer-supplier pairs

# unique customer-supplier pairs with customers in Execucomp and Compustat segments	9267
# relationship-years with customers in Execucomp and Compustat segments	24738
# unique customers	789
# unique suppliers	4627
# resignation or dismissal of top executives of customers	520
# sudden deaths of top executives of customers	41
# suppliers per customer (Mean)	4.9
# suppliers per customer (Median)	2.0
# customers per supplier (Mean)	1.4
# customers per supplier (Median)	1.0
Supplier's revenue from a customer/supplier sales (Mean)	48.51%
Supplier's revenue from a customer/supplier sales (Median)	13.22%
Customer's expenditure on a supplier/customer sales (Mean)	0.90%
Customer's expenditure on a supplier/customer sales (Median)	0.13%

Panel C: Firm characteristics of treatment and control group

	Size Ratio ≤ 1.5	Size Ratio ≤ 2.0	Size Ratio ≤ 3.0	Size Ratio ≤ 4.0	Unrestricted Size Ratio
	Median value is reported				
Assets of treatment group (in mns)	102	101	101	104	136
Assets of control group (in mns)	94	86	84	88	102
Market capitalization of treatment group (in mns)	105	117	116	119	157
Market capitalization of control group (in mns)	100	88	89	99	112
R&D expenses of treatment group	0.013	0.016	0.024	0.028	0.027
R&D expenses of control group	0.012	0..024	0.032	0.039	0.031
Debt level of treatment group	0.17	0.16	0.15	0.15	0.17
Debt level of control group	0.17	0.17	0.15	0.15	0.17
CAPEXP of treatment group	0.039	0.036	0.036	0.036	0.038
CAPEXP of control group	0.047	0.043	0.041	0.041	0.039
Market share of sales of treatment group	0.0064	0.0050	0.0042	0.0040	0.0044
Market share of sales of control group	0.0060	0.0048	0.0042	0.0035	0.0034
Market share of assets of treatment group	0.0064	0.0051	0.0040	0.0040	0.0043
Market share of assets of control group	0.0058	0.0046	0.0041	0.0039	0.0036
Sales-based Herfindahl of treatment group	0.16	0.16	0.17	0.17	0.16
Sales-based Herfindahl of control group	0.20	0.20	0.19	0.19	0.19
Asset-based Herfindahl of treatment group	0.16	0.16	0.17	0.17	0.16
Asset-based Herfindahl of control group	0.19	0.19	0.18	0.18	0.19
iaROA of treatment group	0.25%	0.00	0.00	0.00	0.32%
iaROA of control group	0.00	0.00	0.00	0.00	0.00
iaMB of treatment group	-0.021	0.00	-0.0028	-0.015	-0.015
iaMB of control group	0.00	0.00	0.00	-0.027	-0.016

Panel D: Correlation matrix for customer (CUST) and supplier (SS) firm characteristics.

Variables	CUST Assets	CUST R&D	CUST Debt	CUST CAP-EXP	CUST Market shares of sales	CUST Market shares of assets	CUST Sales-based Herfin-dahl	CUST Asset-based Herfin-dahl	CUST iaROA	CUST iaMB	SS Assets	SS R&D	SS Debt	SS CAP-EXP	SS Market shares of sales	SS Market shares of assets	SS Sales-based Herfin-dahl	SS Asset –based Herfin-dahl	SS iaROA	SS iaMB
CUST Assets	1																			
CUST R&D	-0.118*	1																		
CUST Debt	0.212*	-0.135*	1																	
CUST CAPEXP	-0.063*	0.0722*	0.125*	1																
CUST Market shares of sales	0.230*	-0.118*	-0.051*	-0.088*	1															
CUST Market shares of assets	0.270*	-0.130*	0.0212*	-0.118*	0.971*	1														
CUST Sales-based Herfindahl	0.0149	-0.095*	-0.086*	-0.092*	0.828*	0.803*	1													
CUST Asset –based Herfindahl	0.021*	-0.084*	-0.057*	-0.123*	0.789*	0.796*	0.964*	1												
CUST iaROA	-0.027*	0.185*	-0.179*	0.084*	-0.0025	-0.035*	-0.067*	-0.085*	1											
CUST iaMB	-0.086*	0.246*	-0.195*	0.134*	0.033*	-0.013	-0.011	-0.038*	0.306*	1										
SS Assets	0.141*	-0.052*	0.012	-0.025*	-0.0036	-0.014	-0.031*	-0.039*	-0.034*	0.0130	1									
SS R&D	0.0057	0.0137	-0.0065	-0.0004	0.011	0.0094	0.0069	0.0055	0.0110	0.0034	-0.0073	1								
SS Debt	0.0034	0.0287*	0.0126	0.0654*	-0.023*	-0.023*	-0.028*	0.0225*	-0.0058	-0.0037	-0.0044	0.575*	1							
SS CAPEXP	0.0034	0.0287*	0.0136	0.0654*	-0.023*	-0.023*	-0.028*	-0.025*	0.0025	0.0071	-0.0065	0.871*	0.702*	1						
SS Market shares of sales	0.097*	-0.097*	0.0573*	0.0228*	0.0726*	0.0763*	0.0635*	0.0652*	-0.062*	-0.0175	0.2608*	-0.0134	-0.0035	-0.019*	1					

SS Market shares of assets	0.098*	-0.090*	0.0567*	0.0235*	0.0738*	0.0777*	0.0611*	0.0614*	-0.056*	-0.0153	0.2716*	-0.0129	-0.0027	-0.018*	0.973*	1			
SS Sales-based Herfindahl	0.0112	-0.098*	0.0541*	0.0270*	0.125*	0.127*	0.152*	0.1447*	-0.057*	-0.018*	-0.030*	0.0134	0.0028	-0.0118	0.3875*	0.383*	1		
SS Asset-based Herfindahl	0.0088	-0.120*	0.0611*	0.0309*	0.1235*	0.1257*	0.1577*	0.1548*	-0.068*	-0.024*	-0.039*	0.0120	0.0054	-0.018*	0.3466*	0.339*	0.943*	1	
SS iaROA	-0.0105	0.0044	-0.0006	-0.0045	-0.0175	-0.0163	-0.0133	-0.0115	0.017	0.0019	0.0050	-0.918*	-0.742*	-0.861*	0.0070	0.0067	-0.020*	-0.021*	1
SS iaMB	-0.0129	0.0224*	-0.023*	0.0009	-0.0163	-0.0171	-0.020*	-0.020*	0.0207*	0.0158	-0.0120	0.0241*	0.0163	0.0182	-0.030*	-0.032*	-0.036*	-0.033*	-0.0186

* indicate statistical significance at 1% level

Table 2.2

Supplier and customer cumulative abnormal return around death announcements

Panel A and B present the cumulative abnormal return (CAR) of suppliers and customers, respectively, around announcements of sudden death of customers' top executives with the titles of chief executive officer (CEO), chief financial officer (CFO), chief operating officer (COO), chairman, vice-chairman, president or vice-president. The sample consists of 41 customer firms with 71 suppliers for the sample period 1993 to 2006. The supplier and customer CAR are computed using the market model following the approach of Brown and Warner (1980, 1985) with the CRSP equally-weighted market index as the market proxy. The mean supplier (customer) CAR is reported. [-3, +1] represents the window used to cumulate the abnormal returns from three days before to one day after the announcement date. CAR over the pre-announcement [-30, -4] window and post-announcement [+2, +30] window are also reported. Patell's Z statistic (Patell, 1976) and the rank test Z statistic are reported with p-values in parenthesis. Financial firms and utilities are excluded. Suppliers that are subsidiaries of customers are also excluded. *,**,*** represent statistical significance at 10%, 5% and 1% level respectively.

Panel A: Supplier CAR

		Supplier CAR			
Window	N	Mean CAR (%)	% positive	Patell Z	Rank Test Z
[-30, -4]	71	-0.48	56.3	1.202	0.761
				(0.1147)	(0.2236)
[-3, +1]	71	-2.57	33.8	**-1.740****	**-1.347***
				(0.0409)	**(0.0895)**
[+2, +30]	71	-5.59	32.4	**-1.700****	-0.468
				(0.0446)	(0.3200)

Panel B: Customer CAR

		Customer CAR			
Window	N	Mean CAR (%)	% positive	Patell Z	Rank Test Z
[-30, -4]	41	-1.94	34.1	-1.004	0.134
				(0.1576)	(0.4466)
[-3, +1]	41	1.44	61.0	**2.336*****	**1.376***
				(0.0098)	**(0.0849)**
[+2, +30]	41	-1.67	41.5	-0.594	0.213
				(0.2768)	(0.4158)

Table 2.3
Supplier and customer cumulative abnormal return around turnover announcements

Panel A and B present the cumulative abnormal return (CAR) of suppliers and customers, respectively, around announcements of resignation or dismissal of customers' top executives with the titles of chief executive officer (CEO), chief financial officer (CFO), chief operating officer (COO), chairman, vice-chairman, president or vice-president. The sample consists of 520 customer firms with 1575 suppliers for the sample period 1993 to 2006. The supplier and customer CAR are computed using the market model following the approach of Brown and Warner (1980, 1985) with the CRSP equally-weighted market index as the market proxy. The mean supplier (customer) CAR is reported. [-3, +1] represents the window used to cumulate the abnormal returns from three days before to one day after the announcement date. CAR over the pre-announcement [-30, -4] window and post-announcement [+2, +30] window are also reported. Patell's Z statistic (Patell, 1976) and the rank test Z statistic are reported with p-values in parenthesis. Financial firms and utilities are excluded. Suppliers that are subsidiaries of customers are also excluded. *,**,*** represent statistical significance at 10%, 5% and 1% level respectively.

Panel A: Supplier CAR

		Supplier CAR			
Window	N	Mean CAR (%)	% positive	Patell Z	Rank Test Z
[-30, -4]	1575	-0.63	44.6	-0.787 (0.2156)	-1.068 (0.1431)
[-3, +1]	1575	-0.44	42.3	**-2.133** (0.0165)**	**-1.833** (0.0339)**
[+2, +30]	1575	0.11	42.6	-0.342 (0.3663)	-1.146 (0.1262)

Panel B: Customer CAR

		Customer CAR			
Window	N	Mean CAR (%)	% positive	Patell Z	Rank Test Z
[-30, -4]	520	-3.66	38.1	**-6.324*** (<0.0001)**	**-3.500*** (0.0003)**
[-3, +1]	520	-1.05	45.8	**-3.893*** (<0.0001)**	**-1.462* (0.0724)**
[+2, +30]	520	-1.09	45.4	**-1.527* (0.0634)**	-0.417 (0.3386)

Table 2.4

Supplier cumulative abnormal return and past profitability of customers

This table presents the cumulative abnormal return (CAR) of suppliers around announcements of resignation or dismissal of customers' top executives sorted into two groups based on whether the customer's profitability in the year preceding management turnover is above or below its industry median. Top executives are officers with the titles of chief executive officer (CEO), chief financial officer (CFO), chief operating officer (COO), chairman, vice-chairman, president or vice-president. Supplier CAR is computed from the market model following the approach of Brown and Warner (1980, 1985) using the CRSP equally-weighted market index as the market proxy. The mean supplier CAR is reported. Proxies for the profitability of suppliers are (i) the median industry-adjusted return on assets (iaROA) in Panel A, and (ii) the median industry-adjusted market-to-book (iaMB) ratio of assets in Panel B. Industry is defined by the 4-digit Standard Industrial Classification (SIC) Codes. ROA is computed as the sum of net income before extraordinary income plus income tax expenses plus interest expenses, and divided by lagged assets. MB is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. [-3, +1] represents the window used to cumulate the abnormal return from three days before to one day after the announcement date. CAR over the pre-announcement [-30, -4] and post-announcement [+2, +30] window are also reported. Patell's Z statistic (Patell, 1976) and the rank test Z statistic are reported with p-values in parenthesis. Financial firms and utilities are excluded. Suppliers must have non-zero assets and sales reported in Compustat and cannot be subsidiaries of their customers. Customers must be listed in Execucomp. *,**,*** represent statistical significance at 10%, 5% and 1% level respectively.

Panel A: Past industry-adjusted ROA of customers

		Supplier CAR								
		Customer iaROA ≥ 0				**Customer iaROA < industry median**				
Window	N	Mean CAR (%)	%positive	Patell Z	Rank Test Z	N	Mean CAR (%)	% positive	Patell Z	Rank Test Z
[-30,-4]	943	-0.69	45.0	-0.205 (0.4187)	-0.253 (0.4001)	571	-0.30	44.1	-0.742 (0.2292)	-1.155 (0.1246)
[-3,+1]	943	-0.63	42.6	**-1.871** (0.0307)**	-1.212 (0.1132)	571	-0.44	40.3	**-1.951** (0.0255)**	**-2.045** (0.0208)**
[+2,+30]	943	-0.36	42.6	-0.573 (0.2832)	**-1.288* (0.0994)**	571	1.22	1.22	0.641 (0.2609)	0.173 (0.4315)

Panel B: Past industry-adjusted market-to book ratio of customers

	Supplier CAR									
	Customer iaMB ≥ 0					Customer iaMB < 0				
Window	N	Mean CAR (%)	%positive	Patell Z	Rank Test Z	N	Mean CAR (%)	% positive	Patell Z	Rank Test Z
[-30,-4]	913	-0.51	46.7	0.430 (0.3336)	0.492 (0.3113)	601	-0.61	41.6	**-1.510*** **(0.0655)**	**-2.193**** **(0.0145)**
[-3,+1]	913	-0.56	41.1	**-2.348***** **(0.0095)**	**-2.011**** **(0.0226)**	601	-0.55	42.8	**-1.352*** **(0.0882)**	-0.701 (0.2418)
[+2,+30]	913	0.69	43.4	0.525 (0.3000)	-0.773 (0.2201)	601	-0.45	41.6	-0.740 (0.2296)	-0.555 (0.2897)

Table 2.5

Supplier cumulative abnormal return and customer's market power

This table presents the cumulative abnormal return (CAR) of suppliers around announcements of resignation or dismissal of customers' top executives sorted by the customer's market power. Top executives are officers with the titles of chief executive officer (CEO), chief financial officer (CFO), chief operating officer (COO), chairman, vice-chairman, president or vice-president. The sample is sorted into 4 quartiles according to the customer's market power in the year preceding the announcement. Supplier CAR is computed from the market model following the approach of Brown and Warner (1980, 1985) using the CRSP equally-weighted market index as the market proxy. The mean supplier CAR is reported. Proxies for the market power of customers are (i) the market share of sales in Panel A, (ii) the industry sales-based Herfindahl in Panel B, (iii) the market share of assets in Panel C, and (iv) the industry asset-based Herfindahl in Panel D. Industry is defined by the 4-digit Standard Industrial Classification (SIC) Codes. Sales-based Herfindahl is computed as the sum of the square of a firm's fractional sales in its industry across all firms in the industry. Asset-based Herfindahl is computed as the sum of the square of a firm's fractional assets in its industry across all firms in the industry. Market share of sales is the firm's sales divided by the industry sales. Market share of assets is the firm's assets divided by the industry assets. Supplier CAR is cumulated from three days before to one day after the announcement date. Patell's Z statistic (Patell, 1976) and the rank test Z statistic are reported with p-values in parenthesis. Financial firms and utilities are excluded. Suppliers must have non-zero assets and sales reported in Compustat and cannot be subsidiaries of their customers. Customers must be listed in Execucomp. *,**,*** represent statistical significance at 10%, 5% and 1% level respectively.

Panel A: Customer's market share of sales

		Supplier CAR			
Customer's market share of sales	N	Mean CAR(%)	% positive	Patell Z	Rank Test Z
<25th percentile	356	-0.57	41.9	**-1.321***	-1.188
				(0.0932)	(0.1178)
25th to 50th percentile	354	-0.31	41.8	-1.134	**-1.355***
				(0.1285)	**(0.0882)**
50th - 75th percentile	382	-0.78	41.4	**-1.464***	**-1.791****
				(0.0716)	**(0.0371)**
>75th percentile	398	-1.07	38.4	**-2.786*****	**-1.647***
				(0.0027)	**(0.0502)**

Panel B: Customer's market share of assets

		Supplier CAR			
Customer's market share of assets	N	Mean CAR (%)	% positive	Patell Z	Rank Test Z
<25th percentile	390	-0.65	40.8	-1.272	**-1.706****
				(0.1017)	**(0.0445)**
25th to 50th percentile	315	-0.13	41.6	-1.185	**-1.382***
				(0.1180)	**(0.0840)**
50th - 75th percentile	372	-0.61	44.6	-0.561	-0.984
				(0.2874)	(0.1629)
>75th percentile	413	-1.46	36.8	**-3.616*****	**-2.112****
				(0.0002)	**(0.0177)**

Panel C: Customer's sales-based Herfindahl

		Supplier CAR			
Customer's sales-based Herfindahl	N	Mean CAR (%)	% positive	Patell Z	Rank Test Z
<25th percentile	362	-0.52	41.7	**-1.414***	**-1.633****
				(0.0787)	**(0.0518)**
25th to 50th percentile	355	-0.60	42.5	-0.764	**-1.402***
				(0.2223)	**(0.0809)**
50th - 75th percentile	424	-0.69	42.0	**-1.352***	-0.919
				(0.0883)	(0.1793)
>75th percentile	349	-0.99	38.9	**-1.899****	-0.899
				(0.0288)	(0.1847)

Panel D: Customer's asset-based Herfindahl

		Supplier CAR			
Customer's asset-based Herfindahl	N	Mean CAR (%)	% positive	Patell Z	Rank Test Z
<25th percentile	321	-0.25	41.7	**-1.638***	**-1.715****
				(0.0507)	**(0.0437)**
25th to 50th percentile	431	-0.87	42.5	-1.162	**-1.967****
				(0.1227)	**(0.0250)**
50th - 75th percentile	376	-0.74	40.7	**-1.791****	**-1.639***
				(0.0367)	**(0.0511)**
>75th percentile	362	-1.08	38.1	**-2.222****	-1.082
				(0.0132)	(0.1400)

Table 2.6

Supplier cumulative abnormal return and own market power

This table presents the cumulative abnormal return (CAR) of suppliers around announcements of resignation or dismissal of customers' top executives sorted by the supplier's market power. Top executives are officers with the titles of chief executive officer (CEO), chief financial officer (CFO), chief operating officer (COO), chairman, vice-chairman, president or vice-president. The sample is sorted into 4 quartiles according to the supplier's own market power in the year preceding the announcement. Supplier CAR is computed from the market model following the approach of Brown and Warner (1980, 1985) using the CRSP equally-weighted market index as the market proxy. The mean supplier CAR is reported. Proxies for the market power of suppliers are (i) the market share of sales in Panel A, (ii) the industry sales-based Herfindahl in Panel B, (iii) the market share of assets in Panel C, and (iv) the industry asset-based Herfindahl in Panel D. Industry is defined by the 4-digit Standard Industrial Classification (SIC) Codes. Sales-based Herfindahl is computed as the sum of the square of a firm's fractional sales in its industry across all firms in the industry. Asset-based Herfindahl is computed as the sum of the square of a firm's fractional assets in its industry across all firms in the industry. Market share of sales is the firm's sales divided by the industry sales. Market share of assets is the firm's assets divided by the industry assets. Supplier CAR is cumulated from three days before to one day after the announcement date. Patell's Z statistic (Patell, 1976) and the rank test Z statistic are reported with p-values in parenthesis. Financial firms and utilities are excluded. Suppliers must have non-zero assets and sales reported in Compustat and cannot be subsidiaries of their customers. Customers must be listed in Execucomp. *,**,*** represent statistical significance at 10%, 5% and 1% level respectively.

Panel A: Supplier's market share of sales

		Supplier CAR			
Customer's market share of sales	N	Mean CAR (%)	% positive	Patell Z	Rank Test Z
<25th percentile	301	-0.65	41.9	-0.251 (0.4010)	-0.857 (0.1961)
25th to 50th percentile	356	-1.12	43.0	**-1.736** (0.0413)**	-1.244 (0.1072)
50th - 75th percentile	372	-0.52	40.3	**-1.895** (0.0291)**	**-2.195** (0.0144)**
>75th percentile	402	-0.43	41.0	**-1.282** (0.0999)*	**-1.375** (0.0851)*

Panel B: Supplier's market share of assets

		Supplier CAR			
Customer's market share of assets	N	Mean CAR (%)	% positive	Patell Z	Rank Test Z
<25th percentile	289	-0.22	42.9	0.436 (0.3314)	-0.254 (0.3998)
25th to 50th percentile	362	-1.36	42.5	**-2.049** (0.0202)**	**-1.540* (0.0623)**
50th - 75th percentile	378	-0.73	39.7	**-2.563*** (0.0052)**	**-2.532*** (0.0059)**
>75th percentile	206	-0.33	43.2	-0.699 (0.2424)	-1.148 (0.1259)

Panel C: Supplier's sales-based Herfindahl

		Supplier CAR			
Customer's sales-based Herfindahl	N	Mean CAR (%) [-3, +1]	% positive	Patell Z	Rank Test Z
<25th percentile	300	-0.72	42.3	**-1.613* (0.0534)**	**-1.316* (0.0946)**
25th to 50th percentile	402	-0.50	45.2	-1.028 (0.1521)	-1.125 (0.1307)
50th - 75th percentile	376	-1.05	40.7	**-1.645* (0.0501)**	**-2.123** (0.0173)**
>75th percentile	358	-0.41	41.1	-0.908 (0.1820)	-1.102 (0.1357)

Panel D: Supplier's asset-based Herfindahl

		Supplier CAR			
Customer's asset-based Herfindahl	N	Mean CAR (%) [-3, +1]	% positive	Patell Z	Rank Test Z
<25th percentile	294	-0.57	42.9	-0.780 (0.2176)	-0.720 (0.2362)
25th to 50th percentile	409	-0.92	41.1	**-2.291** (0.0110)**	**-1.984** (0.0240)**
50th - 75th percentile	372	-0.75	40.6	-1.048 (0.1473)	**-1.447* (0.0745)**
>75th percentile	361	-0.38	42.1	-0.932 (0.1758)	**-1.335* (0.0915)**

Table 2.7
OLS regressions of supplier cumulative abnormal return

This table presents OLS regressions of the relationship between supplier cumulative abnormal return (CAR), the past profitability of customers and the market power of customers and suppliers. Dependent variable is the supplier CAR over the [-3, +1] window from three trading days before to one trading day after announcements of top management turnover at customer firms for the sample period 1993 to 2006. Top management includes officers with the titles of chief executive officer (CEO), chief financial officer (CFO), chief operating officer (COO), chairman, vice-chairman, president or vice-president. The CAR is computed from the market model following the approach of Brown and Warner (1980, 1985) using the CRSP equally-weighted market index as the market proxy. Proxies for market power are (i) the sales-based Herfindahl index, (ii) the asset-based Herfindahl index, (iii) the firm's market share of sales in its industry, and (iv) the firm's market share of assets in its industry. Profitability proxy is the median industry-adjusted market-to-book (MB) ratio of assets. Industry is defined by the 4-digit Standard Industrial Classification (SIC) Codes. Sales-based Herfindahl index is computed as the sum of the square of a firm's fractional sales in its industry sales across all firms in the industry. Asset-based Herfindahl index is computed as the sum of the square of a firm's fractional assets in its industry assets across all firms in the industry. Market share of sales is the firm's sales divided by total sales of the industry. Market share of assets is the firm's assets divided by the total assets of the industry. MB is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. Firm controls are as follows: the R&D expenses (R&D) divided by lagged total assets; the debt level (debt) computed as the sum of long-term debt plus current liabilities and divided by lagged total assets; the capital expenditure (CAPEXP) divided by lagged total assets; size is the logarithm of total assets. Year dummies are included. Standard errors are clustered by customers. P-values are reported in parenthesis. All explanatory variables are for the year preceding turnover announcements and winsorized at 1% and 99%. Utilities and financial firms are excluded. Suppliers that are subsidiaries of customers are also excluded. Customers must be listed in Execucomp. *,**,*** represent statistical significance at 10%, 5% and 1% level respectively.

Dependent variable is supplier CARs over [-3, +1] window				
	(1)	(2)	(3)	(4)
Customer sales-based Herfindahl	**-0.0459**			
	[0.0068]* **			
Customer asset-based Herfindahl		**-0.0389**		
		[0.0167] **		
Customer market share of sales			**-0.0254**	
			[0.0960]*	
Customer market share of assets				**-0.0291**
				[0.0513]*
Customer industry-adjusted MB	0.0022	0.0021	0.0024	0.0023
	[0.3278]	[0.3651]	[0.2920]	[0.3139]
Customer R&D	-0.0672	-0.0542	-0.0737	-0.0761
	[0.2385]	[0.3450]	[0.1899]	[0.1736]

Customer Debt	**-0.0322**	**-0.0330**	**-0.0313**	-0.0301
	[0.0668]*	**[0.0650]***	**[0.0894]***	[0.1051]
Customer CAPEXP	**-0.1054**	**-0.1064**	**-0.0996**	**-0.1033**
	[0.0106]**	**[0.0107]****	**[0.0122]****	**[0.0104]****
Customer Size	-0.0015	-0.0015	-0.0006	-0.0003
	[0.5382]	[0.5363]	[0.8374]	[0.9104]
Supplier sales-based Herfindahl	0.0128			
	[0.3318]			
Supplier asset-based Herfindahl		0.0178		
		[0.1804]		
Supplier market share of sales			0.0187	
			[0.1782]	
Supplier market share of assets				0.0185
				[0.1780]
Supplier industry-adjusted MB	-0.0013	-0.0013	-0.0013	-0.0013
	[0.1868]	[0.2021]	[0.2007]	[0.1968]
Supplier R&D	0.0213	0.0230	0.0235	0.0232
	[0.3834]	[0.3484]	[0.3380]	[0.3418]
Supplier Debt	0.0043	0.0041	0.0032	0.0031
	[0.5706]	[0.5890]	[0.6690]	[0.6761]
Supplier CAPEXP	-0.0392	-0.0376	-0.0380	-0.0382
	[0.2757]	[0.2921]	[0.2890]	[0.2869]
Supplier Size	-0.0020	-0.0019	-0.0026	-0.0026
	[0.3047]	[0.3294]	[0.2210]	[0.2215]
Intercept	**0.0680**	**0.0648**	0.0579	0.0561
	[0.0734]*	**[0.0873]***	[0.1147]	[0.1266]
Observations	1245	1245	1245	1245
Adjusted R-squared	0.0125	0.0121	0.0095	0.0103
Year dummies	Yes	Yes	Yes	Yes

Table 2.8
OLS regressions of value-weighted portfolio of supplier cumulative abnormal return

This table presents the OLS regressions of the portfolio of supplier cumulative abnormal return (CAR) formed at the customer level and the customer's market power. For each customer, the revenues generated from trades by each supplier are summed across all suppliers to compute the total input expenditure of the customer. The CAR of each supplier are multiplied by the supplier's revenues from the customer and divided by the customer's total input expenditure, and the weighted supplier CAR is summed across all suppliers of the customer to form a portfolio of supplier CARs. Dependent variable is the value-weighted portfolio of supplier CAR. Supplier CAR is computed from the market model following the approach of Brown and Warner (1980, 1985) with the CRSP equally-weighted market index as market proxy. The CAR is cumulated over the [-3,+1] window from three trading days before to one trading day after announcements of top management turnover of customers. Top management includes officers with the titles of chief executive officer (CEO), chief financial officer (CFO), chief operating officer (COO), chairman, vice-chairman, president or vice-president Proxies for market power are (i) the sales-based Herfindahl index, (ii) the asset-based Herfindahl index, (iii) the firm's market share of sales in its industry, and (iv) the firm's market share of assets in its industry. Profitability proxy is the median industry-adjusted market-to-book (MB) ratio of assets. Industry is defined by the 4-digit Standard Industrial Classification (SIC) Codes. Sales-based Herfindahl index is computed as the sum of the square of a firm's fractional sales in its industry sales across all firms in the industry. Asset-based Herfindahl index is computed as the sum of the square of a firm's fractional assets in its industry assets across all firms in the industry. Market share of sales is the firm's sales divided by the total industry sales. Market share of assets is the firm's assets divided by the total industry assets. MB is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. Customer firm controls are as follows: the R&D expenses (R&D) divided by lagged total assets; the debt level (debt) computed as the sum of long-term debt plus current liabilities and divided by lagged total assets; the capital expenditure (CAPEXP) divided by lagged total assets; and SIZE is the logarithm of total assets. Year dummies are included. Standard errors are clustered by customers. P-values are reported in parenthesis. All explanatory variables are for the year preceding turnover announcements and winsorized at 1% and 99%. Utilities and financial firms are excluded. Suppliers that are subsidiaries of customers are also excluded. Customers must be listed in Execucomp. *,**,*** represent statistical significance at 10%, 5% and 1% level respectively.

Dependent variable is the portfolio of supplier CAR at the customer level				
	(1)	(2)	(3)	(4)
Customer sales-based Herfindahl	**-0.0649**			
	[0.0171]**			
Customer asset-based Herfindahl		**-0.0564**		
		[0.0199]**		
Customer market share of sales			-0.0121	
			[0.6615]	
Customer market share of assets				-0.0141
				[0.6024]
Customer industry-adjusted MB	-0.0020	-0.0020	-0.0018	-0.0018
	[0.5513]	[0.5539]	[0.5968]	[0.5864]
Customer R&D	-0.0610	-0.0561	-0.0512	-0.0532
	[0.3167]	[0.3583]	[0.4317]	[0.4140]
Customer Debt	**-0.0539**	**-0.0550**	**-0.0528**	**-0.0524**
	[0.0049]***	**[0.0054]*****	**[0.0095]*****	**[0.0097]*****
Customer CAPEXP	**-0.1075**	**-0.1089**	**-0.0987**	**-0.1000**
	[0.0265]**	**[0.0257]****	**[0.0428]****	**[0.0409]****
Customer Size	-0.0013	-0.0013	-0.0013	-0.0012
	[0.7247]	[0.7284]	[0.7267]	[0.7561]
Intercept	0.0261	0.0259	0.0168	0.0159
	[0.4346]	[0.4412]	[0.6143]	[0.6368]
Observations	377	377	377	377
Adjusted R-squared	0.0396	0.0372	0.0246	0.0248
Year dummies	Yes	Yes	Yes	Yes

Table 2.9
Post-event profitability of suppliers

This table uses differences-in-differences methodology to compare the change in profitability of suppliers that experienced customer's top management changes (treatment group) relative to suppliers which did not experience customer's top management turnover (control group) for the sample period 1993 to 2006. A supplier is assigned to the treatment group if it experiences a customer's top management turnover at any time during the sample period while suppliers that do not experience any customer's top management turnover throughout the sample period and can be matched to the treated suppliers by 2-digit Standard Industrial Classification (SIC) codes and asset size are assigned to the control group. Each treated unit is matched to only one control unit most similar in asset size without replacement. Results are reported with and without restrictions on the relative asset size ratio of a matched pair. A supplier is considered as experiencing customer's management turnover only once in year t even if multiple customers had management turnover in year t, giving unique supplier-years. Customers must be listed in Execucomp in order to identify top management changes, if any. Both treated and control units must have non-missing profitability data in Compustat in the three years pre- and post-customer's management turnover of the treated unit. Top management turnover are classified as the resignation or dismissal of top executives with the titles of chief executive officer (CEO), chief financial officer (CFO), chief operating officer (COO), chairman, vice-chairman, president or vice-president. Dependent variable is the supplier's profitability in year t. Profitability proxies are (i) the median industry-adjusted market-to-book (iaMB) ratio of assets in Panel A, and (ii) the median industry-adjusted return on assets (iaROA) in Panel B. Industry is defined by the 4-digit SIC Codes. ROA is computed as the ratio of the sum of operating income before extraordinary items plus interest expenses plus income tax expenses to lagged assets. MB is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. Post is a dummy that takes on unity after customer's management turnover, and zero otherwise. CustTO is a dummy that takes on unity for suppliers in the treatment group, and zero for suppliers in the control group. Supplier firm controls are as follows: the market share of sales in its industry computed as the supplier's sales divided by total sales of its industry; the R&D expenses (R&D) divided by lagged total assets; the debt level (debt) computed as the sum of long-term debt plus current liabilities and divided by lagged total assets; the capital expenditure (CAPEXP) divided by lagged total assets; firm size computed as the logarithm of total assets. The average firm characteristics of all customers of a supplier in year t are also included in columns (2), (4), (6) and (8). All variables are winsorized at 1% and 99%. Financial firms and utilities are excluded. Suppliers which are subsidiaries of their customers are also excluded. Standard errors are clustered by suppliers. Year and supplier's firm dummies are included. *,**,*** represent statistical significance at 10%, 5% and 1% level respectively.

Panel A: Dependent variable is supplier's industry-adjusted MB

	Relative Asset Size Ratio ≤ 1.5		Relative Asset Size Ratio ≤ 2		Relative Asset Size Ratio ≤ 4		No restriction on Relative Asset Size Ratio	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post	-0.358	-0.365	-0.365	-0.246	-0.436	-0.380	-0.191	-0.165
	[0.722]	[0.731]	[0.652]	[0.772]	[0.479]	[0.551]	[0.605]	[0.659]
CUSTTO	2.849	2.920	**3.221**	**2.920**	1.024	1.079	-0.229	-0.189
	[0.170]	[0.149]	**[0.060]***	**[0.057]***	[0.409]	[0.392]	[0.824]	[0.850]
Post*CUSTTO	**-1.594**	**-1.587**	**-1.760**	**-1.471**	**-1.326**	**-1.152**	-0.398	-0.279
	[0.076]*	**[0.080]***	**[0.033]****	**[0.055]***	**[0.019]****	**[0.032]****	[0.334]	[0.502]
Supplier market share	2.528	3.038	3.397	2.907	1.133	1.149	0.913	0.829
	[0.443]	[0.372]	[0.287]	[0.309]	[0.589]	[0.558]	[0.332]	[0.383]
Supplier R&D	0.302	0.199	2.593	1.015	0.932	-0.308	1.286	0.893
	[0.927]	[0.951]	[0.459]	[0.693]	[0.742]	[0.894]	[0.337]	[0.456]
Supplier debt	-0.067	0.006	-1.046	-0.954	-0.897	-0.818	-0.263	-0.191
	[0.934]	[0.993]	[0.164]	[0.192]	[0.286]	[0.306]	[0.650]	[0.729]
Supplier CAPEXP	**1.815**	**1.616**	**2.584**	**3.078**	**2.832**	**3.310**	2.487	2.704
	[0.076]*	**[0.064]***	**[0.046]****	**[0.091]***	**[0.016]****	**[0.023]****	[0.018]**	[0.020]**
Supplier firm size	-2.511	-2.610	**-3.219**	**-2.769**	**-2.754**	**-2.469**	-2.163	-2.013
	[0.126]	[0.119]	**[0.025]****	**[0.027]****	**[0.004]*****	**[0.003]*****	[0.000]***	[0.000]***
Mean customer iamb		**0.307**		0.172		0.129		0.033
		[0.091]*		[0.116]		[0.167]		[0.670]
Mean customer firm size		-0.066		-0.160		0.051		0.141
		[0.835]		[0.516]		[0.770]		[0.348]
Mean customer market share		1.004		-0.593		-1.405		-1.198
		[0.683]		[0.802]		[0.303]		[0.192]
Intercept	14.511	15.170	**17.924**	**17.125**	**16.806**	**15.017**	**13.280**	**11.260**
	[0.217]	[0.230]	**[0.057]***	**[0.079]***	**[0.005]*****	**[0.011]****	**[0.000]*****	**[0.003]*****
Observations	897	892	1206	1198	1859	1843	3550	3527
R-square	0.512	0.517	0.802	0.809	0.700	0.701	0.668	0.669
# unique suppliers in treatment group	169	169	229	229	360	360	705	705
Supplier firm dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Dependent variable is supplier's industry-adjusted ROA

	Relative Asset Size Ratio ≤ 1.5		Relative Asset Size Ratio ≤ 2		Relative Asset Size Ratio ≤ 4		No restriction on Relative Asset Size Ratio	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post	-0.065	-0.072	-0.048	-0.055	-0.034	-0.037	-0.009	-0.006
	[0.365]	[0.329]	[0.390]	[0.345]	[0.358]	[0.322]	[0.777]	[0.839]
CUSTTO	-0.084	-0.084	-0.312	-0.319	**-0.221**	**-0.218**	-0.052	-0.038
	[0.598]	[0.582]	[0.102]	[0.102]	**[0.089]***	**[0.097]***	[0.527]	[0.646]
Post*CUSTTO	-0.038	-0.036	-0.011	-0.012	-0.012	-0.014	0.022	0.020
	[0.494]	[0.535]	[0.820]	[0.818]	[0.735]	[0.728]	[0.366]	[0.455]
Supplier market share	0.162	0.155	0.077	0.081	0.006	0.007	0.040	0.043
	[0.473]	[0.481]	[0.662]	[0.639]	[0.961]	[0.957]	[0.702]	[0.681]
Supplier R&D	-0.178	-0.172	**-0.401**	**-0.392**	**-0.432**	**-0.425**	**-0.708**	**-0.706**
	[0.534]	[0.554]	**[0.040]****	**[0.048]****	**[0.014]****	**[0.017]****	**[0.000]*****	**[0.000]*****
Supplier debt	-0.130	-0.135	-0.110	-0.115	-0.132	-0.136	-0.076	-0.078
	[0.231]	[0.257]	[0.288]	[0.306]	[0.184]	[0.192]	[0.395]	[0.397]
Supplier CAPEXP	0.570	0.575	0.490	0.485	0.470	0.475	**0.350**	**0.356**
	[0.227]	[0.231]	[0.278]	[0.288]	[0.125]	[0.131]	**[0.068]***	**[0.068]***
Supplier firm size	0.048	0.051	0.017	0.011	0.017	0.014	-0.0003	0.0009
	[0.240]	[0.176]	[0.606]	[0.718]	[0.513]	[0.592]	[0.987]	[0.965]
Mean customer iamb		-0.012		-0.023		-0.003		-0.022
		[0.927]		[0.845]		[0.968]		[0.742]
Mean customer firm size		-0.058		-0.045		-0.039		-0.033
		[0.596]		[0.591]		[0.518]		[0.313]
Mean customer market share		0.250		0.165		0.057		0.040
		[0.338]		[0.408]		[0.657]		[0.660]
Intercept	0.063	0.563	0.271	0.720	0.191	0.586	0.070	0.369
	[0.833]	[0.632]	[0.287]	[0.441]	[0.320]	[0.373]	[0.689]	[0.366]
Observations	900	886	1194	1175	1826	1800	3568	3521
R-square	0.442	0.445	0.481	0.483	0.507	0.508	0.559	0.558
# unique suppliers in treatment group	169	169	229	229	360	360	705	705
Supplier firm dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

CHAPTER 3

The Medium of Exchange, Control Loss, and Wealth Effect on Suppliers in Mergers and Acquisitions

3.1 Introduction

Merger and acquisition (M&A) transactions are, arguably, among the most important investment decisions of a firm. Like any major corporate investments, the choice of financing in M&A activities can have a significant impact on the acquirer's ownership structure, financial leverage, taxes, risk and subsequent financing decisions. Consequently, the financing decision can have serious wealth implications, not only on the shareholders of both the acquirers and targets, but also on their stakeholders. In this paper, I examine how the medium of exchange in M&A transactions can affect the wealth of suppliers to the merging partners, focusing specifically on the bidder suppliers.

Under the incomplete contracts theory, future contingencies are hard to predict and stakeholders engaged in a long-term contracting relationship with a firm must rely heavily on implicit contracting with the firm. Stakeholders must therefore trust the incumbent management to deliver on implicit promises without legal enforcement (Shleifer and Summers, 1988). To the extent that long-term contracting facilitates relationship-specific investments and reduce contracting costs, management must commit

to building trust with stakeholders. As the ability of management to deliver on trust is strongly influenced by their controlling power, corporate decisions that result in control loss of management should have a detrimental wealth effect on the firm's stakeholders. Suppliers are a group of stakeholders especially vulnerable to control dilution of management since a product market relationship involves long-term implicit contracting.

In M&A transactions, the controlling power of management can be diluted as follows. First, the current management is usually replaced in hostile takeovers. In such cases, management can no longer protect implicit contracts with suppliers as their controlling power is completely removed. Secondly, the choice of the medium of exchange can affect the controlling power of bidder management, even if they remain post-merger. Stock financing involves equity issuance and through the process, dilutes the ownership and control of the bidder's existing major shareholders. Dilution of the bidder's controlling power is further exacerbated if the target has major shareholders, as stock payment will concentrate ownership in the hands of the target's control blocks and create new dominant shareholders in the bidder.

My primary focus is on how the bidder's choice of stock financing over cash financing can affect the wealth of its suppliers, particularly under circumstances where control loss of bidder management is most severe. To the extent that (i) the bidder suppliers cannot influence the choice of the target or the target ownership structure, and (ii) it is hard to think that bidder suppliers can influence the medium of exchange, the financing choice of

the bidder provides an ideal opportunity to examine control dilution of bidder management and wealth implications to its suppliers.

I posit that the balance of controlling power between the acquirer and target in friendly mergers has a direct wealth impact on their suppliers because of the power of management to protect implicit contracts with its own suppliers. In particular, I hypothesize that control loss of bidder management through stock payment in non-diversifying mergers[9] has a negative wealth effect on its suppliers, especially under circumstances where the target has major block-holders and the bidder does not.

As the target's control blocks are formed in the bidder post-merger, they can exert pressure on bidder management to renege on implicit agreements (e.g. trade credit, payment terms) with suppliers, thereby transferring wealth from suppliers to shareholders. Furthermore, the bargaining power of the target's block-holders is enhanced in non-diversifying mergers since suppliers to both merging parties are likely to be direct competitors and can threaten to replace each other. On the other hand, in diversifying mergers, suppliers to the merging parties are unlikely to overlap in technology and any replacement threats used by the target's block-holders to extract value from bidder suppliers will not be credible.

Arguably, if retaining control is important to bidder management, they will choose cash financing over stock payment, especially under circumstances where control loss is most

[9] A merger is non-diversifying if the acquirer and target belong to the same industry where industry is defined by the 4-digit Standard Industrial Classification (SIC) codes.

severe. Only in cases where bidder management faces little ownership dilution would stock financing be observed. However, this is not necessarily the case as cash financing has its costs. Given that most M&A transactions are large and firms have limited cash, cash payment typically involves debt financing, which increases the financial distress costs of the bidder. Hence, in deciding on the M&A financing method, the bidder faces a tradeoff between the costs of control loss associated with stock financing and the financial distress costs of additional debt issuance. Even under circumstances where control loss is significant, the bidder might still choose stock financing because the costs of cash financing is so high that the bidder is willing to accept considerable control dilution. In other words, it is not necessarily the case that stock financing is used because the controlling power of bidder management cannot be diluted.

I begin by using event study methodology to examine the cumulative abnormal return (CAR) of bidders and their suppliers around announcements of friendly merger bids where the payment method is cash[10] or stock. First, I sort the bids by merger types – diversifying or non-diversifying. For non-diversifying mergers, bidder suppliers exhibit a significantly negative mean CAR of -1.82% over the [-3, +1] event window[11]. In contrast, for diversifying mergers, the mean supplier CAR is significantly positive at 0.79%. As for the bidders, their mean CAR is strongly significantly negative for both merger types. The negative supplier CAR under non-diversifying mergers can be driven by the negative bidder CAR if stock prices between trading partners are positively

[10] Following Martin (1996) and Faccio and Masuli (2005), cash financing includes actual cash, liabilities and notes. Furthermore, I classify stock options, common stock and preferred stock as stock financing.
[11] The [-3, +1] window starts from three days prior to one day after the bid announcement. Unless otherwise stated, the CAR referred to in this paper is computed over the [-3, -1] window.

correlated. However, this is unlikely since the bidders and their suppliers experience opposite wealth effects under diversifying mergers.

Next, I perform two-way sorts by merger types and payment methods. The negative supplier CAR observed under non-diversifying merger bids is primarily driven by stock financing. Interestingly, stock financing in diversifying mergers generate a significantly positive supplier CAR of 1.31%, suggesting that stock payment, *per se*, does not adversely affect the wealth of bidder suppliers. Moreover, the results are unlikely to be entirely driven by gain in market power of bidders under non-diversifying mergers as the supplier CAR is much smaller economically and statistically insignificant when cash payment is used.

When further sorted by target ownership concentration, the use of stock financing under non-diversifying merger in the presence of target's institutional block-holders generates the strongest adverse wealth effect to bidder suppliers. The mean supplier CAR is statistically significant and economically large at -4.72%. Interestingly, stock payment in diversifying mergers when the target has block-holders generates a significantly positive and economically large CAR of 5.19% to bidder suppliers, but when the target has no block-holders, the supplier CAR is merely -0.32% and statistically insignificant. Hence, the positive announcement returns to bidder suppliers under stock payment in diversifying mergers, as noted previously, are driven by the presence of target's block-holders.

In sum, stock payment to the target's control blocks can have beneficial or detrimental announcement return effects on bidder suppliers, depending on the merger types. Under diversifying mergers where bidder suppliers do not face direct replacement threats from target suppliers, stock payment can benefit bidder suppliers by creating new monitors on the bidder, thereby reducing the ability of bidder management to dissipate firm value post-merger.

Next, sorting instead by bidder ownership concentration, bidder suppliers are hurt the most when the bidder does not have institutional block-holders to retain power in the combined firm and stock payment is used in non-diversifying mergers to further increase the likelihood of control loss. The supplier CAR is strongly significantly negative and economically large at -3.75%. On the other hand, for the small sample of suppliers protected by the presence of bidder's block-holders, the supplier CAR is positive and comparable in magnitude at 3.24%, albeit statistically insignificant.

Using OLS regressions and controlling for various bidder firm characteristics as well as deal characteristics that have been shown to influence the financing decision by existing studies, stock financing in non-diversifying mergers continues to have a negative impact on supplier CAR, albeit at a 10% significance level. This negative relationship persists after including the bidder CAR in order to control for possible positive correlation in stock price reaction between trading partners. It is further robust to controlling for

turnover[12] of bidder's top executives during the M&A process. Using OLS regressions for sub-samples based on whether the bidder and/or the target has institutional block-holders, the negative supplier CAR observed under stock financing in non-diversifying mergers is primarily driven by cases where (i) the target has institutional block-holders, (ii) the bidder has no institutional block-holders, and (iii) their interaction.

One prediction of control dilution of bidder management is their reduced ability to retain suppliers in the merged firm. Using logistic regressions, I examine the retention likelihood of a bidder supplier post-merger. The results show that the presence of target's block-holders, *per se*, does not reduce the retention probability of bidder suppliers under stock financing in non-diversifying mergers. Rather, the retention likelihood of bidder suppliers is significantly reduced by 12.7% when the bidder does not have block-holders to counter-balance the target's control blocks. This result is intuitive as bidder management faces the worst control dilution associated with stock financing in this case.

Finally, I use two approaches to examine the post-merger profitability of dismissed and retained bidder suppliers. The first approach uses the supplier as its own control by examining the profitability of the same supplier pre- and post-merger. I do not find significant changes in profitability[13] of dismissed or retained suppliers in the three years after the merger relative to the three years prior to bid announcement for all combinations

[12] The ability of management to protect implicit contracts with suppliers is completely removed when they are replaced. Top management turnover, therefore, represents the ultimate control dilution and can be driving the supplier CAR.

[13] The profitability measures are the median industry-adjusted returns on assets, the median industry-adjusted sales growth, and the median industry-adjusted market-to-book ratio.

of merger types and payment methods. However, when further sorted by the presence of target's or bidder's block-holders, I find some evidence of an increase in post-merger profitability of retained bidder suppliers under stock payment in non-diversifying mergers where target has control blocks. This result suggests that stock payment to target's block-holders in non-diversifying mergers hurts bidder suppliers through lower retention likelihood, but as long as these suppliers are not replaced, they enjoy a higher profitability post-merger. In contrast, the dismissed bidder suppliers continue to exhibit no significant changes in profitability after sorting by the presence of target's or bidder's block-holders.

The second approach uses a differences-in-differences methodology to compare the profitability of "treated" suppliers with the profitability of their counterfactuals. For the dismissed bidder suppliers, their counterfactuals are a group of bidder suppliers affected by the same merger type and payment method, but are retained in the combined firm. The counterfactuals are then matched by industry[14] and asset size to the "treated" suppliers. I find that the dismissed bidder supplier has 36.3% lower industry-adjusted sales growth relative to its counterfactual, post-merger.

As for the retained bidder suppliers, their counterfactuals are a group of bidder suppliers affected by the same merger type but a different payment method, and matched by industry and asset size. Examining only non-diversifying mergers, I find that the post-merger industry-adjusted market-to-book ratio (iaMB) of bidder suppliers affected by stock financing is significantly lower than that of their counterfactuals affected by cash

[14] Industry is defined by 2-digit SIC codes in matching.

financing. However, their post-merger industry-adjusted sales growth (iaSALESGW) is higher than that of their counterfactuals by 45.5% at a p-value of 0.064, while their post-merger industry-adjusted returns on asset are not significantly different from that of their counterfactuals. Unfortunately, the small sample size does not allow matching by an additional dimension which is the presence of target's block-holders. Hence, we cannot analyze how the lower iaMB or higher iaSALESGW of the "treated" supplier post-merger is related to the presence or absence of target's block-holders.

The remainder of this chapter is organized as follows. In Section 3.2, I review related literature on M&A financing and derive the empirical predictions. Next, I discuss the empirical methodology and construction of empirical proxies in Section 3.3. In Section 3.4, I describe the data sources and present the descriptive statistics. The empirical results are presented in Section 3.5. Lastly, I conclude in Section 3.6.

3.2 Related Literature and Empirical Predictions

3.2.1 Studies on Determinants of M&A Financing Choices

A number of existing studies have examined the motives behind M&A financing decisions. The information asymmetry theory predicts that bidders with over-valued equity are more likely to finance with stock than cash. Hence, earlier theoretical studies have focused on the role of information asymmetry about the bidder's or the target's value in influencing the choice of financing. Hansen (1987) includes a "state-contingent pricing" effect of stock financing as it forces target shareholders to share the risk that the

acquirers may have overpaid. Fisher (1989) focuses on the choice of financing in preempting competition among bidders by signaling the bidder's valuation of the target.

Subsequently, building on Harris and Raviv (1988) and Stulz (1988), studies start to relate the preferences of bidder management for corporate control to the method of payment. Specifically, Stulz (1988) observes that managers can rely on debt financing to maintain ownership level and voting power. Amihud, Lev, and Travlos (1990), Martin (1996), and Ghosh and Ruland (1998) empirically examine the determinants of M&A payment methods and find that lower bidder managerial ownership is negatively related to the likelihood of stock financing, as would be predicted by a corporate control motive. Ghosh and Ruland (1998) further relate the M&A financing decision to the preferences of target management for control rights in the combined firm. The authors find that managerial ownership of the target positively influences the likelihood of stock payment, and the target's managers are more likely to retain job in the merged firm under stock financing. In a recent study, Faccio and Masulis (2005) use a large sample of European M&A transactions for the period 1997-2000, and find that the tradeoff between control concerns and debt financing constraints strongly influences the financing choice.

This paper is motivated by the above studies that relate control loss of bidder to the use of stock financing in M&A transactions. As the M&A financing decision is a tradeoff between control concerns and debt financing constraints, it is not necessarily the case that the bidder will use stock financing only when there is no control loss. Furthermore, it is unlikely that bidder suppliers can influence the payment method. Hence, stock payment

can be used as an instrument to proxy for reduced ability of the bidder to protect implicit contracts with its suppliers in the M&A process, thereby allowing us to examine how control dilution of the bidder can impact stakeholder value.

3.2.2 Studies on Announcement Wealth Effects of M&A Financing Decisions

For acquisitions of publicly traded targets, studies have consistently documented a significantly negative average announcement returns to acquirers when stock financing is selected over cash financing (ex. Travlos, 1987; Wansley, Lane and Yang, 1987; Amihud et al, 1990; Servaes, 1991; and Brown and Ryngaert, 1991). Furthermore, Amihud, Lev and Travlos (1990) report significantly negative bidder returns for stock payment, but only for those bidders with low management ownership. The dominant explanation for the negative market reaction is that stock financing creates an adverse selection effect as acquirers have incentives to use over-valued equity as payment. In contrast, for acquisitions of private targets, Chang (1998) shows a positive average announcement returns to acquirers when stock financing is used, and attribute the market reaction to monitoring activities by target shareholders.

I follow these studies in using event study methodology to examine the market reaction, not only to the bidder, but also to their suppliers around announcements of M&A financing decision. To the best of my knowledge, no other studies have examined the financing choice of the bidder and the consequent announcement returns effect on its suppliers.

3.2.3 Empirical Predictions

The main hypothesis in this study is that stock financing in non-diversifying mergers has a negative wealth effect on bidder suppliers, especially under circumstances where control loss of bidder management is most severe. The first prediction would be that stock payment in non-diversifying mergers has a negative announcement returns effect on bidder suppliers. Since control loss of bidder management is substantial when the target has control blocks, the second prediction would be that the presence of target's block-holders has an incremental negative announcement returns effect on bidder suppliers. Moreover, the target's block-holders gain the most power if the bidder does not have control blocks. The third prediction would be that the presence of target's block-holders combined with the absence of bidder's block-holders has the most adverse announcement returns effect on bidder suppliers.

Control loss of bidder management can affect its ability to retain its own suppliers. The fourth prediction is that bidder suppliers are less likely to be retained in the merged firm under stock payment in non-diversifying mergers, especially in the presence of target's block-holders and the absence of bidder's block-holders. For dismissed bidder suppliers they should experience lower profitability post-merger, *ceteris paribas*. As for the retained bidder suppliers, there are no clear predictions on their wealth effects post-merger. This is because the monitoring activities of target's block-holders can have beneficial or detrimental effects on the retained bidder suppliers. Monitoring lowers the ability of bidder management to dissipate firm value and brings benefits to both its shareholders and stakeholders. On the other hand, monitoring can create pressure for

bidder management to renege on implicit promises with suppliers in order to generate profits. Hence, the post-merger wealth effect on retained bidder suppliers of stock payment in non-diversifying mergers remains an empirical question.

3.3 Empirical Methodology and Proxies

3.3.1 Empirical Design

3.3.1.1 Event Study

I rely on event study methodology to examine the abnormal market reaction to bidder suppliers around announcements of merger bids. I compute the cumulative abnormal return (CAR) using the market model as described in Brown and Warner (1980, 1985) with the CRSP equally-weighted index as the market proxy. Event period CAR is cumulated for the [-3, +1] event window which starts from three days prior to one day after the announcement. I also report a [-30, -4] pre-event window and a [+2, +30] post-event window. Patell Z-statistics (Patell, 1976) and non-parametric rank test Z-statistics corrected for serial correlation are used as the test statistics. First, I sort the merger bids according to their merger types – diversifying or non-diversifying. Then, I perform two-way sorts by merger types and payment methods. Lastly, I sort by whether the target or bidder has institutional block-holders and their combinations. The announcement returns to bidder suppliers are then computed for each combination.

3.3.1.2 OLS Regressions

Univariate analyses using event study methodology do not allow us to control for other factors that can affect the supplier CAR. Therefore, OLS regression with the general specification in (3.1) is used. Year dummies are included to control for year fixed effects.

$$BSSCAR[-3,+1]=\alpha+\beta_1.SAMEIND+\beta_2.ALLSTOCK+\beta_3.SAMEIND\times ALLSTOCK +\beta'.X+\lambda'.Z+\varepsilon \quad (3.1)$$

where BSSCAR[-3,+1] is the CAR of bidder supplier over the event window, SAMEIND is a dummy that indicates a non-diversifying merger bid, ALLSTOCK is a dummy that indicates the use of stock financing, X is a vector of covariates for the bidder firm characteristics and deal characteristics. Z represents a set of year dummies. Standard errors are clustered by bidders. To analyze the effect of target and/or bidder ownership concentration, I further estimate (3.1) for eight cases according to whether the target or bidder has block-holders, and their combinations.

Next, to examine the profitability of bidder supplier pre- and post-merger using the supplier as its own control, I estimate the general specification in (3.2).

$$PROFIT_{i,k,t}=\alpha+\theta_k+\beta_1.POST_{i,t}+\delta'.X_{i,t}+\gamma'.W_{k,t}+\lambda'.Z_t+\varepsilon_{i,k,t} \quad (3.2)$$

where $PROFIT_{i,k,t}$ is the profitability of supplier k to bidder i in year t; θ_k controls for firm fixed effects of supplier k; $POST_{i,,t}$ is a dummy that takes on unity in the year after

the effective date of completion of the merger by bidder i, and zero otherwise; $X_{i,t}$ and $W_{k,t}$ are a vector of covariates for the bidder and supplier firm characteristic, respectively. Z represents a set of year dummies. Standard errors are clustered by bidders.

The profitability of bidder suppliers in the three years before the bid announcement date and in the three years after the effective date of merger completion is examined. For dismissed bidder suppliers, I do not control for bidder firm characteristics as these suppliers are no longer trading partners of the bidder post-merger. I estimate (3.2) for four combinations of merger types with payment methods, followed by eight combinations of merger types, payment methods and whether the target has institutional block-holders. As there are relatively few cases where the bidder has institutional block-holders, I do not estimate (3.2) for combinations of merger types, payment methods and whether the bidder has block-holders.

3.3.1.3 Logistic Regressions

Logistic regressions with the general specification in (3.3) are used to examine the retention likelihood of bidder suppliers, post-merger.

$$\Pr(r=1)=\frac{\exp(\alpha+\beta_1 SAMEIND+\beta_2 ALLSTOCK+\beta_3 SAMEIND\times ALLSTOCK+\gamma' X)}{1+\exp(\alpha+\beta_1 SAMEIND+\beta_2 ALLSTOCK+\beta_3 SAMEIND\times ALLSTOCK+\gamma' X)} \quad \text{.....(3.3)}$$

where r is a dummy that takes on unity if the bidder supplier is retained after the effective date of completion of the merger, and zero otherwise.

3.3.1.4 Differences-in-Differences Methodology

One disadvantage of using the supplier as its own control is that it does not allow comparison between suppliers affected by stock financing with those not affected by stock financing under the same merger type. For example, a supplier affected by stock financing in a non-diversifying merger could have experienced an increase in profitability had the method of payment been cash. Although the outcome under cash financing is not observed, we can select a control group of suppliers similar in firm characteristics but affected by cash financing under the same merger type ("untreated" suppliers), and use a differences-in-differences approach to compare the post-merger profitability of "treated" suppliers relative to the "untreated" suppliers. One disadvantage of this approach is the difficulty in selecting the counterfactuals. When the available pool of "untreated" suppliers is small, not all of the "treated" suppliers can be matched with a good counterfactual. To achieve good matches, we must sacrifice sample size.

I examine only non-diversifying mergers under this approach. For the dismissed bidder suppliers ("treated" suppliers), their counterfactuals are a group of retained bidder suppliers ("untreated" suppliers) matched first by 2-digit SIC codes, and then by smallest differences in asset size. To achieve good matches while retaining a reasonable sample size, the relative asset size of the matched pair must not exceed a ratio of 2.5:1. As for the retained bidder suppliers affected by stock financing (the "treated" suppliers), their counterfactuals are a group of retained bidder suppliers affected by cash financing (the "untreated" suppliers) matched using the same methodology. Matching is done without replacement. I then estimate the differences-in-differences specification in (3.4).

$$PROFIT_{i,k,t} = \alpha + \theta_k + \beta_1 . POST_{i,t} + \beta_2 . TREAT_{k,t} + \beta_3 . POST_{i,t} \times TREAT_{k,t} + \delta' . X_{i,t} + \gamma' . W_{k,t} + \lambda' . Z_t + \varepsilon_{i,k,t} \quad \text{.....(3.4)}$$

where $TREAT_{k,,t}$ is a dummy that takes on unity if supplier k is "treated", and zero if "untreated". The coefficient of interest is β_3 which estimates the differential effects on profitability for a supplier in the treatment group relative to its counterfactual, post-merger.

The profitability of bidder suppliers in the three years before the bid announcement date and in the three years after the effective date of merger completion is examined. Unfortunately, when I sort the bidder suppliers into four combinations by merger types and whether the target has institutional block-holders, and try to match each "treated" supplier to an "untreated" supplier from within the same combination, I obtain few matches. As a result, I cannot use the differences-in-differences approach to analyze the effects of target's block-holders on profitability of bidder suppliers.

3.3.2 Empirical Proxies

3.3.2.1 Firm Profitability

I construct three proxies for firm profitability commonly used in the literature. First, I use the median industry-adjusted return on assets (iaROA) where the return on assets is computed as the sum of net income before extraordinary income plus interest expenses plus income tax expenses, and divided by lagged book value of assets. Industry is defined by the 4-digit SIC codes. Next, I use the median industry-adjusted sales growth

(iaSalesGW) computed as the current sales minus lagged sales, and divided by lagged sales.

Since these two measures are computed using historical accounting numbers, they are both backward-looking measures of firm profitability. To incorporate market expectations of future firm's prospect, I also use the median industry-adjusted market-to-book (iaMB) ratio of assets as a forward-looking measure of firm profitability. The market-to-book ratio is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus short-term and long-term debt while the book value of assets is the sum of the book value of equity plus short-term and long-term debt. Profitability proxies are winsorized at 1% and 99%.

3.3.2.2 Ownership Concentration

To proxy for control blocks in the target, I use a target block-holder (TGBH) dummy to indicate the presence of an institutional block-holder in the target in the year preceding the merger bid. A block-holder is defined to be an investor who holds more than 5% ownership in the firm. Similarly, I use an acquirer block-holder (AQBH) dummy to indicate the presence of an institutional block-holder in the bidder.

3.3.2.3 Factors Influencing M&A Financing Choice

Following existing studies, I control for bidder firm characteristics and deal characteristics that can influence the M&A financing decision. As information asymmetry about the bidder's asset value increases such as after a stock run-up, the

bidder is more likely to use overvalued equity as payment (e.g. Martin, 1996). Moreover, bidder's existing shareholders experience less dilution in voting power after a stock run-up. I construct the RUNUP measure as the bidder's buy and hold cumulative stock return over the 360 days prior to the month of the bid. I also control for the market run-up (MKTRUNUP) computed as the buy and hold cumulative excess market return over the same period where the excess market return is the market return minus the risk-free rate.

Furthermore, as the target assets increase in value relative to those of the bidder, stock payment is more likely due to its "state-contingent pricing" effect (Hansen, 1987). I use a relative size measure (RELSIZE) computed as the ratio of the deal transaction value divided by the sum of the deal transaction value plus the market capitalization of the bidder in the year-end preceding the bid. Jung et al. (1996) find that bidders with higher market-to-book (MB) ratio are more likely to use stock financing, possibly because the target shareholders are more attracted to stock of high-growth firms. I compute the MB ratio as the market value of equity plus book value of debt over the sum of book value of equity plus book value of debt.

As stock financing dilutes the controlling power of major shareholders, bidders with institutional block-holders should have less incentive to use stock payment (e.g. Amihud et al., 1990; Stulz, 1988; Jung et al., 1996). I control for the fractional ownership (MAXBHOWN) held by the largest institutional block-holder of the bidder. I also include its quadratic term as studies have found a non-linear relation between stock payment and managerial or dominant shareholder's ownership (e.g. Martin, 1996; Ghosh

and Ruland, 1998; and Faccio and Masuli, 2005). Under stock financing, the target's major shareholders will remain as significant block-holders in the merged firm if the relative size of the deal is large. Following the approach of Faccio and Masulis (2005), I include the control loss (CTRLLOSS) of bidder computed as the product between the target's largest institutional block and the relative deal size. If the bidder owns a larger fraction of the target prior to the merger bid, its bargaining position relative to the target is improved. Hence, I further control for the bidder's prior ownership in the target (PRIOROWN).

Cash financing generally depends on the bidder's debt capacity and current leverage. Theories on capital structure predicts that asset tangibility, earnings growth and asset diversification increase debt capacity while asset volatility decreases debt capacity (e.g. Myers, 1977; Hovakimian, Opler and Titman, 2001). I use the ratio of plant, properties and equipment to total assets (NPPE) as a measure of asset tangibility. Larger firms are likely to be more diversified, have lower flotation costs and better access to debt markets. Hence, I control for the logarithm of total assets (SIZE). Highly levered bidder will have less debt capacity. Following Faccio and Masulis (2005), I compute a financial leverage variable (FINLEV) that captures the bidder's leverage if the M&A deal is entirely financed by debt. FINLEV is constructed as the sum of the bidder's long term debt and current liabilities plus transaction value, and divided by the sum of assets plus transaction value. To measure the bidder's asset volatility, I compute the standard deviation of the bidder's stock returns (STDRET) in the 360 days prior to the month of the bid announcement. Lastly, I include an indicator (TENDER) to control for tender offers.

3.3.2.4 Other Firm Characteristics of Bidders

Market power enhances the bidder's bargaining power over suppliers, and lowers the costs of breaching implicit agreements with them. I use the market share of sales (MKTSHR) to proxy for market power. The bidder's market share of sales is computed as the ratio of bidder's sales to total sales in its industry. As the R&D intensity of a firm can proxy for the degree of information asymmetry or the intangibility of assets, I control for the bidder's R&D expenses normalized by lagged assets. I also include the bidder's capital expenditure divided by lagged asset to control for investment intensity (NCAPEXP). Besides FINLEV, I also use the debt-to-asset (DEBT/ASSET) ratio of bidder where debt is the sum of short-term and long-term debt. Lastly, I control for turnover of bidder's top executives within one year starting from the bid announcement.

3.3.2.5 Supplier Firm Characteristics

I control for market share of sales of the supplier, which can influence its bargaining power with the bidder. Other supplier's firm controls are the logarithm of assets, R&D intensity, debt-to asset ratio and capital expenditure. Lastly, I include the sales dependency of the supplier on the bidder computed as the supplier's revenues generated from trades with the bidder divided by the supplier's net sales.

3.4 Data and Descriptive Statistics

3.4.1 Data

The main data sources are the SDC Platinum, Compustat Industrial Annual, Compustat Industry Segments, Center for Security Prices (CRSP) database, Thomson Financial 13f

Institutional CDA and Execucomp database. Bidders and targets are obtained from the SDC Platinum database. Firm characteristics are obtained from the Compustat Industrial Annual database. Customer-supplier pairs are identified from the Compustat Industry Segments. Stock prices, returns and market indices required for event study analyses are obtained from the CRSP database. Institutional block-holder ownership data are obtained from Thomson Financial 13f Institutional CDA database. Top management turnover is identified from the Execucomp database and news articles. The detailed construction of the final dataset is described below.

3.4.1.1 Data on Mergers

Friendly mergers between publicly-traded domestic U.S firms with disclosed merger value from 1993 to 2006 are obtained from the SDC Platinum database. Mergers involving bidders or targets in the utilities sector or financial industry are excluded. Deals involving leveraged buyouts, going private transactions or privatization, liquidation, joint ventures, or buyout of bankrupt targets are eliminated. Furthermore, only completed deals in which the bidder acquired more than 50% ownership, and the payment method is all cash or all stock are included.

The bidder must also be listed in Execucomp and have at least one supplier listed in the Compustat Industry Segments. Bid announcement dates, effective dates of completion of the merger, transaction value, tender offers, prior ownership in the target by the bidder, and payment methods are further obtained from the SDC Platinum database. The SDC database also reports the bidder and target industry according to the 4-digit SIC codes,

and I use this information to classify mergers as non-diversifying if the bidder and target have the same 4-digit SIC codes, or diversifying otherwise. The bid announcement dates are checked using news articles from Lexis-Nexis or Factiva.

3.4.1.2 Identifying Customer-Supplier Pairs

I follow the approach in Fee, Hadlock and Thomas (2006) to identify customer-supplier pairs. First, to identify whether the bidders have suppliers, I check the Compustat Industry Segments. Firms are required to report the names of all customers accountable for over 10% of their annual sales. The customer names and the sales generated from these customers are reported in the Compustat Industry Segments. I manually match each customer name to its CUSIP in Compustat. For customer names that are abbreviated, I used visual inspection and industry affiliation to determine whether the customer is listed in Compustat. For the remaining unmatched customers, I check their corporate websites and the Directory of Corporate Affiliations to determine if the customer is a subsidiary of a listed firm. If so, the customer is assigned to its parent's CUSIP. Lastly, only bidders listed as customers in the Compustat Segments are retained.

3.4.1.3 Institutional Block-holder

Institutional block-holder ownership data are obtained from the Thomson Financial 13f Institutional CDA database. Institutional investors typically report their holdings on a quarterly basis. I use the latest reported holdings for the year. For each firm, I identify whether there are any institutional investors who hold more than 5% ownership in the firm. If so, the firm is classified as having institutional block-holders. For this group of

firms, I further identify the fractional holdings by the largest block-holder. For firms with no institutional block-holders, the fractional ownership by the largest block-holder is assigned to zero.

3.4.1.4 Management Turnover Data

For each bidder, I check the Execucomp database to identify any top management turnover in the year following the bid announcement. First, I use the Execucomp database to identify the names of officers with the titles of chief executive officer (CEO), chief financial officer (CFO), chief operation officer (COO), chairman or vice-chairman, president or vice president (VP) for bidders. I then identify the year where these top executives are no longer listed under the firm, and search Factiva or Google for news articles on the resignation or dismissal of these executives. If their resignation or dismissal occurred in the year following the bid announcement, I classify the bidder as undergoing management turnover.

3.4.1.5 Targets that are Suppliers to Bidders

I check for cases where the target is also a supplier to the bidder prior to the merger bid as the replacement threats on the other suppliers of the bidder would be most severe. I found seven such cases in the initial merger sample, but after restricting the bidder to be listed in Compustat and Execucomp databases, only three cases remained. To avoid estimation issues, I exclude these three cases.

3.4.1.6 Common Supplier to the Bidder and Target

A supplier to the bidder could also be supplying to the target. In this case, common suppliers face little retention threats in non-diversifying mergers, and their presence should be controlled for. I found three such cases in the initial merger sample but after restricting the bidder to be listed in Compustat and Execucomp databases, only one case remained, which is then removed from the sample.

3.4.2 Descriptive Statistics

3.4.2.1 Merger Sample

The sample consists of 356 successful friendly merger bids announced between domestic U.S. publicly traded firms for the period 1993 to 2006, as shown in Table 3.1. Of these, we have 256 diversifying merger bids and 100 non-diversifying ones. Stock payment was observed in 162 deals (45.5%), while cash financing was used in 194 deals (54.5%). The presence of target's block-holders is observed in 40.9% of these bids while the presence of bidder's block-holders is less frequently observed and occurs in 32.1% of these deals. Furthermore, in 49.6% of these bids, both bidder and target have no block-holders, while in 22.1%, they both have block-holders. Most importantly, in 18.3% of the bids, the bidder has no block-holders but the target does.

[INSERT TABLE 3.1]

Next, stock payment was used more frequently in diversifying than non-diversifying mergers, and there is a higher frequency of bidder or target having control blocks under diversifying mergers than non-diversifying ones. When bids are sorted by payment

methods, it is less likely to observe the presence of block-holders in the bidder or the target under stock-financed deals than cash-financed ones. The presence of target's block-holders is observed in 50.1% of cash-financed deals, but only in 27.8% of stock-financed ones. We further observe a lower frequency under stock-financed than cash-financed deals that the target has block-holders but the bidder does not. These findings concur with studies that show a negative relation between the use of stock payment and major shareholders' ownership.

On average, the deal transaction value is $1442 million with a relative deal size of 9.6%. The median deal involves target or bidder with no block-holders and no control loss. The mean and maximum control loss is 0.41 and 6.76, respectively. In addition, the largest block-holder of the bidder owns 21% in the maximum case. The median bidder has no ownership in the target prior to bid while the mean bidder has 1.13%. The bidder also experiences an average stock price run-up of 39% over the one year up to the month prior to bid, while the market run-up is only 9.8% over the same period. If the deal is entirely financed by debt, the mean bidder would have a financial leverage of 28.9%.

3.4.2.2 Characteristics of Bidders and their Suppliers

The median bidder has $6549 million in assets and is 84 times larger than the median bidder supplier. In terms of asset tangibility, the median bidder has 24% of total assets in plant, properties and equipment. One large difference between the median bidder and its median supplier comes from their market share of sales, with the former commanding 14.5% of industry sales and the latter commanding merely 0.22%. Bidders are more

profitable than their suppliers. The median bidder has an industry-adjusted ROA of 12.25% while that for the median supplier is only 1.06%. The same pattern is observed when profitability is measured by the industry-adjusted MB ratio.

Another large difference between the median bidder and its median supplier comes from their dependency on trades with each other, with the former spending 0.10% of net sales on input purchases from a supplier and the latter generating 14.7% of net sales from trades with a bidder. In other words, the supplier would be more vulnerable to managerial moral hazard of the bidder than the bidder would be to managerial moral hazard of the supplier.

3.5 Empirical Results

In this section, I discuss the event study results followed by the multivariate analyses.

3.5.1 Event Study Results

Sorting the bids by merger types, Panel B of Table 3.2 shows that bidder suppliers suffer adverse market reaction only in non-diversifying mergers. The mean supplier CAR is significantly negative and economically large at -1.82% over the [-3, +1] window. As for the bidders, they suffer strong adverse market reaction under both merger types. The bidder CAR is -2.00% and -1.36% for non-diversifying and diversifying mergers, respectively. The negative supplier CAR in non-diversifying mergers could be driven by the negative bidder CAR if the stock prices of close trading partners are positively

correlated. However, it is unlikely since the bidders and their suppliers experience opposite wealth effects under diversifying mergers.

[INSERT TABLE 3.2]

Next, I sort the bids two-way by merger types and payment methods. From Panel B of Table 3.3, the negative supplier CAR observed previously under non-diversifying mergers is primarily driven by stock payment. The mean supplier CAR is an economically large -2.69% over the [-3, +1] window under stock financing but much smaller at -0.57% over the same window under cash financing. Moreover, it is only statistically significant under stock financing. These results are not consistent with the alternative story that the negative supplier CAR observed in non-diversifying mergers is driven by market power gain of bidders. In non-diversifying mergers, the market power of acquirers increase and the negative supplier CAR can reflect this gain in relative bargaining power of the bidders over their stakeholders. However, for this alternative explanation to hold, we must also observe negative supplier CAR of comparable magnitude in cash payment, yet we do not.

[INSERT TABLE 3.3]

Interestingly, comparing the supplier CAR between merger types, we observe that it is not stock payment, *per se*, that has an adverse announcement returns effect on bidder suppliers. The mean supplier CAR is significant and positive at 1.31% under stock payment in diversifying mergers. Rather, it is the combination of stock payment with non-diversifying merger bids that negatively affects supplier CAR. As for the bidders,

Panel A of Table 3.3 shows a negative bidder CAR for all combinations of merger types with payment methods, except when cash financing is used in non-diversifying mergers.

[INSERT TABLE 3.4]

From Table 3.4, the average announcement returns to the bidder suppliers are statistically significantly negative under non-diversifying for both cases where the target has and do not have institutional block-holders. However, looking more carefully at the magnitude, the presence of target's block-holder generates a negative supplier CAR of -4.72%, which is more than twice as large in magnitude as the negative supplier CAR of -2.04% observed in the absence of target's block-holders. In other words, the presence of the target's control blocks has a large incremental adverse announcement returns effect on the bidder suppliers under stock payment in non-diversifying mergers. On the other hand, control blocks of the target have no significant effect on supplier CAR when cash financing is used in non-diversifying mergers. These results strongly support the main hypothesis explored in this paper.

Interestingly, under stock financing in diversifying mergers, we observe a significantly positive and economically large supplier CAR of 5.19% when the target has block-holders, but insignificant supplier CAR when the target has no block-holders. Hence, the positive supplier CAR under stock financing in diversifying mergers, as noted previously in Table 3.3, is driven by control blocks of the target. This finding supports the explanation that stock payment provides monitoring incentives to the target's dominant shareholders. Both shareholders and stakeholders of the bidder can benefit from these

monitoring activities since the ability of bidder management to dissipate firm value is reduced. In sum, stock financing in the presence of target's block-holders can have beneficial or detrimental wealth effect on the bidder suppliers, depending on the merger type.

[INSERT TABLE 3.5]

Table 3.5 shows that the absence of institutional block-ownership in the bidder strongly hurts the returns of bidder suppliers around bid announcements when stock financing is used in non-diversifying mergers. The supplier CAR is economically large at -3.75%, and strongly statistically significant with a p-value less than 1%. In contrast, supplier CAR is positive and of comparable magnitude at 3.24%, albeit insignificant, when the bidder has institutional block-holders. These results provide further evidence that bidder suppliers are hurt the most under circumstances where they would require protection from bidder management but the ability of bidder management to provide protection is most diminished by stock payment. Interestingly, supplier CAR is significantly positive at 1.62% under stock payment in diversifying mergers and the bidder does not have institutional block-holders. One possible explanation is that monitoring by target's block-holders, if any, is made more effective when the bidder has no counter-balancing control blocks.

3.5.2 Multivariate Analyses

Using OLS regressions, column (2) of Table 3.6 confirms that the use of stock financing in non-diversifying mergers have a negative impact on the announcement returns to

bidder suppliers, as evident from the significantly negative loading on the interaction term of SAMEIND and ALLSTOCK. Controlling for various bidder firm characteristics and deal characteristics that can influence the M&A financing choice, the loading on the interaction term remains negative and largely unchanged, although its significance falls to the 10% level. Additionally, the bidder's stock return volatility has a significantly negative impact on supplier CAR while the bidder's market share of sales has a weakly positive effect.

[INSERT TABLE 3.6]

Next, from Column (2) of Table 3.7, the loading on the interaction term of SAMEIND and ALLSTOCK is -0.10 when the target has block-holder, and is statistically significantly negative and economically large. In this case, while stock payment in diversifying mergers increases supplier CAR by 6% over the [-3, +1] window, as indicated by the coefficient on ALLSTOCK, stock payment in non-diversifying mergers generates a supplier CAR of about -4%. From Column (3), the loading on the interaction term of SAMEIND and ALLSTOCK is also significantly negative at -0.05 when the bidder has no block-holders. In other words, stock payment under non-diversifying mergers in the absence of bidder's institutional block-holders decreases supplier CAR by 5%. These findings are strongly consistent with the event study results.

[INSERT TABLE 3.7]

Furthermore, Column (7) shows that the negative supplier CAR under stock payment in non-diversifying mergers is primarily driven by mergers where the bidder has no block-

holders but the target does. Under such circumstances, stock payment increases supplier CAR by 7% in diversifying mergers but decreases supplier CAR by 6% (= 7.1 -12.8) in non-diversifying mergers.

[INSERT TABLE 3.8]

The analyses, thus far, focus on the announcement returns impact on bidder suppliers. One prediction of control dilution of bidder management is its reduced ability to retain its own suppliers, post-merger. Using logistic regressions in Table 3.8, I find that the presence of target's block-holders, *per se*, does not reduce the retention probability of bidder suppliers when stock financing is used in non-diversifying mergers. Rather, the retention likelihood of bidder suppliers is significantly reduced by 12.7% only when the bidder does not have block-holders to counter-balance the target's control. Additionally, bidder suppliers are more likely to be retained if they are larger in size or derive a larger fraction of net sales from trades with the bidder. They are less likely to be retained in tender offers or if they have higher debt-to-asset ratios. Bidders who experienced a larger run-up in stock prices prior to the bid are also more likely to retain their suppliers.

[INSERT TABLE 3.9]

Next, I proceed to analyze the post-merger profitability of dismissed bidder suppliers separately for each combination of merger types and payment methods. From Table 3.9, using the bidder supplier as its own control, I do not find significant differences in profitability of the dismissed suppliers pre- and post-merger for each combination of merger types and payment methods. Furthermore, Table 3.10 also shows insignificant differences in profitability of the dismissed suppliers pre- and post-merger for each

combination of merger types, payment methods, and the presence of target's or bidder's block-holders.

[INSERT TABLE 3.10]

From Table 3.11, using a differences-in-differences approach focusing only on non-diversifying mergers, I find that dismissed bidder suppliers have 36.3% lower industry-adjusted sales growth (iaSalesGW), post-merger, relative to a control group of retained bidder suppliers. The p-value is 0.012. However, this pattern is not observed when profitability is measured by the industry-adjusted return on assets (iaROA) or market-to-book ratio (iaMB).

[INSERT TABLE 3.11]

Last but not least, I proceed to analyze the post-merger profitability of retained bidder suppliers separately for each combination of merger types and payment methods. From Table 3.12, again using the bidder supplier as its own control, I do not find significant differences in profitability of the retained bidder suppliers pre- and post-merger.

[INSERT TABLE 3.12]

When sorted further by the presence of target's or bidder's block-holders, I find the most consistent evidence of an increase in post-merger profitability of the retained bidder suppliers for the combination of stock payment under non-diversifying mergers in the presence of target's block-holders. From Table 3.13, for this combination, the coefficient on iaROA is 0.064 at a p-value of 0.15. The coefficients on iaSalesGW and iaMB are

0.555 and 1.023, respectively, and both are statistically significant. This finding suggests the following. Stock financing in non-diversifying mergers with target's control blocks hurts bidder suppliers only through lower retention likelihood but as long as these suppliers are not replaced, they enjoy a higher profitability post-merger.

[INSERT TABLE 3.13]

Finally, from Table 3.14, the results from a differences-in-differences approach indicate that the post-merger iaMB of bidder suppliers affected by stock financing is significantly lower than that of their counterfactuals affected by cash financing. However, their post-merger iaSALESGW is higher than that of their counterfactuals by 45.5% at a p-value of 0.064, while their post-merger iaROA is not significantly different from that of their counterfactuals. In other words, I do not find consistent evidence that retained bidder suppliers affected by stock payment experience significant profitability differences, post-merger, relative to retained bidder suppliers affected by cash payment.

[INSERT TABLE 3.14]

3.6 Conclusion

In this chapter, I posit that the balance of controlling power between the bidder and target in friendly non-diversifying mergers have a direct wealth impact on bidder suppliers because of the ability of management to protect and retain its own suppliers in the merged entity. In particular, I hypothesize that stock payment in non-diversifying mergers has a negative wealth effect on bidder suppliers, especially under circumstances where control loss of bidder management is most severe.

First, focusing on market reaction to bidder suppliers around announcements of merger bids, stock financing in non-diversifying mergers where the target has block-holders and the bidder does not generates the most negative announcement returns to bidder suppliers. Using OLS regressions and controlling for bidder firm characteristics and deal characteristics that can influence the M&A financing decision, I confirm that the use of stock financing in non-diversifying mergers hurts the announcement returns to bidder suppliers. Moreover, the negative announcement returns effect on bidder suppliers is driven by merger bids where (i) the target has institutional block-holders, or (ii) the acquirer has no institutional block-holders, and (iii) their joint effect. However, I find that the presence of target's block-holders, *per se*, does not reduce the retention probability of bidder suppliers under stock financing in non-diversifying mergers. Rather, the retention likelihood of bidder suppliers is significantly reduced by 12.7% only when the bidder does not have block-holders to counter-balance the target's control blocks.

Using bidder suppliers as their own counterfactuals, I find no evidence of significant changes in profitability of dismissed bidder suppliers for all combinations of merger types, payment methods and target ownership concentration. Using a differences-in-differences approach, I find that dismissed bidder suppliers have 36.3% lower industry-adjusted sales growth, post-merger, relative to a control group of retained bidder suppliers.

Next, again by using bidder suppliers as their own counterfactuals, I find some evidence of an increase in post-merger profitability of retained bidder suppliers under non-diversifying mergers where stock payment was used and the target has block-holders. This finding suggests that control dilution of bidder management through stock financing in non-diversifying mergers hurts bidder suppliers through a lower retention probability, but as long as these suppliers are not replaced, they enjoy a higher profitability post-merger. Unfortunately, the limited sample size prohibits matching of counterfactuals by merger types, industry, firm size and target ownership concentration.

Overall, I find strong evidence in support of my hypothesis. Interestingly, I also find that stock payment to target's control blocks generates positive announcement returns to bidder suppliers in diversifying mergers, possibly due to monitoring activities by target's block-holders in the merged firm.

Table 3.1
Descriptive statistics

The sample consists of 356 friendly merger bids announced from 1993 to 2006 between publicly traded firms for which the bidder is listed in Execucomp, and has at least one supplier listed in the Compustat Industry Segments. Only completed deals in which the bidder acquired more than 50% share ownership, and the offer consideration is all cash or all stock are included. Both bidders and targets must be domestic U.S. firms. Mergers involving financial firms or utilities are excluded. Panel A and B describe the merger bids, and deal characteristics, respectively, while Panel C and D report firm characteristics of the bidders and their suppliers, respectively. A merger is non-diversifying if the bidder and the target have the same 4-digit Standard Industrial Classifications (SIC) codes, and diversifying otherwise. The bidder (target) has block-holders if it has at least one institutional investor with more than 5% ownership. The bidder experiences management turnover if there are resignation or dismissal of top executives within one year starting from the bid announcement date. Relative size of the deal (RELSIZE) is computed as the ratio of the deal transaction value to the sum of the market value of the bidder in the year preceding the bid plus the deal transaction value. Control loss (CTRLLOSS) is computed as the maximum fractional ownership in the target held by an institutional investor with more than 5% ownership multiplied by RELSIZE. MAXBHOWN_BIDDER measures the maximum fractional ownership in the bidder held by an institutional block-holder with at least 5% ownership. RUNUP is the one-year buy and hold daily stock returns of the bidder computed up to one month before the bid. Market runup (MKT_RUNUP) is the one-year buy and hold daily returns of the CRSP value-weighted market index minus the risk-free rate computed up to one month before the bid. FINLEV measures the financial leverage of the bidder if the deal is entirely financed by cash through debt issuance, and is computed as the ratio of the sum of long-term debt and current liabilities of the bidder in the year preceding the bid plus the deal transaction value to the sum of the book value of assets of the bidder in the year preceding the bid plus the deal transaction value. PRIOROWN is the fractional ownership in the target held by the bidder prior to the bid. STDRET is the standard deviation of daily stock returns computed for one year up to the month prior to the bid. MKTSHR is the market share of sales computed as the ratio of the firm sales to total sales in its industry. Asset refers to the book value of total assets. Market-to-book ratio (MB) is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. NPPE is the value of plants, properties and equipment, divided by lagged assets. R&D expenses are divided by lagged assets. Debt-to-Asset ratio is the sum of long-term and short-term debt divided by lagged asset of the firm. NCAPEXP is the capital expenditure divided by lagged assets. iaROA and iaMB are the median industry-adjusted return on assets and market-to-book ratio, respectively, where industry is defined by the 4-digit SIC codes. ROA is computed as the sum of net income before extraordinary income, interest expenses and income taxes divided by lagged assets.

Panel A: Merger bids

	All Bids	Diversifying Merger Bids	Non-Diversifying Merger Bids	Stock Payment	Cash Payment
No. of merger bids	356	256	100	162	194
% all stock payment	45.5	40.2	59.0	100	0
% all cash payment	54.5	59.8	41.0	0	100
% diversifying	71.9	100	0	63.6	78.9
% non-diversifying	28.1	0	100	36.4	21.1
% bids where bidder has block-holders	32.1	33.6	27.6	23.8	38.4
% bids where target has block-holders	40.9	42.5	34.2	27.8	50.05
% bids where both bidder and target have no block-holders	49.6	47.7	55.3	61.9	40.0
% bids where bidder has block-holders and target has no block-holders	10.0	9.8	10.5	10.3	9.8
% bids where bidder has no block-holders and target has block-holders	18.3	18.7	17.1	14.3	21.3
% bids where both bidder and target have block-holders	22.1	23.8	17.1	13.5	28.9
% bids followed by bidder management turnover	7.6	7.9	6.7	4.6	9.9

Panel B: Deal characteristics

	Mean	Median	Minimum	Maximum	Standard Deviation
Transaction value at effective date (million)	1442	361	2.94	59515	5229
Relative deal size (RELSIZE)	9.55%	4.44%	0.027	69.87	0.132
Control loss (CTRLLOSS)	0.407	0.00	0.00	6.76	1.217
Ownership of largest block-holder of bidder (MAXBHOWN_BIDDER)	2.99%	0.00	0.00	21.09%	4.736
Prior ownership in target by bidder (BIDDER_PRIOROWN)	1.13%	0.00	0.00	77.80%	6.492
Bidder RUNUP	39.34%	23.95%	-80.26%	342.66%	0.613
Market RUNUP (MKT_RUNUP)	9.78%	1.06%	-37.83%	46.56%	0.160
Bidder Financial Leverage (FINLEV)	28.85%	26.56%	0.14%	84.12%	0.841

Panel C: Bidder characteristics

	Mean	Median	Minimum	Maximum	Standard Deviation
Assets (million)	11358	6549	78.8	29601	10784
R&D expenses	8.47%	7.03%	0	53.5	0.0849
Debt-to-assets ratio (DEBT/ASSET)	20.94%	19.26%	0	81.41%	0.178
NCAPEX	8.09%	6.55%	0.74%	52.1%	0.0667
NPPE	29.25%	23.95%	1.80%	70.14%	0.200
Market share of sales (MKTSHR)	21.42%	14.55%	0.02%	84.19%	0.210
iaROA	3.52%	1.83%	-75.10%	37.00%	0.127
MB ratio	4.64	3.24	0.54	22.20	3.684
iaMB ratio	2.26	1.08	-2.31	16.78	3.347
Standard deviation of stock returns (STDRET)	0.026	0.024	0.0077	0.084	0.0123
Revenue spent on inputs with supplier/bidder's sales	0.58%	0.10%	0.00	8.22%	0.0118

Panel D: Characteristics of suppliers to the bidders

	Mean	Median	Minimum	Maximum	Standard Deviation
Assets (million)	758	78	0.37	29601	2988
R&D expenses	17.1%	9.7%	0	93.72%	0.221
Debt-to-assets ratio (DEBT/ASSET)	25.59%	12.72%	0	92.50%	0.397
NCAPEX	9.79%	5.31%	0.12%	87.24%	0.141
NPPE	27.19%	18.46%	0.73%	78.99%	0.279
Market share of sales (MKTSHR)	2.90%	0.22%	0.00	84.19%	0.093
iaROA	-3.00%	0.00%	-75.16%	37.00%	0.216
MB ratio	3.77	2.36	0.42	25.00	4.222
iaMB ratio	1.25	0.024	-2.31	22.19	4.016
Sales Dependency	20.84%	14.70%	10.00%	100%	0.224

Table 3.2

Merger types and cumulative abnormal return of bidders and their suppliers

This sample consists of 356 friendly merger bids announced from 1993 to 2006 between publicly traded firms for which the bidder is listed in Execucomp, and has at least one supplier listed in the Compustat Industry Segments. Only completed deals in which the bidder acquired more than 50% share ownership, and the offer consideration is all cash or all stock are included. Both bidders and targets must be domestic U.S. firms. The bidders in the sample have a total of 1448 suppliers. The merger type is non-diversifying if the bidder and target have the same 4-digit Standard Industrial Classification (SIC) codes, and diversifying otherwise. The event date is the announcement date of the bid. Cumulative abnormal return (CAR) is computed from the market model following standard event study methodology (see Brown and Warner, 1985) using the CRSP equally-weighted market index. CAR are estimated for the [-3, +1] event window, starting from three days prior to one day after announcement. A pre-event [-30, -4] and post-event [+2, +30] window are also presented. Panel A and B present the mean CAR for bidders and their suppliers respectively. *,**,*** represents statistical significance at the 10%, 5% and 1 % level respectively.

Panel A: Bidder CAR

Bidder CAR										
	Non-diversifying					Diversifying				
Window	N	Mean CARs (%)	%positive	Patell Z	Rank Test Z	N	Mean CARs (%)	% positive	Patell Z	Rank Test Z
[-30,-4]	100	3.91	61.0	**2.333*** (0.0098)**	0.564 (0.2866)	256	0.98	54.7	**1.626* (0.0520)**	1.254 (0.1030)
[-3,+1]	100	-2.00	43.0	**-2.542*** (0.0055)**	-2.577*** (0.0052)	256	-1.36	38.3	**-3.953*** (<0.0001)**	**-3.146** (0.0009)**
[+2,+30]	100	1.01	46.0	-0.155 (0.4386)	**-1.249 (0.1063)**	256	-1.76	44.5	**-2.165** (0.0152)**	**-2.698*** (0.0037)**

Panel B: CAR of suppliers to bidders

CAR of suppliers to the bidders										
	Non-diversifying					Diversifying				
Window	N	Mean CARs (%)	%positive	Patell Z	Rank Test Z	N	Mean CARs (%)	% positive	Patell Z	Rank Test Z
[-30,-4]	327	-0.30	42.2	0.549 (0.2917)	0.581 (0.2808)	1121	0.70	45.2	0.830 (0.2032)	-0.853 (0.1971)
[-3,+1]	327	-1.82	41.0	**-2.153** (0.0157)**	**-1.707** (0.0444)**	1121	0.79	47.6	**2.553*** (0.0054)**	0.471 (0.3190)
[+2,+30]	327	-0.64	41.6	-0.605 (0.2727)	-0.956 (0.1699)	1121	-0.80	43.1	0.403 (0.3435)	**-1.772** (0.0387)**

Table 3.3
Payment modes, merger types and cumulative abnormal return of bidders and their suppliers

This sample consists of 356 friendly merger bids announced from 1993 to 2006 between publicly traded firms for which the bidder has at least one supplier listed in the Compustat Industry Segments. Only completed deals in which the bidder acquired more than 50% share ownership, and the offer consideration is all cash or all stock are included. Both bidders and targets must be domestic U.S. firms. The merger type is non-diversifying if the bidder and target have the same 4-digit Standard Industrial Classification (SIC) codes, and diversifying otherwise. Payment mode is (i) ALL CASH if the bidder offers cash only and (ii) ALL STOCK if the bidder offers equity only. The event date is the announcement date of the bid. Cumulative abnormal return (CAR) is computed from the market model following standard event study methodology (see Brown and Warner, 1985) using the CRSP equally-weighted market index CAR are estimated for the [-3, +1] event window, starting from three days prior to one day after announcement. A pre-event [-30, -4] and post-event [+2, +30] window are also presented. Panel A and B present the mean CAR for bidders and their supplier, respectively. *,**,*** represents statistical significance at the 10%, 5% and 1 % level respectively.

Panel A: Bidder CAR

Bidder CAR										
	Non-diversifying					Diversifying				
ALL STOCK										
Window	N	Mean CARs (%)	%positive	Patell Z	Rank Test Z	N	Mean CARs (%)	% positive	Patell Z	Rank Test Z
[-30,-4]	59	5.20	64.4	**2.394*** (0.0083)**	0.678 (0.2492)	103	1.06	56.3	**1.726** (0.0422)**	0.401 (0.3442)
[-3,+1]	59	-3.45	44.1	**-3.380*** (0.0004)**	**-2.912*** (0.0019)**	103	-1.58	32.0	**-2.647*** (0.0041)**	**-2.551*** (0.0056)**
[+2,+30]	59	0.79	45.8	0.102 (0.4595)	**-1.313* (0.0951)**	103	-2.39	44.7	-1.075 (0.1412)	**-1.883** (0.0303)**
ALL CASH										
[-30,-4]	41	2.06	56.1	0.772 (0.2201)	0.057 (0.4772)	153	0.93	53.6	0.688 (0.2458)	**1.294* (0.0984)**
[-3,+1]	41	0.08	41.5	0.085 (0.4662)	-0.490 (0.3123)	153	-1.21	42.5	**-2.942*** (0.0016)**	**-2.026** (0.0218)**
[+2,+30]	41	1.33	46.3	-0.363 (0.3582)	-0.358 (0.3604)	153	-1.33	44.4	**-1.919** (0.0275)**	**-1.978** (0.0244)**

Panel B: CAR of suppliers to bidders

Supplier CAR										
Non-diversifying						**Diversifying**				
ALL STOCK										
Window	N	Mean CARs (%)	%positive	Patell Z	Rank Test Z	N	Mean CARs (%)	% positive	Patell Z	Rank Test Z
[-30,-4]	192	-1.89	40.6	-0.187 (0.4259)	-0.725 (0.2345)	310	1.65	45.5	0.788 (0.2152)	0.270 (0.3938)
[-3,+1]	192	-2.69	39.1	**-2.800*** (0.0026)**	**-2.069** (0.0197)**	310	1.31	48.4	**1.657** (0.0488)**	0.209 (0.4172)
[+2,+30]	192	0.25	46.4	1.001 (0.1585)	-0.208 (0.4176)	310	0.48	44.5	**1.561* (0.0593)**	-0.506 (0.3065)
ALL CASH										
[-30,-4]	135	1.96	44.4	1.077 (0.1408)	**1.729** (0.0424)**	816	0.33	45.2	0.492 (0.3110)	-1.101 (0.1360)
[-3,+1]	135	-0.57	43.7	-0.011 (0.4955)	-0.277 (0.3910)	816	0.55	47.2	**1.917** (0.0276)**	0.375 (0.3539)
[+2,+30]	135	-1.89	34.8	**-2.134** (0.0164)**	-1.242 (0.1075)	816	-1.18	42.7	-0.356 (0.3610)	**-1.753** (0.0403)**

Table 3.4
Target ownership concentration, payment modes, merger types and cumulative abnormal return of bidder suppliers

This sample consists of 356 friendly merger bids announced from 1993 to 2006 between publicly traded firms for which the bidder is listed in Execucomp, and has at least one supplier listed in the Compustat Industry Segments. Only completed deals in which the bidder acquired more than 50% share ownership, and the offer consideration is all cash or all stock are included. Both bidders and targets must be domestic U.S. firms. The merger type is non-diversifying if the bidder and target belong to the same 4-digit Standard Industrial Classification (SIC) codes, and diversifying otherwise. Payment mode is (i) ALL CASH if the bidder offers cash only and (ii) ALL STOCK if the bidder offers equity only. TGBH is a target block-holder dummy that takes on unity if the target has at least one institutional investor with more than 5% ownership in the year preceding the bid, and zero otherwise. The event date is the announcement date of the bid. Cumulative abnormal return (CAR) is computed from the market model following standard event study methodology (see Brown and Warner, 1985) using the CRSP equally-weighted market index. CAR are estimated for the [-3, +1] event window, starting from three days prior to one day after announcement. *,**,*** represents statistical significance at the 10%, 5% and 1 % level respectively.

Panel A: Non-diversifying mergers

CAR of suppliers to the bidders										
ALL STOCK										
	TGBH =1						**TGBH =0**			
Window	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z
[-3,+1]	47	**-4.72**	48.9	**-1.709** (0.0437)**	-1.273 (0.1020)	145	**-2.04**	35.9	**-2.248** (0.0123)**	**-1.618* (0.0533)**
ALL CASH										
Window	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z
[-3,+1]	49	0.40	53.1	0.501 (0.3080)	0.255 (0.3996)	86	-1.13	38.4	-0.393 (0.3473)	-0.487 (0.3132)

Panel B: Diversifying mergers

CAR of suppliers to the bidders

ALL STOCK

	TGBH =1					**TGBH =0**				
Window	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z
[-3,+1]	92	**5.19**	57.6	**3.926*** (<0.001)**	**1.671** (0.0478)**	218	-0.32	44.5	-0.575 (0.2828)	-0.816 (0.2077)

ALL CASH

Window	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z
[-3,+1]	446	0.39	48.9	1.213 (0.1127)	0.092 (0.4635)	365	0.62	44.7	**1.321* (0.0933)**	0.560 (0.2880)

Table 3.5
Bidder ownership concentration, payment modes, merger types and cumulative abnormal return of bidder suppliers

This sample consists of 356 friendly merger bids announced from 1993 to 2006 between publicly traded firms for which the bidder is listed in Execucomp, and has at least one supplier listed in the Compustat Industry Segments. Only completed deals in which the bidder acquired more than 50% share ownership, and the offer consideration is all cash or all stock are included. Both bidders and targets must be domestic U.S. firms. The merger type is non-diversifying if the bidder and target have the same 4-digit Standard Industrial Classification (SIC) codes, and diversifying otherwise. Payment mode is (i) ALL CASH if cash-financed, and (ii) ALL STOCK if stock-financed. AQBH is a bidder block-holder dummy that takes on unity if the bidder has at least one institutional investor with more than 5% ownership in the year preceding the bid, and zero otherwise. The event date is the announcement date of the bid. Cumulative abnormal return (CAR) is computed from the market model following standard event study methodology (see Brown and Warner, 1985) using the CRSP equally-weighted market index. CAR are estimated for the [-3, +1] event window, starting from three days prior to one day after announcement. *,**,*** represents statistical significance at the 10%, 5% and 1 % level respectively.

Panel A: Non-diversifying mergers

CAR of suppliers to the bidders

ALL STOCK

	AQBH =1					**AQBH =0**				
Window	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z
[-3,+1]	29	3.24	58.6	1.028 (0.1521)	0.503 (0.3077)	163	**-3.75**	35.6	**-3.472*** (0.0003)**	**-2.358*** (0.0095)**

ALL CASH

Window	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z
[-3,+1]	34	**-2.21**	29.4	**-1.556* (0.0599)**	-1.083 (0.1399)	101	-0.02	48.5	0.890 (0.1868)	0.508 (0.3059)

Panel B: Diversifying mergers

CAR of suppliers to the bidders

ALL STOCK

	AQBH =1					AQBH =0				
Window	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z
[-3,+1]	45	-0.48	42.2	-0.357 (0.3606)	-0.157 (0.4379)	265	**1.62**	49.4	**1.939** (0.0262)**	0.294 (0.3844)

ALL CASH

Window	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z	N	Mean CARs (%)	% posit-ive	Patell Z	Rank Test Z
[-3,+1]	315	0.91	51.4	1.213 (0.1126)	0.640 (0.2613)	496	**0.38**	44.8	**1.561* (0.0593)**	-0.028 (0.4891)

Table 3.6
OLS regressions of CAR of suppliers to bidders
on merger types and payment methods

This table presents OLS regressions of the cumulative abnormal return (CAR) of suppliers to the bidders on merger types and payment methods. Dependent variable is the CAR of suppliers to the bidders. CAR is computed from the market model following standard event study methodology (see Brown and Warner, 1985) using the CRSP equally-weighted market index for the [-3, +1] event window, starting from three days prior to one day after announcement. The merger type is non-diversifying if the bidder and target have the same 4-digit Standard Industrial Classification (SIC) codes, and diversifying otherwise. SAMEIND is a dummy that takes on unity if the merger type is non-diversifying, and zero if otherwise. ALLSTOCK is a dummy that takes on unity if the bidder offers stock only as payment, and zero otherwise. Relative size of the deal (RELSIZE) is computed as the ratio of the deal transaction value to the sum of the market value of the bidder in the year preceding the bid plus the deal transaction value. Control loss (CTRLLOSS) is computed as the maximum fractional ownership in the target held by an institutional investor with at least 5% ownership multiplied by RELSIZE. MAXBHOWN_BIDDER measures the maximum fractional ownership in the bidder held by an institutional block-holder with at least 5% ownership. BIDDER_RUNUP is the one-year buy and hold daily stock returns of the bidder computed up to one month before the bid. Market runup (MKT_RUNUP) is the one-year buy and hold daily returns of the CRSP value-weighted market index minus the risk-free rate computed up to one month before the bid. BIDDER_FINLEV measures the financial leverage of the bidder if the deal is entirely financed by cash through debt issuance, and is computed as the ratio of the sum of long-term debt and current liabilities of the bidder in the year preceding the bid plus the deal transaction value to the sum of the book value of assets of the bidder in the year preceding the bid plus the deal transaction value. TENDER is a dummy that take on unity if a tender offer was made, and zero otherwise. BIDDER_PRIOROWN is the fractional ownership in the target held by the bidder prior to the bid. BIDDER_STDRET is the standard deviation of daily stock returns computed for one year up to the month prior to the bid. BIDDER_MKTSHR is the market share of sales of the bidder, and is computed as the ratio of the bidder's sales to total sales in its industry. BIDDER_SIZE is the logarithm of book value of assets of the bidder. Market-to-book ratio (BIDDER_MB) of the bidder is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. BIDDER_PPE is the value of plants, properties and equipment of the bidder, divided by lagged assets. BIDDER_CAR is the CAR of the bidder over the [-3, +1] window computed in the same way as the supplier CAR. BIDDER_TO is a dummy that takes on unity if the bidder experiences resignation or dismissal of top management within one year starting from the bid announcement date, and zero otherwise. Top management includes officers with the titles of Chief Executive Officer (CEO), Chief Financial Officer (CFO), Chief Operating Officer (COO), President, Vice-President, Chairman or Vice-Chairman. Year dummies are included. Mergers involving utilities and financial firms are excluded. Standard

errors are clustered by bidder. P-values are reported in parenthesis. *,**,*** represent statistical significance at 10%, 5% and 1% level respectively.

Dependent variable is CAR of suppliers to the bidders						
	(1)	(2)	(3)	(4)	(5)	(6)
SAMEIND	**-0.025**	-0.004	**-0.017**	0.002	0.002	0.003
	[0.022]**	[0.561]	**[0.074]***	[0.845]	[0.786]	[0.693]
ALLSTOCK	-0.003	0.006	-0.002	0.003	0.002	0.003
	[0.815]	[0.591]	[0.841]	[0.826]	[0.863]	[0.843]
SAMEIND*ALLSTOCK		**-0.037**		**-0.035**	**-0.034**	**-0.035**
		[0.046]**		**[0.071]***	**[0.087]***	**[0.089]***
RELSIZE			-0.039	-0.032	-0.015	-0.013
			[0.428]	[0.492]	[0.776]	[0.793]
CTRLLOSS			0.009	0.008	0.007	0.007
			[0.110]	[0.140]	[0.163]	[0.168]
MAXBHOWN_BIDDER			0.001	0.001	0.001	0.001
			[0.846]	[0.834]	[0.842]	[0.785]
MAXBHOWN_BIDDER^2			-4.55E-06	-1.44E-05	1.22E-06	-1.31E-05
			[0.987]	[0.960]	[0.997]	[0.963]
BIDDER_RUNUP			-0.006	-0.004	-0.005	-0.005
			[0.600]	[0.720]	[0.641]	[0.619]
MKT_RUNUP			0.028	0.019	0.025	0.025
			[0.605]	[0.711]	[0.618]	[0.623]
BIDDER_FINLEV			0.026	0.033	0.034	0.032
			[0.624]	[0.537]	[0.524]	[0.532]
TENDER			-0.003	-0.006	-0.006	-0.005
			[0.790]	[0.564]	[0.563]	[0.605]
BIDDER_PRIOROWN			0.0001	0.0001	0.0002	0.0001
			[0.858]	[0.833]	[0.827]	[0.839]
BIDDER_STDRET			**-1.530**	**-1.440**	**-1.380**	**-1.391**
			[0.011]**	**[0.019]****	**[0.022]****	**[0.022]****
BIDDER_MKTSHR			0.0224	**0.0270**	**0.0254**	**0.0256**
			[0.121]	**[0.071]***	**[0.094]***	**[0.093]***
BIDDER_SIZE			-0.003	-0.002	-0.001	-0.001
			[0.533]	[0.751]	[0.876]	[0.841]
BIDDER_MB			-0.003	-0.002	-0.002	-0.002
			[0.228]	[0.274]	[0.251]	[0.234]
BIDDER_PPE			0.006	0.002	0.004	0.003
			[0.768]	[0.922]	[0.864]	[0.893]
BIDDER_CAR					0.082	0.082
					[0.300]	[0.305]
BIDDER_TO						-0.008
						[0.698]
INTERCEPT	0.013	0.010	0.048	0.032	0.021	0.025
	[0.414]	[0.461]	[0.448]	[0.636]	[0.736]	[0.693]
Observations	1176	1176	1166	1166	1166	1166
Adjusted R-squared	0.022	0.027	0.042	0.045	0.046	0.047
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes

Table 3.7
OLS regressions of CAR of bidders' suppliers on merger types, payment methods and presence of institutional block-holders

This table presents OLS regressions of the cumulative abnormal return (CAR) of suppliers to the bidders on merger types, payment methods, and whether the target or the bidder has institutional shareholders who hold at least 5% ownership in the firm prior to bid announcements. Dependent variable is the CAR of suppliers to the bidders. CAR is computed from the market model following standard event study methodology (see Brown and Warner, 1985) using the CRSP equally-weighted market index for the [-3, +1] event window, starting from three days prior to one day after announcement. The merger type is non-diversifying if the bidder and target have the same 4-digit Standard Industrial Classification (SIC) codes, and diversifying otherwise. SAMEIND is a dummy that takes on unity if the merger type is non-diversifying, and zero if otherwise. ALLSTOCK is a dummy that takes on unity if the bidder offers stock only as payment, and zero otherwise. AQBH is a dummy that takes on unity if the bidder has at least one institutional block-holder with more than 5% ownership, and zero otherwise. TGBH is a dummy that takes on unity if the target has at least one institutional block-holder with more than 5% ownership, and zero otherwise. Relative size of the deal (RELSIZE) is computed as the ratio of the deal transaction value to the sum of the market value of the bidder in the year preceding the bid plus the deal transaction value. BIDDER_RUNUP is the one-year buy and hold daily stock returns of the bidder computed up to one month before the bid. Market runup (MKT_RUNUP) is the one-year buy and hold daily returns of the CRSP value-weighted market index minus the risk-free rate, computed up to one month before the bid. BIDDER_FINLEV measures the financial leverage of the bidder if the deal is entirely financed by cash through debt issuance, and is computed as the ratio of the sum of long-term debt and current liabilities of the bidder in the year preceding the bid plus the deal transaction value to the sum of the book value of assets of the bidder in the year preceding the bid plus the deal transaction value. TENDER is a dummy that take on unity if a tender offer was made, and zero otherwise. BIDDER_PRIOROWN is the fractional ownership in the target held by the bidder prior to the bid. BIDDER_STDRET is the standard deviation of daily stock returns computed for one year up to the month prior to the bid. BIDDER_MKTSHR is the market share of sales of the bidder, and is computed as the ratio of the bidder's sales to total sales in its industry. BIDDER_SIZE is the logarithm of book value of assets of the bidder. Market-to-book ratio (BIDDER_MB) of the bidder is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. BIDDER_PPE is the value of plants, properties and equipment of the bidder, divided by lagged assets. BIDDER_CAR is the CAR of the bidder over the [-3, +1] window computed in the same way as the supplier CAR. BIDDER_TO is a dummy that takes on unity if the bidder experiences resignation or dismissal of top management within one year starting from the bid announcement date, and zero otherwise. Top management includes officers with the titles of Chief Executive Officer (CEO), Chief Financial Officer (CFO), Chief Operating Officer (COO), President, Vice-President, Chairman or Vice-Chairman. Mergers involving utilities and financial firms are excluded. Standard errors are clustered by bidder. P-values are reported in

parenthesis. *,**,*** represent statistical significance at 10%, 5% and 1% level respectively.

	Dependent variable is the CAR of suppliers to the bidders							
	TGBH = 0	TGBH=1	AQBH=0	AQBH=1	TGBH=0 & AQBH=0	TGBH=0 & AQBH=1	TGBH=1 & AQBH=0	TGBH=1 & AQBH=1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SAMEIND	-0.022	0.011	0.005	0.024	-0.013	**-0.120**	-0.016	-0.032
	[0.119]	[0.477]	[0.699]	[0.467]	[0.562]	**[0.004]*** **	[0.494]	[0.553]
ALLSTOCK	-0.011	**0.060**	0.023	-0.010	-0.003	**0.063**	**0.071**	**-0.078**
	[0.553]	**[0.007]*** **	[0.141]	[0.760]	[0.853]	**[0.015]** **	**[0.003]*** **	**[0.067]***
SAMEIND* ALLSTOCK	0.018	**-0.102**	**-0.052**	0.002	0.009	0.023	**-0.128**	0.092
	[0.462]	**[0.012]** **	**[0.034]** **	[0.969]	[0.730]	[0.509]	**[0.001]*** **	[0.107]
RELSIZE	0.018	-0.115	0.016	-0.086	**0.082**	**-0.670**	**-0.318**	0.048
	[0.746]	[0.209]	[0.755]	[0.395]	**[0.098]***	**[0.000]*** **	**[0.012]** **	[0.691]
BIDDER_RUNUP	-0.007	0.007	-0.008	0.020	**-0.021**	-0.028	-0.005	0.036
	[0.526]	[0.730]	[0.471]	[0.396]	**[0.036]** **	[0.124]	[0.772]	[0.238]
MKT_RUNUP	-0.011	0.010	**0.076**	**-0.164**	0.065	**0.205**	0.012	-0.178
	[0.832]	[0.880]	**[0.013]** **	**[0.026]** **	[0.125]	**[0.014]** **	[0.852]	[0.273]
BIDDER_FINLEV	-0.021	**0.155**	-0.019	**0.163**	**-0.116**	**0.934**	**0.367**	0.086
	[0.688]	**[0.098]***	[0.734]	**[0.068]***	**[0.043]** **	**[0.000]*** **	**[0.003]*** **	[0.451]
TENDER	0.009	-0.013	0.005	0.014	**0.016**	**0.099**	**-0.038**	-0.010
	[0.491]	[0.344]	[0.649]	[0.463]	**[0.088]***	**[0.000]*** **	**[0.041]** **	[0.751]
BIDDER _PRIOROWN	0.0002	-0.001	**-0.002**	0.001	-0.001	0.001	0.004	0.005
	[0.790]	[0.733]	**[0.009]*** **	[0.193]	[0.132]	[0.139]	[0.335]	[0.234]
BIDDER_STDRET	**-0.900**	0.407	**-1.166**	-0.345	**-1.759**	1.243	0.065	-0.436
	[0.068]*	[0.486]	**[0.083]***	[0.671]	**[0.001]*** **	[0.111]	[0.928]	[0.637]
BIDDER_MKTSHR	-0.006	**0.047**	0.027	0.038	-0.006	**0.285**	0.055	0.039
	[0.799]	**[0.057]***	[0.150]	[0.325]	[0.777]	**[0.001]*** **	[0.116]	[0.368]
BIDDER_SIZE	0.001	0.003	0.005	0.006	0.001	-0.002	0.010	-0.006
	[0.876]	[0.727]	[0.372]	[0.473]	[0.776]	[0.868]	[0.403]	[0.578]
BIDDER_MB	0.001	-0.002	0.0002	-0.001	0.001	-0.002	-0.004	-0.001
	[0.470]	[0.514]	[0.909]	[0.773]	[0.484]	[0.393]	[0.130]	[0.863]
BIDDER_PPE	**0.054**	0.009	0.037	-0.012	0.032	0.021	-0.019	0.039
	[0.036] **	[0.797]	[0.119]	[0.768]	[0.261]	[0.525]	[0.680]	[0.451]
BIDDER_CAR	0.048	0.117	-0.002	-0.064	0.002	**-1.001**	0.252	0.172
	[0.497]	[0.420]	[0.979]	[0.750]	[0.971]	**[0.001]*** **	[0.101]	[0.424]
BIDDER_TO	0.011	**-0.091**	0.025	-0.040	0.027	**-0.078**	**0.095**	-0.047
	[0.521]	**[0.080]***	[0.268]	[0.217]	[0.123]	**[0.002]*** **	**[0.091]***	[0.244]
INTERCEPT	0.008	-0.068	-0.039	-0.082	0.032	**-0.351**	-0.131	0.036
	[0.896]	[0.484]	[0.583]	[0.335]	[0.622]	**[0.001]*** **	[0.327]	[0.742]
Observations	696	470	909	257	596	100	313	157
Adjusted R-squared	0.027	0.115	0.050	0.098	0.064	0.278	0.216	0.138

Table 3.8

Logistic regressions on retention likelihood of bidder suppliers post-merger

This table presents logistic regressions on the likelihood of bidder suppliers remaining post-merger with merger types, payment methods and presence of institutional block-holders of the bidders and targets. Dependent variable is a RETAIN dummy that takes on unity if the bidder suppliers remains with the bidder after the effective year of merger completion, and zero otherwise. The merger type is non-diversifying if the bidder and target have the same 4-digit Standard Industrial Classification (SIC) codes, and diversifying otherwise. SAMEIND is a dummy that takes on unity if the merger type is non-diversifying, and zero if otherwise. ALLSTOCK is a dummy that takes on unity if the bidder offers stock only as payment, and zero otherwise. AQBH is a dummy that takes on unity if the bidder has at least one institutional block-holder with more than 5% ownership in the bidder, and zero otherwise. TGBH is a dummy that takes on unity if the target has at least one institutional block-holder with more than 5% ownership in the target, and zero otherwise. Relative size of the deal (RELSIZE) is computed as the ratio of the deal transaction value to the sum of the market value of the bidder in the year preceding the bid plus the deal transaction value. BIDDER_RUNUP is the one-year buy and hold daily stock returns of the bidder computed up to one month before the bid. Market runup (MKT_RUNUP) is the one-year buy and hold daily returns of the CRSP value-weighted market index minus the risk-free rate, computed up to one month before the bid. BIDDER_FINLEV measures the financial leverage of the bidder if the deal is entirely financed by cash through debt issuance, and is computed as the ratio of the sum of long-term debt and current liabilities of the bidder in the year preceding the bid plus the deal transaction value to the sum of the book value of assets of the bidder in the year preceding the bid plus the deal transaction value. TENDER is a dummy that take on unity if a tender offer was made, and zero otherwise. BIDDER_PRIOROWN is the fractional ownership in the target held by the bidder prior to the bid. BIDDER_STDRET is the standard deviation of daily stock returns computed for one year up to the month prior to the bid. BIDDER_MKTSHR is the market share of sales of the bidder, and is computed as the ratio of the bidder's sales to total sales in its industry. BIDDER_SIZE is the logarithm of book value of assets of the bidder. Market-to-book ratio (BIDDER_MB) of the bidder is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. BIDDER_PPE is the value of plants, properties and equipment of the bidder, divided by lagged assets. BIDDER_CAR is the CAR of the bidder over the [-3, +1] window computed in the same way as the supplier CAR. SS_SIZE is the logarithm of book value of assets of the supplier. SS_iaMB is the median industry-adjusted market-to-book ratio of the supplier. SS_DEBT is the sum of long-term debt plus short-term liabilities of the supplier, and divided by its lagged assets. SS_MKTSHR is the market share of sales of the suppliers. SS_DEPENDENCY is the sales dependency of the supplier on the bidder, and computed as the revenues generated from trades with the bidder divided by the supplier's net sales. Mergers involving utilities and financial firms are excluded. Standard errors are clustered by bidder. A dummy indicating bidder's management turnover is not included due to collinearity. P-

values are reported in parenthesis. *,**,*** represent statistical significance at 10%, 5% and 1% level respectively.

	Dependent variable is a REMAIN indicator			
	TGBH=0	TGBH=1	AQBH=0	AQBH=1
	(1)	(2)	(3)	(4)
SAMEIND	0.100	-0.077	0.050	-0.143
	[0.716]	[0.823]	[0.815]	[0.731]
ALLSTOCK	0.251	-0.290	-0.183	0.617
	[0.445]	[0.430]	[0.563]	[0.220]
SAMEIND *ALLSTOCK	-0.283	-0.150	-0.363	1.041
	[0.469]	[0.780]	[0.278]	[0.129]
RELSIZE	-0.892	1.481	-0.461	-2.428
	[0.413]	[0.384]	[0.652]	[0.213]
BIDDER_RUNUP	0.214	0.225	**0.270**	-0.605
	[0.219]	[0.416]	**[0.097]***	[0.261]
MKT_RUNUP	-0.666	-1.055	-0.801	1.284
	[0.420]	[0.275]	[0.201]	[0.467]
BIDDER_FINLEV	0.345	-1.366	0.951	-0.291
	[0.681]	[0.361]	[0.208]	[0.839]
TENDER	0.383	**0.437**	-0.062	**0.813**
	[0.145]	**[0.058]***	[0.816]	**[0.005]*****
BIDDER _PRIOROWN	**-0.067**	-0.052	-0.031	**-0.085**
	[0.033]**	[0.380]	[0.145]	**[0.097]***
BIDDER_STDRET	**-36.134**	**-33.664**	-16.279	**-73.598**
	[0.000]***	**[0.042]****	[0.110]	**[0.001]*****
BIDDER_MKTSHR	**0.777**	-0.183	0.480	-1.158
	[0.075]*	[0.762]	[0.221]	[0.110]
BIDDER_SIZE	-0.159	-0.217	-0.069	**-0.282**
	[0.054]*	[0.132]	[0.389]	**[0.050]***
BIDDER_MB	-0.036	0.005	-0.011	0.104
	[0.168]	[0.925]	[0.647]	[0.192]
BIDDER_PPE	-0.218	-0.439	0.149	-1.280
	[0.708]	[0.659]	[0.753]	[0.239]
SS_SIZE	**0.262**	**0.280**	**0.249**	**0.257**
	[0.000]***	**[0.000]*****	**[0.000]*****	**[0.003]*****
SS_DEBT-to-ASSET	-0.237	-0.204	**-0.712**	**0.978**
	[0.315]	[0.647]	**[0.001]*****	**[0.000]*****
SS_MKTSHR	-0.079	-0.393	0.101	1.447
	[0.890]	[0.706]	[0.846]	[0.496]
SS_IAMB	**-0.042**	-0.022	**-0.035**	-0.023
	[0.030]**	[0.347]	**[0.039]****	[0.332]
SS_SALES_ DEPENDENCY	**1.522**	**2.608**	**1.796**	**2.892**
	[0.004]***	**[0.000]*****	**[0.000]*****	**[0.009]*****
INTERCEPT	0.921	1.869	-0.254	**3.642**
	[0.298]	[0.243]	[0.784]	**[0.020]****
Observations	908	515	1093	333
Year dummies	Yes	Yes	Yes	Yes
Adjusted R-squared	0.074	0.107	0.061	0.199

CONT'D

	Dependent variable is a REMAIN indicator				
	TGBH=0 & AQBH=0	TGBH=0 & AQBH=1	TGBH=1 & AQBH=1	TGBH=1 & AQBH=0	Marginal Effect for (8) -(σ/2) to +(σ/2)
	(5)	(6)	(7)	(8)	
SAMEIND	-0.134	0.943	0.506	0.527	0.056
	[0.686]	[0.353]	[0.714]	[0.135]	
ALLSTOCK	-0.031	**1.652**	-0.319	-0.356	-0.042
	[0.935]	**[0.021]****	[0.761]	[0.605]	
SAMEIND *ALLSTOCK	0.007	-2.920	1.509	**-1.511**	**-0.127**
	[0.987]	[0.293]	[0.223]	**[0.029]****	
RELSIZE	-0.815	-1.049	0.721	2.881	0.112
	[0.484]	[0.840]	[0.860]	[0.545]	
BIDDER_RUNUP	0.124	0.912	-0.697	**0.823**	**0.102**
	[0.502]	[0.472]	[0.268]	**[0.073]***	
MKT_RUNUP	0.149	-7.445	5.553	-1.814	-0.078
	[0.866]	[0.439]	[0.156]	[0.178]	
BIDDER_FINLEV	0.005	6.314	-2.754	-0.585	-0.026
	[0.996]	[0.401]	[0.333]	[0.910]	
TENDER	0.202	1.467	**1.403**	**-0.963**	**-0.099**
	[0.496]	[0.212]	**[0.001]*****	**[0.009]*****	
BIDDER _PRIOROWN	**-0.054**	-0.035		0.094	0.054
	[0.048]**	[0.326]		[0.401]	
BIDDER_STDRET	**-36.055**	2.469	**-95.018**	-41.296	-0.089
	[0.002]***	[0.973]	**[0.036]****	[0.414]	
BIDDER_MKTSHR	**1.084**	2.705	-0.217	-0.741	-0.044
	[0.016]**	[0.525]	[0.862]	[0.480]	
BIDDER_SIZE	**-0.213**	0.553	0.009	0.063	0.009
	[0.018]**	[0.373]	[0.974]	[0.894]	
BIDDER_MB	-0.010	-0.263	**0.395**	-0.041	-0.034
	[0.729]	[0.414]	**[0.002]*****	[0.562]	
BIDDER_PPE	-0.173	-4.619	0.026	0.546	0.025
	[0.813]	[0.226]	[0.991]	[0.674]	
SS_SIZE	**0.292**	-0.019	**0.462**	**0.208**	**0.094**
	[0.000]***	[0.894]	**[0.027]****	**[0.000]*****	
SS_DEBT-to-ASSET	**-0.684**	**1.085**	**0.911**	**-1.398**	**-0.105**
	[0.013]**	**[0.009]*****	**[0.004]*****	**[0.014]****	
SS_MKTSHR	-0.579	**9.369**	-3.387	1.108	0.029
	[0.304]	**[0.011]****	[0.228]	[0.470]	
SS_IAMB	**-0.042**	-0.048	0.004	-0.027	-0.034
	[0.065]*	[0.406]	[0.922]	[0.392]	
SS_SALES_ DEPENDENCY	**1.501**	1.753	**4.629**	**2.572**	**0.135**
	[0.011]**	[0.139]	**[0.000]*****	**[0.000]*****	
INTERCEPT	0.536	-1.889	-1.636	-0.926	
	[0.675]	[0.701]	[0.601]	[0.888]	
Observations	782	126	205	308	
Year dummies	Yes	Yes	Yes	Yes	
Adjusted R-squared	0.069	0.222	0.293	0.106	

Table 3.9
Profitability of dismissed suppliers of bidders post-merger by merger types and payment methods

This table presents OLS regressions that examine the profitability of dismissed suppliers of bidders post-merger relative to their profitability pre-merger. A supplier is dismissed if it is no longer listed in the Compustat Industry Segments as the bidder's suppliers in the year after the effective date of completion of the merger. Dependent variable is the profitability of the dismissed supplier in year t. Proxies for profitability are (i) the median industry-adjusted return on assets (iaROA), (iii) the median industry-adjusted sales growth (iaSalesGW) and (iii) the median industry-adjusted market-to-book (iaMB) ratio. Industry is defined by the 4-digit Standard Industrial Classification (SIC) codes. Return on assets is computed as the sum of net income before extraordinary income plus interest expenses plus income taxes, and divided by lagged book value of assets. Sales growth is the current sales minus lagged sales, and divided by lagged sales. Market-to-book ratio is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. A merger is non-diversifying if the bidder and target share the same 4-digit SIC codes, and diversifying otherwise. The payment method is ALL STOCK if only stock financing is used, and ALL CASH if only cash financing is used. Post is a dummy that takes on unity after the effective year of completion of the merger, and zero otherwise. The sample is restricted to three years before the announcement date and three years after the effective year of completion of the merger. Firm controls are as follow: SIZE is the logarithm of book value of assets; DEBT-to-ASSET ratio is the sum of long-term debt plus short-term liabilities, and divided by lagged assets. R&D is the R&D expenses divided by lagged assets. CAPEXP is the capital expenditure divided by lagged assets. MKTSHR is the market share of sales of the firm computed as the ratio of the firm's sales to total sales in its industry. The prefix SS refers to the supplier. Supplier's firm fixed effects and year dummies are included. Mergers involving utilities and financial firms are excluded. Standard errors are clustered by bidders with p-values reported in parenthesis. *,**,*** represent statistical significance at 10%, 5% and 1% level, respectively.

Panel A: Non-diversifying mergers

	Dependent variable is profitability of bidder supplier					
	ALL STOCK			**ALL CASH**		
	iaROA	**iaSalesGW**	**iaMB**	**iaROA**	**iaSalesGW**	**iaMB**
	(1)	(2)	(3)	(4)	(5)	(6)
POST	-0.004	0.148	0.451	0.028	0.245	0.493
	[0.844]	[0.130]	[0.119]	[0.551]	[0.377]	[0.431]
SS_SIZE	0.015	0.101	**-0.667**	-0.037	-0.049	**-1.126**
	[0.598]	[0.439]	**[0.030]****	[0.421]	[0.775]	**[0.026]****
SS_DEBT/ASSET	-0.089	-0.008	-0.792	**-0.241**	-0.020	0.202
	[0.240]	[0.981]	[0.159]	**[0.001]*****	[0.946]	[0.628]
SS_R&D	**-1.210**	0.464	**5.739**	**-1.632**	1.353	1.274

	[0.000]* **	[0.181]	**[0.003]*** **	**[0.000]*** **	[0.217]	[0.231]
SS_CAPEXP	**-0.492**	**1.407**	-0.366	-0.265	1.648	-1.188
	[0.093]*	**[0.073]***	[0.796]	[0.396]	[0.187]	[0.501]
SS_MKTSHR	0.312	**-0.737**	-1.079	-0.152	1.514	-3.072
	[0.215]	**[0.073]***	[0.374]	[0.788]	[0.248]	[0.275]
INTERCEPT	**0.193**	0.291	**4.209**	**0.477**	-0.292	**6.085**
	[0.070]*	[0.575]	**[0.002]*** **	**[0.055]***	[0.800]	**[0.005]*** **
Observations	882	992	908	495	543	509
Adjusted R-squared	0.698	0.375	0.535	0.783	0.284	0.619
Year dummies/SS fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Diversifying mergers

	Dependent variable is profitability of bidder supplier					
	ALL STOCK			**ALL CASH**		
	iaROA	**iaSalesGW**	**iaMB**	**iaROA**	**iaSalesGW**	**iaMB**
	(7)	(8)	(9)	(10)	(11)	(12)
POST	0.012	-0.081	-0.071	0.004	0.008	0.121
	[0.726]	[0.364]	[0.841]	[0.855]	[0.897]	[0.706]
SS_SIZE	0.053	**0.219**	**-1.426**	**0.063**	**0.159**	**-1.533**
	[0.101]	**[0.007]*** **	**[0.000]*** **	**[0.022]** **	**[0.022]** **	**[0.000]*** **
SS_DEBT/ASSET	-0.078	0.039	0.116	-0.108	0.076	0.982
	[0.343]	[0.843]	[0.835]	[0.036]**	[0.375]	[0.084]*
SS_R&D	**-0.980**	**1.954**	1.783	**-0.992**	**1.875**	**3.553**
	[0.000]* **	**[0.000]*** **	[0.123]	**[0.000]*** **	**[0.001]*** **	**[0.004]*** **
SS_CAPEXP	**-0.504**	**1.887**	**2.901**	-0.132	**2.499**	2.045
	[0.074]*	**[0.002]*** **	**[0.068]***	[0.567]	**[0.000]*** **	[0.281]
SS_MKTSHR	-0.281	-0.396	7.214	-0.064	0.024	-0.045
	[0.483]	[0.647]	[0.167]	[0.730]	[0.913]	[0.974]
INTERCEPT	-0.151	**-1.036**	**5.615**	-0.239	**-1.239**	**7.054**
	[0.249]	**[0.009]*** **	**[0.000]*** **	[0.104]	**[0.000]*** **	**[0.000]*** **
Observations	1345	1561	1419	2631	2917	2660
Adjusted R-squared	0.705	0.370	0.507	0.722	0.398	0.626
Year dummies/SS fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Table 3.10
Profitability of dismissed suppliers of bidders post-merger by merger types, payment methods and target ownership concentration

This table presents OLS regressions that examine the profitability of the dismissed suppliers of bidders post-merger relative to their profitability pre-merger. A supplier is dismissed if it is no longer listed in the Compustat Industry Segments as the bidder's suppliers in the year after the effective date of completion of the merger. Dependent variable is the profitability of the dismissed supplier in year t. Proxies for profitability are (i) the median industry-adjusted return on assets (iaROA), (iii) the median industry-adjusted sales growth (iaSalesGW) and (iii) the median industry-adjusted market-to-book (iaMB) ratio. Industry is defined by the 4-digit Standard Industrial Classification (SIC) codes. Return on assets is computed as the sum of net income before extraordinary income plus interest expenses plus income taxes, and divided by lagged book value of assets. Market-to-book ratio is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. Sales growth is the current sales minus lagged sales, and divided by lagged sales. A merger is non-diversifying if the bidder and target share the same 4-digit SIC codes, and diversifying otherwise. The payment method is ALL STOCK if only stock financing is used, and ALL CASH if only cash financing is used. AQBH is a dummy that takes on unity if the bidder has at least one institutional block-holder with more than 5% ownership, and zero otherwise. TGBH is a dummy that takes on unity if the target has at least one institutional block-holder with more than 5% ownership, and zero otherwise. Post is a dummy that takes on unity after the effective year of completion of the merger, and zero otherwise. The sample is restricted to three years before the announcement date and three years after the effective year of completion of the merger. Firm controls are as follow: SIZE is the logarithm of book value of assets; DEBT-to-ASSET ratio is the sum of long-term debt plus short-term liabilities, and divided by lagged assets. R&D is the R&D expenses divided by lagged assets. CAPEXP is the capital expenditure divided by lagged assets. MKTSHR is the market share of sales of the firm computed as the ratio of the firm's sales to total sales in its industry. Firm controls are computed at end of year t. The prefix SS refers to the supplier. Panel A and B report the results for non-diversifying and diversifying mergers, respectively. Supplier's firm fixed effects and year dummies are included. Mergers involving utilities and financial firms are excluded. Standard errors are clustered by bidders. P-values are reported in parenthesis. *,**,*** represent statistical significance at 10%, 5% and 1% level, respectively.

Panel A: Non-diversifying mergers

	Dependent variable is the profitability of supplier to bidder											
	ALL STOCK						ALL CASH					
	TGBH = 0			TGBH = 1			TGBH = 0			TGBH = 1		
	iaROA	**iaSalesGW**	**iaMB**	**iaROA**	**iaSalesGW**	**iaMB**	**iaROA**	**iaSalesGW**	**iaMB**	**iaROA**	**iaSalesGW**	**iaMB**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
POST	0.020	0.089	0.327	-0.051	**0.247**	1.077	-0.023	-0.171	1.341	0.067	0.038	**-0.555**
	[0.599]	[0.649]	[0.489]	[0.492]	**[0.003]*** **	[0.126]	[0.596]	[0.594]	[0.128]	[0.283]	[0.609]	**[0.075]***
SS_SIZE	-0.001	0.154	**-0.634**	0.065	-0.055	**-0.835**	0.040	0.053	-0.743	-0.121	0.018	**-1.465**
	[0.967]	[0.312]	**[0.091]***	[0.318]	[0.743]	**[0.058]***	[0.387]	[0.524]	[0.354]	[0.195]	[0.855]	**[0.000]*** **
SS_DEBT/ASSET	-0.063	0.007	-0.171	**-0.184**	0.024	**-2.020**	**-0.164**	0.224	**0.750**	**-0.351**	0.028	-0.541
	[0.480]	[0.986]	[0.838]	**[0.060]***	[0.919]	**[0.042]** **	**[0.026]** **	[0.555]	**[0.075]***	**[0.034]** **	[0.789]	[0.145]
SS_R&D	**-1.119**	0.463	**5.053**	**-1.414**	0.531	**7.034**	**-1.687**	1.592	-0.256	**-1.524**	0.747	**2.513**
	[0.000]* **	[0.343]	**[0.071]***	**[0.000]*** **	[0.248]	**[0.000]*** **	**[0.000]*** **	[0.125]	[0.908]	**[0.000]*** **	[0.199]	**[0.026]** **
SS_CAPEXP	-0.510	0.749	-1.020	-0.522	2.387	0.335	-0.406	1.020	-1.440	-0.191	2.817	-0.052
	[0.249]	[0.485]	[0.592]	[0.268]	[0.069]*	[0.909]	[0.410]	[0.421]	[0.695]	[0.641]	[0.016]**	[0.940]
SS_MKTSHR	-0.204	-1.097	2.966	0.297	**-0.898**	-2.137	**-1.570**	4.311	0.403	-0.217	0.101	**-6.555**
	[0.871]	[0.362]	[0.127]	[0.543]	**[0.047]** **	[0.202]	**[0.090]***	[0.414]	[0.936]	[0.714]	[0.530]	**[0.000]*** **
INTERCEPT	**0.276**	0.085	**4.748**	0.035	0.989	**4.571**	0.181	-0.694	3.931	**0.896**	-0.419	**8.127**
	[0.010] **	[0.888]	**[0.000]*** **	[0.917]	[0.174]	**[0.034]** **	[0.290]	[0.228]	[0.216]	**[0.070]***	[0.514]	**[0.000]*** **
Observations	641	712	648	241	280	260	261	287	266	234	1102	243
Adjusted R-squared	0.656	0.390	0.534	0.798	0.369	0.566	0.808	0.328	0.662	0.779	0.321	0.572
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supplier fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Diversifying mergers

	Dependent variable is the profitability of supplier to bidder											
	ALL STOCK						ALL CASH					
	TGBH = 0			TGBH = 1			TGBH = 0			TGBH = 1		
	iaROA	iaSalesGW	iaMB	iaROA	iaSalesGW	iaMB	iaROA	iaSalesGW	iaMB	iaROA	iaSalesGW	iaMB
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
POST	0.042	0.027	0.248	-0.073	-0.027	0.219	-0.014	-0.017	0.455	-0.028	0.028	0.189
	[0.234]	[0.869]	[0.516]	[0.229]	[0.833]	[0.711]	[0.726]	[0.833]	[0.281]	[0.334]	[0.704]	[0.626]
SS_SIZE	**0.072**	**0.262**	**-1.180**	0.019	**0.173**	**-2.225**	0.064	0.087	**-1.469**	0.055	**0.230**	**-1.790**
	[0.060]*	**[0.027]****	**[0.000]*****	[0.720]	**[0.051]***	**[0.008]*****	[0.122]	[0.414]	**[0.000]*****	[0.114]	**[0.012]****	**[0.000]*****
SS_DEBT/ASSET	-0.102	0.111	0.466	-0.004	-0.246	-1.730	**-0.133**	-0.109	**1.825**	-0.078	0.155	0.350
	[0.290]	[0.653]	[0.387]	[0.972]	[0.229]	[0.139]	**[0.056]***	[0.367]	**[0.036]****	[0.234]	[0.122]	[0.597]
SS_R&D	**-1.223**	**1.721**	0.743	-0.420	**2.267**	2.939	**-0.780**	**2.306**	1.921	**-1.230**	1.426	**5.003**
	[0.000]***	**[0.001]*****	[0.544]	[0.240]	**[0.003]*****	[0.199]	**[0.007]*****	**[0.000]*****	[0.101]	**[0.000]*****	[0.118]	**[0.003]*****
SS_CAPEXP	0.039	**2.062**	1.869	**-1.325**	**1.679**	6.121	0.034	**1.935**	-0.402	-0.434	**3.080**	**6.162**
	[0.909]	**[0.007]*****	[0.253]	**[0.002]*****	**[0.044]****	[0.225]	[0.889]	**[0.011]****	[0.807]	[0.205]	**[0.001]*****	**[0.018]****
SS_MKTSHR	0.030	0.795	4.997	-0.642	-2.012	16.145	-0.211	0.047	-1.028	-0.080	-0.250	-0.641
	[0.946]	[0.546]	[0.151]	[0.179]	[0.169]	[0.138]	[0.400]	[0.966]	[0.651]	[0.709]	[0.416]	[0.658]
INTERCEPT	-0.202	**-0.943**	**4.577**	0.085	**-1.121**	**9.622**	**-0.386**	**-0.816**	**4.243**	-0.125	**-1.631**	**9.382**
	[0.207]	**[0.061]***	**[0.000]*****	[0.686]	**[0.026]****	**[0.006]*****	**[0.040]****	**[0.063]***	**[0.003]*****	[0.510]	**[0.000]*****	**[0.002]*****
Observations	935	1096	1000	410	465	419	1092	1183	1051	1539	1734	1609
Adjusted R-squared	0.710	0.349	0.525	0.745	0.492	0.540	0.593	0.358	0.484	0.799	0.473	0.721
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supplier fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 3.11
Post-merger profitability of dismissed suppliers of bidders under stock financing in non-diversifying mergers using a differences-in-differences approach

This table presents results using a differences-in-differences methodology to examine the profitability of dismissed suppliers of bidders post-merger relative to a control group of retained suppliers of bidders, under stock-financing in non-diversifying mergers. The treatment group consists of dismissed bidder suppliers under stock-financing in non-diversifying mergers. The control group consists of retained bidder suppliers under stock-financing in non-diversifying mergers, matched to the "treated" suppliers by industry and asset size. Industry is defined by the 2-digit Standard Industry Classification (SIC) codes in matching, and the relative asset size of a matched pair cannot exceed a ratio of 2.5. A merger is non-diversifying if the bidder and target share the same 4-digit SIC codes. The sample is restricted to three years before the announcement date and three years after the effective year of completion of the merger. A supplier is retained if it continues to be listed in the Compustat Industry Segments as the bidder's suppliers in the year after the effective date of completion of the merger, and dismissed otherwise. Dependent variable is the profitability of the bidder supplier in year t. Proxies for profitability are (i) the median industry-adjusted return on assets (iaROA), (ii) the median industry-adjusted sales growth (iaSALESGW), and (ii) the median industry-adjusted market-to-book (iaMB) ratio where industry is defined by the 4-digit SIC codes. Return on assets is computed as the sum of net income before extraordinary income plus interest expenses plus income taxes, and divided by lagged book value of assets. Sales growth is the current sales minus lagged sales, and divided by lagged sales. Market-to-book ratio is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. Post is a dummy that takes on unity after the effective year of completion of the merger, and zero otherwise. Treat is a dummy that takes on unity if the suppliers belong to the treatment group, and zero if they belong to the control group. Firm controls are as follow: SIZE is the logarithm of book value of assets; DEBT-to-ASSET ratio is the sum of long-term debt plus short-term liabilities, and divided by lagged assets. R&D is the R&D expenses divided by lagged assets. CAPEXP is the capital expenditure divided by lagged assets. MKTSHR is the market share of sales of the firm computed as the ratio of the firm's sales to total sales in its industry. The prefix SS refers to the supplier. Supplier's firm fixed effects and year dummies are included. Mergers involving utilities and financial firms are excluded. Standard errors are clustered by bidders. P-values are reported in parenthesis. *,**,*** represent statistical significance at 10%, 5% and 1% level, respectively.

	Dependent variable is the profitability of supplier to bidder		
	iaROA	**iaSALESGW**	**iaMB**
	(1)	(2)	(3)
POST	0.014	0.092	-0.432
	[0.676]	[0.212]	[0.226]
TREAT	-0.043	0.149	0.449
	[0.446]	[0.421]	[0.347]
POST*TREAT	0.022	**-0.363**	0.850
	[0.716]	**[0.012]****	[0.244]
SS_SIZE	0.006	0.013	**-0.615**
	[0.865]	[0.895]	**[0.005]*****
SS_DEBT-to-ASSET RATIO	0.024	**0.370**	0.719
	[0.835]	**[0.078]***	[0.430]
SS_R&D	**-0.775**	**1.272**	1.950
	[0.010]***	**[0.095]***	[0.250]
SS_CAPEXP	-0.125	0.776	0.640
	[0.474]	[0.167]	[0.527]
SS_MKTSHR	-1.286	2.035	12.883
	[0.517]	[0.282]	[0.147]
INTERCEPT	0.087	-0.314	**2.378**
	[0.621]	[0.499]	**[0.059]***
Observations	405	461	440
Adjusted R-squared	0.617	0.356	0.464
Year dummies	Yes	Yes	Yes
Supplier firm fixed effects	Yes	Yes	Yes

Table 3.12

Profitability of retained suppliers of bidders post-merger by merger types and payment methods

This table presents OLS regressions that examine the profitability of retained suppliers of bidders post-merger relative to their profitability pre-merger. A supplier is retained if it continues to be listed in the Compustat Industry Segments as the bidder's suppliers in the year after the effective date of completion of the merger. Dependent variable is the profitability of the retained supplier in year t. Proxies for profitability are (i) the median industry-adjusted return on assets (iaROA), (iii) the median industry-adjusted sales growth (iaSalesGW) and (iii) the median industry-adjusted market-to-book (iaMB) ratio. Industry is defined by the 4-digit Standard Industrial Classification (SIC) codes. Return on assets is computed as the sum of net income before extraordinary income plus interest expenses plus income taxes, and divided by lagged book value of assets. Sales growth is the current sales minus lagged sales, and divided by lagged sales. Market-to-book ratio is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. A merger is non-diversifying if the bidder and target share the same 4-digit SIC codes, and diversifying otherwise. The payment method is ALL STOCK if only stock financing is used, and ALL CASH if only cash financing is used. Post is a dummy that takes on unity after the effective year of completion of the merger, and zero otherwise. The sample is restricted to three years before the announcement date and three years after the effective year of completion of the merger. Firm controls are as follow: SIZE is the logarithm of book value of assets; DEBT-to-ASSET ratio is the sum of long-term debt plus short-term liabilities, and divided by lagged assets. R&D is the R&D expenses divided by lagged assets. CAPEXP is the capital expenditure divided by lagged assets. MKTSHR is the market share of sales of the firm computed as the ratio of the firm's sales to total sales in its industry. Firm controls are computed at end of year t. The prefix AQ and SS refer to the bidder and its supplier, respectively. Supplier's firm fixed effects and year dummies are included. Mergers involving utilities and financial firms are excluded. Standard errors are clustered by bidders. P-values are reported in parenthesis. *,**,*** represent statistical significance at 10%, 5% and 1% level, respectively.

	Dependent variable is the profitability of supplier to bidder											
	Non-Diversifying						Diversifying					
	ALL STOCK			ALL CASH			ALL STOCK			ALL CASH		
	iaROA	iaSalesGW	iaMB	iaROA	iaSalesGW	iaMB	iaROA	iaSalesGW	iaMB	iaROA	iaSalesGW	iaMB
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
POST	0.031	-0.074	0.207	-0.076	0.160	-0.072	-0.036	**-0.127**	-0.201	0.021	0.061	-0.036
	[0.163]	[0.398]	[0.220]	[0.442]	[0.289]	[0.905]	[0.328]	**[0.037]****	[0.379]	[0.422]	[0.489]	[0.866]
SS_SIZE	0.002	0.018	**-0.752**	0.033	**0.219**	**-1.733**	**0.041**	**0.194**	**-0.823**	0.045	**0.152**	**-1.188**
	[0.955]	[0.828]	**[0.066]***	[0.323]	**[0.082]***	**[0.008]*****	**[0.077]***	**[0.001]*****	**[0.015]****	[0.217]	**[0.073]***	**[0.002]*****
SS_DEBT/ASSET	**-0.075**	**0.533**	0.142	-0.001	-0.165	**2.097**	**-0.188**	0.262	0.017	-0.083	0.409	**1.160**
	[0.002]***	**[0.031]****	[0.726]	[0.988]	[0.103]	**[0.050]****	**[0.010]****	[0.262]	[0.980]	[0.172]	[0.140]	**[0.071]***
SS_R&D	**-0.866**	**1.476**	**5.722**	**-0.911**	1.646	1.406	**-0.763**	**1.671**	**3.291**	**-1.415**	1.130	**2.144**
	[0.000]***	**[0.004]*****	**[0.000]*****	**[0.002]*****	[0.205]	[0.403]	**[0.012]****	**[0.000]*****	**[0.043]****	**[0.000]*****	[0.153]	**[0.066]***
SS_CAPEXP	-0.013	**1.685**	0.546	-0.110	1.525	-2.545	-0.405	0.638	2.618	-0.378	0.492	**4.491**
	[0.943]	**[0.006]*****	[0.412]	[0.706]	[0.481]	[0.424]	[0.330]	[0.134]	[0.335]	[0.144]	[0.531]	**[0.004]*****
SS_MKTSHR	-0.840	-0.584	5.147	-0.287	1.568	-1.193	-0.105	0.772	-1.483	0.093	1.183	2.719
	[0.298]	[0.647]	[0.315]	[0.364]	[0.134]	[0.807]	[0.748]	[0.105]	[0.660]	[0.860]	[0.275]	[0.533]
AQ_SIZE	-0.015	0.048	-0.214	**0.108**	-0.232	1.255	0.019	0.012	0.230	0.023	0.001	**0.528**
	[0.527]	[0.580]	[0.451]	**[0.076]***	[0.558]	[0.433]	[0.595]	[0.815]	[0.526]	[0.393]	[0.990]	**[0.070]***
AQ_DEBT/ASSET	0.161	**0.722**	-0.936	-0.175	0.190	**-3.842**	-0.015	-0.256	1.230	**-0.205**	**-0.513**	0.663
	[0.178]	**[0.029]****	[0.331]	[0.457]	[0.830]	**[0.029]****	[0.900]	[0.167]	[0.450]	**[0.058]***	**[0.044]****	[0.514]
AQ_R&D	-0.175	-0.519	-1.395	-0.188	-0.358	-20.780	0.778	1.059	3.886	-0.525	-0.984	-0.412
	[0.275]	[0.341]	[0.408]	[0.748]	[0.854]	[0.000]***	[0.021]**	[0.074]*	[0.377]	[0.081]*	[0.066]*	[0.816]
AQ_CAPEXP	0.098	-1.818	0.059	0.338	-2.257	**10.022**	-0.075	0.480	-9.922	**0.909**	**1.644**	0.813
	[0.793]	[0.113]	[0.988]	[0.393]	[0.486]	**[0.004]*****	[0.877]	[0.688]	[0.123]	**[0.046]****	**[0.071]***	[0.808]
AQ_MB	0.004	-0.013	0.026	**-0.046**	**-0.163**	0.100	0.003	-0.002	0.050	-0.006	**0.046**	0.080
	[0.475]	[0.513]	[0.564]	**[0.024]****	**[0.086]***	[0.504]	[0.516]	[0.627]	[0.416]	[0.427]	**[0.081]***	[0.293]
AQ_MKTSHR	-0.100	-0.152	**-2.397**	**-0.779**	-1.058	**-19.676**	-0.048	-0.440	**2.884**	0.024	-0.254	0.960
	[0.585]	[0.844]	**[0.045]****	**[0.020]****	[0.545]	**[0.088]***	[0.831]	[0.231]	**[0.046]****	[0.800]	[0.158]	[0.188]
INTERCEPT	0.177	-0.756	**5.712**	-0.791	1.145	-0.159	-0.387	**-1.167**	0.814	-0.279	-0.966	-0.421
	[0.472]	[0.369]	**[0.070]***	[0.246]	[0.751]	[0.991]	[0.210]	**[0.018]****	[0.800]	[0.295]	[0.214]	[0.879]

Observations	665	733	696	263	295	288	885	1014	955	1177	1313	1175
Adjusted R-squared	0.663	0.392	0.475	0.701	0.371	0.516	0.642	0.346	0.518	0.663	0.295	0.560
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supplier fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 3.13
Profitability of retained suppliers of bidders post-merger by merger types, payment methods and target ownership concentration

This table presents OLS regressions that examine the profitability of retained suppliers of bidders post-merger relative to their profitability pre-merger. A supplier is retained if it continues to be listed in the Compustat Industry Segments as the bidder's suppliers in the year after the effective date of completion of the merger. Dependent variable is the profitability of the retained supplier in year t. Proxies for profitability are (i) the median industry-adjusted return on assets (iaROA), (iii) the median industry-adjusted sales growth (iaSalesGW) and (iii) the median industry-adjusted market-to-book (iaMB) ratio. Industry is defined by the 4-digit Standard Industrial Classification (SIC) codes. Return on assets is computed as the sum of net income before extraordinary income plus interest expenses plus income taxes, and divided by lagged book value of assets. Sales growth is the current sales minus lagged sales, and divided by lagged sales. Market-to-book ratio is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. A merger is non-diversifying if the bidder and target share the same 4-digit SIC codes, and diversifying otherwise. The payment method is ALL STOCK if only stock financing is used, and ALL CASH if only cash financing is used. AQBH is a dummy that takes on unity if the bidder has at least one institutional block-holder with more than 5% ownership, and zero otherwise. TGBH is a dummy that takes on unity if the target has at least one institutional block-holder with more than 5% ownership, and zero otherwise. Post is a dummy that takes on unity after the effective year of completion of the merger, and zero otherwise. The sample is restricted to three years before the announcement date and three years after the effective year of completion of the merger. Firm controls are as follow: SIZE is the logarithm of book value of assets; DEBT-to-ASSET ratio is the sum of long-term debt plus short-term liabilities, and divided by lagged assets. R&D is the R&D expenses divided by lagged assets. CAPEXP is the capital expenditure divided by lagged assets. MKTSHR is the market share of sales of the firm computed as the ratio of the firm's sales to total sales in its industry. Firm controls are computed at end of year t. The prefix AQ and SS refer to the bidder and its supplier, respectively. Panel A and B report the results for non-diversifying and diversifying mergers, respectively. Supplier's firm fixed effects and year dummies are included. Mergers involving utilities and financial firms are excluded. Standard errors are clustered by bidders. P-values are reported in parenthesis. *,**,*** represent statistical significance at 10%, 5% and 1% level, respectively.

Panel A: Non-diversifying mergers

	Dependent variable is the profitability of supplier to bidder											
	ALL STOCK						ALL CASH					
	TGBH = 0			TGBH = 1			TGBH = 0			TGBH = 1		
	iaROA	**iaSalesGW**	**iaMB**	**iaROA**	**iaSalesGW**	**iaMB**	**iaROA**	**iaSalesGW**	**iaMB**	**iaROA**	**iaSalesGW**	**iaMB**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
POST	0.007	-0.122	-0.121	0.064	**0.555**	**1.023**	0.004	-0.009	-0.051	-0.135	-0.054	-0.863
	[0.829]	[0.196]	[0.612]	[0.150]	**[0.055]***	**[0.002]*****	[0.966]	[0.965]	[0.957]	[0.298]	[0.773]	[0.488]
SS_SIZE	-0.003	0.017	-0.857	-0.008	0.014	-0.540	0.042	**0.268**	**-1.684**	0.055	0.342	**-2.053**
	[0.959]	[0.862]	[0.110]	[0.768]	[0.944]	[0.474]	[0.334]	**[0.061]***	**[0.055]***	[0.168]	[0.230]	**[0.000]*****
SS_DEBT/ASSET	**-0.079**	**0.654**	0.170	-0.034	0.538	0.497	0.015	-0.074	**2.384**	**-0.147**	0.494	**3.124**
	[0.003]***	**[0.033]****	[0.749]	[0.770]	[0.211]	[0.386]	[0.871]	[0.297]	**[0.031]****	**[0.053]***	[0.466]	**[0.000]*****
SS_R&D	**-0.914**	**2.168**	**6.594**	**-0.795**	0.037	4.841	**-0.362**	**3.649**	**4.766**	**-1.267**	-0.708	-1.985
	[0.000]***	**[0.000]*****	**[0.000]*****	**[0.035]****	[0.951]	[0.157]	**[0.001]*****	**[0.000]*****	**[0.058]***	**[0.000]*****	[0.375]	[0.296]
SS_CAPEXP	0.0060	**1.043**	0.550	-0.059	2.761	-0.013	-0.252	-1.038	-5.398	-0.193	**5.498**	1.217
	[0.979]	**[0.022]****	[0.638]	[0.883]	[0.164]	[0.945]	[0.676]	[0.556]	[0.296]	[0.203]	**[0.000]*****	[0.308]
SS_MKTSHR	-0.900	-1.495	4.436	-0.421	1.953	**16.375**	**-0.565**	0.448	-4.454	0.355	**3.841**	**26.381**
	[0.315]	[0.336]	[0.433]	[0.368]	[0.466]	**[0.007]*****	**[0.088]***	[0.643]	[0.236]	[0.665]	**[0.086]***	**[0.000]*****
AQ_SIZE	0.027	-0.023	0.126	**-0.136**	-0.010	**-1.036**	0.095	-0.560	0.143	-0.020	0.122	2.246
	[0.591]	[0.786]	[0.841]	**[0.002]*****	[0.983]	**[0.051]***	[0.615]	[0.142]	[0.963]	[0.775]	[0.608]	[0.159]
AQ_DEBT/ASSET	0.162	**0.736**	-1.287	0.222	**2.635**	-2.531	0.053	-0.809	-1.813	-0.585	0.612	-5.899
	[0.325]	**[0.060]***	[0.307]	[0.285]	**[0.002]*****	[0.260]	[0.892]	[0.468]	[0.527]	[0.437]	[0.710]	[0.324]
AQ_R&D	-0.366	0.858	-3.600	-0.126	-0.461	1.422	-0.074	**-1.857**	**-24.249**	-1.436	5.037	**-23.185**
	[0.284]	[0.107]	[0.224]	[0.241]	[0.406]	[0.181]	[0.838]	**[0.072]***	**[0.001]*****	[0.367]	[0.316]	**[0.030]****
AQ_CAPEXP	0.256	**-2.615**	3.031	0.654	-1.037	-3.005	**0.885**	0.141	9.585	0.772	-3.963	11.842
	[0.591]	**[0.009]*****	[0.436]	[0.520]	[0.625]	[0.389]	**[0.077]***	[0.969]	[0.223]	[0.697]	[0.407]	[0.393]
AQ_MB	0.007	-0.009	0.082	-0.003	**-0.095**	-0.063	-0.015	**-0.091**	0.079	**-0.056**	-0.131	0.161
	[0.345]	[0.725]	[0.223]	[0.754]	**[0.009]*****	[0.264]	[0.361]	**[0.074]***	[0.718]	**[0.092]***	[0.336]	[0.724]
AQ_MKTSHR	-0.377	0.352	**-4.937**	**1.169**	-5.552	**-9.300**	-0.713	**2.763**	-12.163	0.075	-1.975	**-40.198**
	[0.176]	[0.649]	**[0.075]***	**[0.002]*****	[0.156]	**[0.081]***	[0.117]	**[0.007]*****	[0.387]	[0.929]	[0.443]	**[0.002]*****
INTERCEPT	-0.113	-0.313	4.319	**1.167**	0.241	**12.129**	-0.940	4.301	9.619	0.612	-2.807	-6.731
	[0.799]	[0.656]	[0.409]	**[0.005]*****	[0.957]	**[0.022]****	[0.598]	[0.257]	[0.677]	[0.298]	[0.157]	[0.726]

Observations	460	512	482	205	221	214	156	181	174	107	114	114
Adjusted R-squared	0.669	0.466	0.511	0.685	0.383	0.375	0.681	0.646	0.607	0.871	0.455	0.352
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supplier fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Diversifying mergers

	Dependent variable is the profitability of supplier to bidder											
	ALL STOCK						**ALL CASH**					
	TGBH = 0			**TGBH = 1**			**TGBH = 0**			**TGBH = 1**		
	iaROA	**iaSalesGW**	**iaMB**	**iaROA**	**iaSalesGW**	**iaMB**	**iaROA**	**iaSalesGW**	**iaMB**	**iaROA**	**iaSalesGW**	**iaMB**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
POST	-0.026	-0.041	0.160	**0.146**	-0.177	-0.870	**0.043**	0.022	0.214	0.002	0.315	0.429
	[0.491]	[0.673]	[0.542]	**[0.022]****	[0.206]	[0.380]	**[0.090]***	[0.802]	[0.362]	[0.969]	[0.247]	[0.399]
SS_SIZE	0.003	**0.196**	-0.660	**0.051**	**0.175**	**-1.787**	0.049	**0.150**	**-0.997**	0.003	0.086	-1.739
	[0.886]	**[0.007]*****	[0.184]	**[0.100]***	**[0.068]***	**[0.000]*****	[0.325]	**[0.065]***	**[0.002]*****	[0.946]	[0.686]	[0.119]
SS_DEBT/ASSET	**-0.120**	0.332	0.557	-0.221	-0.059	-0.824	-0.107	0.466	0.537	0.025	0.279	1.648
	[0.076]*	[0.255]	[0.385]	[0.296]	[0.337]	[0.393]	[0.218]	[0.175]	[0.422]	[0.680]	[0.492]	[0.176]
SS_R&D	**-1.195**	**1.674**	1.454	-0.238	**1.282**	**6.751**	**-0.833**	**2.143**	**3.092**	**-2.154**	-0.326	-0.870
	[0.000]***	**[0.001]*****	[0.417]	[0.585]	**[0.014]****	**[0.002]*****	**[0.023]****	**[0.016]****	**[0.003]*****	**[0.000]*****	[0.750]	[0.250]
SS_CAPEXP	0.250	0.432	1.393	**-1.163**	0.842	3.361	-0.355	-0.434	**2.752**	-0.558	**3.073**	11.150
	[0.585]	[0.436]	[0.646]	**[0.035]****	[0.213]	[0.413]	[0.232]	[0.489]	**[0.001]*****	[0.150]	**[0.035]****	[0.118]
SS_MKTSHR	0.131	**1.429**	-0.228	-0.035	-0.308	2.302	0.559	**2.216**	3.994	-0.687	-0.813	0.963
	[0.642]	**[0.035]****	[0.953]	[0.955]	[0.566]	[0.808]	[0.355]	**[0.026]****	[0.493]	[0.423]	[0.451]	[0.791]
AQ_SIZE	-0.003	-0.043	0.015	-0.086	0.218	0.829	0.009	-0.078	**0.650**	0.038	-0.095	0.635
	[0.935]	[0.434]	[0.963]	[0.188]	[0.382]	[0.563]	[0.802]	[0.400]	**[0.019]****	[0.762]	[0.871]	[0.676]
AQ_DEBT/ASSET	0.073	-0.420	1.582	-0.074	-0.026	-0.043	-0.158	**-0.748**	0.133	-0.481	0.001	1.560
	[0.577]	[0.402]	[0.347]	[0.691]	[0.956]	[0.981]	[0.281]	**[0.011]****	[0.892]	[0.175]	[0.999]	[0.459]
AQ_R&D	0.828	0.504	6.101	0.018	**1.518**	-3.550	-0.139	-0.587	-0.943	**-3.807**	-7.123	1.726
	[0.022]**	[0.399]	[0.191]	[0.980]	**[0.047]****	[0.581]	[0.624]	[0.382]	[0.530]	**[0.021]****	[0.206]	[0.897]
AQ_CAPEXP	0.000	1.691	-5.268	-1.058	-0.371	-14.083	0.970	**1.623**	**7.139**	**1.469**	2.313	**-7.826**

	[1.000]	[0.211]	[0.192]	[0.419]	[0.897]	[0.499]	[0.136]	**[0.068]***	**[0.065]***	**[0.027]****	[0.126]	**[0.073]***
AQ_MB	-0.006	-0.011	-0.006	**0.010**	0.005	0.048	-0.007	0.019	0.076	-0.004	**0.105**	0.086
	[0.228]	[0.134]	[0.927]	**[0.084]***	[0.703]	[0.451]	[0.454]	[0.475]	[0.423]	[0.694]	**[0.065]***	[0.331]
AQ_MKTSHR	0.342	-0.394	**3.833**	0.010	-0.173	0.747	-0.091	-0.199	0.278	0.475	0.344	5.205
	[0.203]	[0.379]	**[0.011]****	[0.956]	[0.667]	[0.768]	[0.234]	[0.224]	[0.580]	[0.184]	[0.862]	[0.413]
INTERCEPT	0.022	-0.606	1.753	0.269	-3.211	1.511	-0.320	-0.405	-3.070	-0.187	-0.140	0.551
	[0.943]	[0.329]	[0.600]	[0.681]	[0.151]	[0.910]	[0.349]	[0.541]	[0.325]	[0.868]	[0.977]	[0.961]
Observations	640	717	682	245	297	273	790	893	812	387	420	363
Adjusted R-squared	0.656	0.343	0.574	0.739	0.411	0.500	0.606	0.269	0.493	0.778	0.393	0.629
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supplier fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 3.14
Post-merger profitability of retained suppliers of bidders under stock financing in non-diversifying mergers using a differences-in-differences approach

This table presents results using a differences-in-differences methodology to examine the profitability of retained suppliers of bidders affected by stock financing in non-diversifying relative to a control group of retained suppliers of bidders affected by cash-financing in non-diversifying. The treatment group consists of retained bidder suppliers who are affected by non-diversifying mergers and the use of stock financing. The control group consists of retained bidder suppliers who are affected by non-diversifying mergers and cash financing, and matched to the "treated" suppliers by industry and asset size. Industry is defined by the 2-digit Standard Industrial Classification (SIC) codes in matching, and the relative asset size of a matched pair cannot exceed a ratio of 2.5. A merger is non-diversifying if the bidder and target have the same 4-digit SIC codes. The sample is restricted to three years before the announcement date and three years after the effective year of completion of the merger. A supplier is retained if it continues to be listed in the Compustat Industry Segments as the bidder's suppliers in the year after the effective date of completion of the merger. Dependent variable is the profitability of the retained supplier in year t. Proxies for profitability are (i) the median industry-adjusted return on assets (iaROA), and (ii) the median industry-adjusted market-to-book (iaMB) ratio, where industry is defined by the 4-digit SIC codes. Return on assets is computed as the sum of net income before extraordinary income plus interest expenses plus income taxes, and divided by lagged book value of assets. Sales growth is the current sales minus lagged sales, and divided by lagged sales. Market-to-book ratio is computed as the market value divided by book value of assets where market value is the sum of the market value of equity plus long-term debt and current liabilities while the book value of assets is the sum of the book value of equity plus long-term debt and current liabilities. Post is a dummy that takes on unity after the effective year of completion of the merger, and zero otherwise. Treat is a dummy that takes on unity if the suppliers belong to the treatment group, and zero if they belong to the control group. Firm controls are as follow: SIZE is the logarithm of book value of assets; DEBT-to-ASSET ratio is the sum of long-term debt plus short-term liabilities, and divided by lagged assets. R&D is the R&D expenses divided by lagged assets. CAPEXP is the capital expenditure divided by lagged assets. MKTSHR is the market share of sales of the firm computed as the ratio of the firm's sales to total sales in its industry. The prefix AQ and SS refer to the bidder and its supplier, respectively. Supplier's firm fixed effects and year dummies are included. Mergers involving utilities and financial firms are excluded. Standard errors are clustered by bidders. P-values are reported in parenthesis. *,**,*** represent statistical significance at 10%, 5% and 1% level, respectively.

	Dependent variable is the profitability of supplier to bidder		
	iaROA	**iaSalesGW**	**iaMB**
	(1)	(2)	(2)
POST	-0.095	-0.175	**2.128**
	[0.462]	[0.501]	**[0.025]****
TREAT	-0.035	**-0.358**	0.468
	[0.189]	**[0.021]****	[0.299]
POST*TREAT	0.054	**0.455**	**-2.209**
	[0.534]	**[0.064]***	**[0.016]****
SS_SIZE	0.044	0.086	-0.497
	[0.323]	[0.574]	[0.526]
SS_DEBT-to-ASSET RATIO	0.062	0.302	-0.450
	[0.474]	[0.203]	[0.550]
SS_R&D	**-1.063**	**3.681**	**3.536**
	[0.002]***	**[0.000]*****	**[0.089]***
SS_CAPEXP	-0.223	1.938	1.274
	[0.581]	[0.310]	[0.655]
SS_MKTSHR	0.595	-2.228	25.390
	[0.825]	[0.848]	[0.391]
AQ_SIZE	0.021	**-0.668**	1.179
	[0.849]	**[0.100]***	[0.255]
AQ_DEBT-to-ASSET RATIO	0.010	1.093	-2.550
	[0.969]	[0.160]	[0.143]
AQ_R&D	-0.151	-0.027	-4.398
	[0.719]	[0.983]	[0.229]
AQ_CAPEXP	0.025	-2.274	1.985
	[0.965]	[0.140]	[0.648]
AQ_MB	**0.038**	**-0.080**	0.022
	[0.063]*	**[0.062]***	[0.875]
AQ_iaROA	-0.563	0.396	-1.405
	[0.179]	[0.532]	[0.684]
AQ_MKTSHR	-0.851	0.740	**-14.769**
	[0.116]	[0.569]	**[0.051]***
INTERCEPT	0.080	6.165	-6.053
	[0.945]	[0.115]	[0.488]
Observations	351	394	363
R-squared	0.751	0.490	0.673
Year dummies	Yes	Yes	Yes
Supplier firm fixed effects	Yes	Yes	Yes

CHAPTER 4

Faith-Based Investing: Religious Loyalty, Fund Flows and Performance

4.1 Introduction

In recent years, faith-based investing has gained increasing popularity. In May 1998, the Catholic Values (CV) 400 index[15] was introduced by KLD[16] to meet the demand of a growing clientele seeking to invest in accordance with their Catholic values. Furthermore, Morningstar reported that the fastest growing subset of the socially responsible funds is the religious funds and assets held by such funds has increased from less than $500 million in 1997 to more than $17 billion in 2007[17]. Faith-based investing is a form of socially responsible investing where investment portfolios are screened not only to meet social, environmental and governance factors, but also to satisfy religious criteria. For example, Islamic funds generally avoid companies involved in pork processing and investments that bear interest, while Catholic funds avoid companies that promote abortion, pornography and non-married lifestyles.

[15] According to KLD inc., the CV400 Index is designed to represent the large-cap U.S. equity market available to Catholic investors who seek equity ownership in alignment with the moral and social teachings of the Church.

[16] KLD Research & Analytics, Inc. provides social research and indices for institutional investors.

[17] See article at http://news.morningstar.com/ARTICLENET/ARTICLE.ASPX?ID=188559. In addition, according to a 2003 survey by the U.S. Social Investment Forum (SIF), the market for assets that are deemed socially, morally or environmentally responsible has grown rapidly over the past decade and represents approximately more than 11% of the financial market as a whole, or an estimated $2.16 trillion.

It would be interesting to infer the preferences of investors in religious funds through an examination of their investment behavior. Religious funds are distinguished by specific denomination or religion[18] and some of them are associated with churches or sold to a selected group of investors. For example, the New Covenant mutual funds belong to the Presbyterian Church while the MMA Praxis funds are part of the Mennonite Church. The AB Funds, sponsored by the Southern Baptist Convention, started by selling to only Southern Baptist ministers and employees of Southern Baptist entities and institutions such as universities, seminaries, hospitals and retirement homes in 2001.

By clearly associating the fund with a religious denomination or marketing it through the churches, it is likely that religious funds appeal to a unique clientele of investors who identify themselves with the particular religious faith. Hence, it is natural to suspect that the behavior of investors in religious mutual funds would differ from the behavior of investors in secular funds. According to Smith (1922), "the morale of the Christian cause depends on whole-souled loyalty." As the morale of a religious cause depends on the devotion of men and women promoting it, followers are taught the doctrine of religious loyalty. If religious funds capture primarily a religious clientele, the doctrine of religious loyalty is likely to influence the behavior of investors in these funds.

In this paper, I first examine the behavior of investors in religious mutual funds and compare it to the behavior of investors in secular socially responsible mutual funds. I expect that investors in religious funds will exhibit low sensitivity to short-term fund performance if they are guided by religious loyalty to the promotion of long-term faith-

[18]Appendix A presents the religious denomination of religious funds in the sample.

based causes in investing. Next, I study the effect of distribution channels of religious funds on the flow-to-performance sensitivity of their investors. I sort the religious funds into two groups according to whether the fund is sponsored by churches (henceforth, church fund) or not (henceforth, non-church fund). I expect religious loyalty to be stronger towards funds sponsored and distributed by churches. This is because such funds are most likely held by church-goers who face peer pressure to demonstrate religious loyalty or are strongly devoted to religious causes upheld by the churches.

Third, I examine the performance of these religious funds. Faith-based investing can hurt financial returns to investors in two ways. First, portfolio screening by religious values would exclude certain industries and stocks from the investment portfolio. This would result in inefficient diversification due to a constrained investment opportunity set. Consequently, religious portfolios would be more concentrated mechanically due to under-representation in industries excluded by screening and over-allocation of assets to other industries. Unlike unconstrained portfolios where managers use their informational advantage to hold a more concentrated portfolio in order to generate superior returns (Kacperczyk, Sialm and Zheng, 2005), managers of screened portfolios must hold a more concentrated portfolio regardless of their informational advantage. The lack of flexibility for religious fund managers to use their informational advantage in choosing the industry concentration of the fund can hurt performance.

Second, the low sensitivity of investors to performance as predicted by their religious loyalty could reduce the incentives of managers to exert effort and result in poor fund

performance. Although it is possible to restore the incentives of managers through other channels such as higher fees or the market for managerial talent, screening will still limit the flexibility of managers to use their informational advantage in industry and stock selection. Hence, investors in religious funds must rationally expect the fund to under-perform unconstrained benchmarks.

Using a sample of 38 religious funds, I find that the average investor exhibits flat flow-to-performance sensitivity. Investors in religious funds do not chase returns. They also do not penalize fund managers for poor performance with outflows. In contrast, using a sample of 79 secular socially responsible funds, the typical investor exhibits positive flow-to-performance sensitivity, a result consistent with Bollen and Cohen (2005). Among the religious funds, the typical investor in non-church funds exhibits flat flow-to-performance sensitivity. On the other hand, the typical investor in church funds not only does not chase past performance, they move flows into the fund when past returns are negative. This interesting result suggests that investors of church funds increase their support of these funds when past fund performance is poor.

When comparing an equally-weighted portfolio of religious funds to market indices such as the CRSP value-weighted market index, the S&P 500 total return index and the Domini Social (DS) 400 index[19], the monthly return of the religious portfolio is, on average, -0.23% lower than the monthly return of the CRSP market index at a p-value of 0.017. However, the return differences between the religious portfolio and the other two

[19] Although the CV400 index is more appropriate as a religious benchmark, it is not used due to a correlation of 0.999 with the DS 400 index since being introduced in May 1998. The DS 400, which was introduced in 1991, is used instead in order to have a time series from 1993 to 2006.

market indices, although negative, are not statistically significant. Separating the religious funds into two equally-weighted portfolios of church and non-church funds, the church portfolio significantly under-performs all three market indices by -0.42% per month while the non-church portfolio under-performs only the CRSP market index by -0.20% per month. Based on raw returns, it would appear that the church-portfolio performs worse than the non-church portfolio against the three market indices.

To adjust for the risk and style of the fund, I use the four-factor model to compute the abnormal return. The religious portfolio generates significantly negative abnormal return of about -0.14% per month consistently across all three market indices. In contrast, the portfolio of secular socially responsible funds does not generate significant abnormal return consistently across all three market indices. Next, both the church and non-church religious portfolios generate significantly negative abnormal returns but the return differences between the two portfolios are not statistically significant. Controlling for fund characteristics such as turnover, expense ratio, asset size, age and standard deviation of monthly returns, OLS results confirm that religious funds under-perform the secular socially responsible funds by 0.14% per month or an annualized 1.7%, albeit at 10% significance level. Similar results are obtained using Fama-Macbeth regressions.

Using the transformed difference of the Sharpe ratio between two portfolios according to Jobson and Korkie (1981), the religious portfolio displays a statistically significantly lower Sharpe ratio than the CRSP market index. In contrast, the secular socially responsible portfolio appears as well diversified as the market portfolio. Indeed, by

computing an industry concentration index (ICI) for each fund following the approach of Kacperczyk, Sialm and Zheng (2005), religious funds show a significantly higher ICI than secular socially responsible funds using both OLS and Fama-Macbeth regressions while controlling for the fund characteristics mentioned earlier.

To investigate whether the negative abnormal return of religious funds is related to the higher ICI, I examine the loading on the interaction term between a religious fund dummy and the ICI variable. OLS results show a significantly negative loading on the interaction term when the CRSP market index and S&P 500 total return index, but not the DS 400 index, are used in computing the abnormal returns. Moreover, the loading on the religious dummy turns positive, albeit insignificant. This finding shows that a higher industry concentration for religious funds hurts performance, as would be expected if the industry concentration arises due to portfolio constraints imposed by religious screening rather than the informational advantage of fund managers. Once their industry concentrations are controlled for, religious funds do not under-perform the secular socially responsible funds.

This paper contributes to the literature that examines the behavior of mutual fund investors and their flow-performance sensitivity (ex. Ippolito, 1992; Brown, Harlow and Starks, 1996; Gruber, 1996; Chevalier and Ellison, 1997; Goetzmann and Peles, 1997; Sirri and Tufano, 1998; Zheng, 1999; Del Guercios and Tkac, 2002; Nanda, Wang and Zheng, 2004). To date, no study has examined investors in religious funds. Despite the small asset size of religious funds, the increasing popularity of these funds indicates

demand by a growing clientele. Moreover, the insensitivity of investors in religious funds to performance is a novel result in the mutual fund literature which has, to date, documented a strong convexity in flow-performance sensitivity of investors.

Lastly, this chapter contributes to the literature that examines the cost to social investing. Extant studies have found mixed results for the performance of socially responsible funds (ex. Hamilton et al., 1993; Mallin et al., 1995; Guerard, 1997; Kurtz, 1997; Sauer, 1997; Goldreyer et al., 1999; Statman, 2000; Bauer et al., 2002; Geczy et al., 2003; Girard et al., 2005). Critiques of socially responsible funds have questioned the screening stringency. Bello (2005) has shown that the top ten holdings of socially responsible funds are not significantly different from that of the conventional funds. This study shows that religious funds are less well-diversified than the market portfolio and have a higher industry concentration than secular socially responsible funds. Hence, religious funds would be a more appropriately screened portfolio to address the effects of screening on performance than secular socially responsible funds. This study shows that there is a tradeoff between financial returns and screening.

The reminder of this chapter proceeds as follows. I describe the data in section 4.2 and present the flow-performance analysis in section 4.3. Section 4.4 analyses the Sharpe ratio and industry concentration of the funds, and presents the performance results as well. Lastly, Section 4.5 concludes.

4.2 Sample Construction and Data Description

I compile a list of religious and secular socially responsible funds from the U.S. Social Investment Forum (SIF) website[20], Morningstar as well as websites of religious investment organizations such as the Catholic Financial Services Corporation. Appendix A lists the sample of religious funds by fund family. Next, the financial performance data for the funds are obtained from the Center for Research in Security Prices (CRSP) Survivor-Bias Free U.S. Mutual Fund Database. Specifically, the CRSP mutual fund database provides information about the fund's monthly returns, total net assets, turnover ratios, expense ratios, investment objectives, and other fund characteristics. Funds not found in the CRSP database for the sample period 1993 to 2006 are excluded.

I further restrict the sample funds to U.S. equity mutual funds by removing balanced, bond, international, index and specialized sector funds. I value-weigh funds with multiple share classes by the total net assets of each share class, i.e., funds with multiple share classes are counted only once. Next, the fund holdings are obtained from the CDA database provided by Thomson Financial. The fund holdings are matched to return data from CRSP using the mutual fund links tables. Funds must have at least 24 months of return data to be included. To identify church funds, I examine the website of each religious fund. I find that only the family of AB funds, MMA Praxis funds and the New Covenant Funds are sponsored by churches. Funds belonging to these three families are classified as church funds, and all other funds are classified as non-church funds.

[Insert Table 4.1]

[20] http://www.socialinvest.org/

Table 4.1 provides summary statistics of the sample funds. The sample consists of 38 religious funds and 79 secular socially responsible funds. Among the religious funds, 13 are church funds and 25 are non-church funds. The average religious fund is 6.7 years old while the mean secular socially responsible fund is 12.8 years old. On average, the church and non-church funds are 5.8 and 4.6 years old, respectively. In terms of monthly total net assets, the average religious fund manages $63 millions while the average secular socially responsible fund manages $468 millions. Church funds manage $109 millions, on average, and are much larger than non-church funds which manage an average of only $30 millions per month.

The religious funds have a mean expense ratio of 1.56% which is higher than that of 1.24% for the secular socially responsible funds. Church funds have a mean expense ratio of 1.63% while non-church funds have a mean expense ratio of 1.54%. Next, religious funds have a turnover ratio of 63% which is comparable to the turnover ratio of 65% for the secular socially responsible funds. The mean turnover ratio for church funds is 107% and is much higher than that of 42% for non-church funds. As for their industry concentration, religious funds are more concentrated with a mean ICI of 0.151 while secular socially responsible funds have a mean ICI of only 0.089. The higher ICI of religious funds relative to the secular socially responsible funds is largely driven by the church funds. Church funds have a mean ICI of 0.151 whereas non-church funds have a much lower mean ICI of 0.111.

4.3 Flow-Performance Sensitivity Analysis

In this section, I investigate the flow-to-performance sensitivity of investors in religious funds. Following existing literature, net inflows into the fund is constructed as the new money growth (NMG) according to (4.1).

$$NMG_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1}.(1+R_{i,t})}{TNA_{i,t-1}} \quad \text{.....(4.1)}$$

where $TNA_{i,t}$ is the monthly total net assets and $R_{i,t}$ is the monthly return of fund i at time t.

The general form of the multivariate regression used in analyses is (4.2).

$$NMG_{i,t} = \alpha + \beta_1 R_{i,t-1} + \beta_2 NEGDUM \times R_{i,t-1} + \beta_3 \log(TNA_{i,t-1}) + \beta_4 \log(AGE_{i,t-1}) + \beta_5 TO_{i,t-12} + \beta_6 EXP_{i,t-12} + \beta_6 SD_{i,t-1} + \varepsilon_{i,t} \quad \text{.....(4.2)}$$

where $R_{i,t-1}$ is the lagged raw return of the fund, NEGDUM is a dummy that takes on unity if $R_{i,t-1}<0$, and zero otherwise. $AGE_{i,t-1}$ is the fund's age in months, $TO_{i,t-12}$ is the annual turnover ratio, $EXP_{i,t-12}$ is the annual expenses ratio, and $SD_{i,t-1}$ is the standard deviation of monthly fund returns over the past 24 months up to month t-1. New money growth is winsorized at 1% and 99% to remove outliers. The time unit is one month. All explanatory variables are lagged by one month, except for expenses and turnover which are lagged by one year. Year dummies are included to control for time fixed effects. Standard errors are clustered by fund. The panel is unbalanced since most funds do not exist over the entire period.

From equation (4.2), β_1 and β_2 capture the sensitivity of investors to good and poor past performance of the fund, respectively, and are the coefficients of interest. I expect β_1 and β_2 to be insignificant if investors in religious funds exhibit negligible flow-performance sensitivity.

[Insert Table 4.2]

Table 4.2 presents the flow-performance sensitivity results. As hypothesized, β_1 and β_2 are statistically insignificant for religious funds, i.e., investors in religious funds exhibit flat flow-to-performance sensitivity. In contrast, β_1 is significantly positive for secular socially responsible funds under both OLS and Fama-Macbeth regressions. This interesting finding indicates that investors are not sensitive to past performance of the religious funds, and is consistent with religious loyalty to long-term faith-based investing.

[Insert Table 4.3]

Next, for the sample of religious funds, I examine the loading on the interaction term of a church fund dummy with past positive and negative returns of the fund. From Table 4.3, investors in non-church funds continue to exhibit flat flow-to-performance sensitivity, as evident from the insignificant loadings on the RET and NEGDUM*RET variables. However, while the loading on CHURCH*RET is insignificant, the loading on CHURCH*NEGDUM*RET is significantly negative at a p-value of 0.06 and 0.04 under OLS and Fama-Macbeth regressions, respectively. This finding indicates that investors move flows into church funds when the past fund return is negative, a result completely opposite to the convex flow-to-performance sensitivity of investors well-documented by

extant studies. This behavior is puzzling. Perhaps, guided by strong religious loyalty, investors in church funds feel obligated to support poorly-performing funds.

4.4 Performance Analyses

We have seen that investors in religious funds exhibit flat flow-performance sensitivity. Screening would lead to inefficient diversification of the religious funds and limit the ability of fund managers to capitalize on their informational advantage when selecting the industry concentration of the fund. Additionally, the flat flow-performance sensitivity could result in low effort by fund managers. In this section, I analyze the Sharpe ratio, industry concentration and performance of religious funds. The secular socially responsible funds are used for comparison. The first part examines the transformed Sharpe ratio between two portfolios and the industry concentration of the fund while the second part examines the abnormal returns using unconditional factor models as well as pooled OLS and Fama-Macbeth regressions.

4.4.1 Sharpe Ratio

The Sharpe ratio has commonly been used to gauge the effects of inefficient diversification. One issue with using the Sharpe ratio to compare two portfolios comes from establishing the statistical significance of the observed differences in performance. Jobson and Korkie (1981) propose a transformed difference of the Sharpe ratios between two portfolios a and b according to (4.3).

$$SR_{ab} = \sigma_b \mu_a - \sigma_a \mu_b \quad \text{.....(4.3)}$$

where $\mu = \sum_{t=1}^{T} \frac{r_t}{T}$, $\sigma^2 = \sum_{t=1}^{T} \frac{r_t^2}{(T-1)}$

and r_t is the return of the portfolio minus the risk-free rate at time t and T is the no. of time observations in the return series. The asymptotic distribution for the transformed difference of Sharpe ratios is normal with mean SR_{ab} and variance according to (4.4) and the approximate Z statistic is given by (4.5).

$$\psi = \frac{1}{T}[2\sigma_a^2\sigma_b^2 - 2\sigma_a\sigma_b\sigma_{ab} + \frac{1}{2}(\mu_a^2\sigma_b^2 + \mu_b^2\sigma_a^2) - (\frac{\mu_a\mu_b}{2\sigma_a\sigma_b})(\sigma_{ab}^2 + \sigma_a^2\sigma_b^2)] \quad \text{.....(4.4)}$$

$$Z = \frac{\hat{SR}_{ab}}{\sqrt{j}} \quad \text{.....(4.5)}$$

I use the z-statistic in (4.5) to test the null hypothesis of $SR_{ab} = 0$ between 2 portfolios.

[Insert Table 4.4]

From Table 4.4, the religious portfolio, the church portfolio and the non-church portfolio all have a lower transformed Sharpe ratio than the CRSP market index and the S&P 500 total return index at a 5% significance level. In other words, these religious portfolios are less well diversified than the market index. In contrast, the secular socially responsible portfolio appears as well-diversified as both the CRSP market index and the S&P500 total return index. When the DS 400 market index is used as the market portfolio, Panel C shows that only the church portfolio has a lower transformed Sharpe ratio than the market portfolio at 10% significance level.

4.4.2 Industry Concentration Index

As mentioned previously, screened portfolios would mechanically have a higher industry concentration due to under-representation in excluded industries and over-allocation of the fund assets to the remaining industries. I follow the approach of Kacperczyk, Sialm and Zheng (2005) in constructing an industry concentration index (ICI) of a mutual fund by taking the difference between the industry weights[21] of the fund and the industry weights of the total market portfolio, and summing the squared differences across the 48 industries for each fund. If a fund excludes a particular industry, its weight in that industry is assigned to zero. A higher ICI represents a more concentrated portfolio.

[Insert Table 4.5]

From Table 4.5, religious funds have a higher ICI than secular socially responsible funds, as evident from the positive and significant loading of 0.017 on the religious dummy under Fama-Macbeth regression. Since the standard deviation of ICI is 0.055, a typical religious fund has an ICI that is 0.31 of a standard deviation higher than the ICI of a secular socially responsible fund. OLS regression gives similar results. Among the religious funds, Church funds do not significantly differ from non-church funds in terms of ICI. These findings are consistent with the transformed Sharpe ratio results.

4.4.3 Buy-and-Hold Portfolio Returns

To examine buy-and-hold portfolio returns, I form equal-weighted portfolios for each group of funds so as to obtain the secular socially responsible portfolio and the religious

[21] As according to the 48 industry groupings of Fama and French (1997) available on Prof. Kenneth French's website. http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

portfolio. I further separate the religious portfolio into a church portfolio and non-church portfolio. For each portfolio, I use simple t-tests to compare the monthly portfolio returns with the monthly returns of a market index. Three market indices are used – the CRSP value-weighted index, the S&P 500 total return index and the DS 400 index.

[Insert Table 4.6]

From Panel A of Table 4.6, the religious portfolio significantly under-performs only the CRSP market index. The mean difference in returns is -0.23% per month. From Table B, the church portfolio under-performs all three market indices by about -0.42% per month at a 5% significance level. In contrast, the non-church portfolio weakly under-performs the CRSP market index and do not differ in terms of raw returns from the other two indices.

4.4.4 Unconditional Factor Models

The above analysis does not incorporate the risk and style of the fund. Therefore, I estimate the risk- and style-adjusted performance using the four-factor model of Carhart (1997) according to (4.6).

$$r_{i,t} = \alpha_{i,t} + \beta_1^m r_{m,t} + \beta_2^{SMB} SMB_t + \beta_3^{HML} HML_t + \beta_4^{UMD} UMD_t + \varepsilon_{i,t} \quad \text{.....(4.6)}$$

where $r_{i,t}$ is the return on a portfolio in excess of the one-month T-bill return, $r_{m,t}$ is the excess return on a value-weighted aggregate market proxy, and SMB, HML and UMD are returns on a value-weighted, zero-investment, factor-mimicking portfolios for size, book-to-market equity, and one-year momentum in stock returns. The beta coefficients

can be interpreted as the loadings of the fund portfolios on the four risk and style factors. The intercept, α, is a measure of the abnormal performance of the fund portfolio during the estimation period.

[Insert Table 4.7]

From Table 4.7, the religious portfolio has a significantly negative alpha of at least -0.20% per month over the sample period 1993 to 2006 when all three market indices are used separately in the four-factor model. On the other hand, the secular socially responsible portfolio does not generate significant negative alpha consistently across all three market indices.

[Insert Table 4.8]

From Table 4.8, a difference portfolio that longs the religious portfolio and shorts the secular socially responsible portfolio generates a significantly negative alpha of at least -0.13% per month for all three market indices.

[Insert Table 4.9]

Next, when the religious portfolio is separated into a church portfolio and a non-church portfolio, both portfolios generate significantly negative alpha using the four-factor model. Moreover, the non-church portfolio appears to generate larger negative alpha that ranges from -0.26% to -0.30% per month while the church portfolio generates a less negative alpha that ranges from -0.18% to -0.21% per month, depending on the market index being used. However, using an investment strategy that longs the church portfolio

and shorts the non-church portfolio generates insignificant abnormal returns, suggesting that the church portfolio does not differ significantly in terms of abnormal returns from the non-church portfolio.

[Insert Table 4.10]

4.4.5 Multivariate Performance Analyses

One major advantage of aggregating funds into portfolios is that the long-run fund performance can be evaluated without requiring a long time-series for each fund. However, by aggregation, we lose information specific to the fund and cannot control for fund characteristics. A multivariate framework allows us to control for individual fund characteristics. Second, the previous section determines the abnormal returns in the four-factor model contemporaneously with the factor loadings. Such an approach implicitly assumes that the factor loadings remain invariant with time. A multivariate framework allows us to avoid such a strong assumption. The abnormal returns are computed based on factor loadings estimated on a rolling basis using the previous 24 months of returns. The cost of this approach is a reduction in the number of time-series and cross-sectional observations since young funds are excluded and the first two years of a fund history are used to estimate the factor loadings.

The multivariate regression equation has the following form in (4.7):

$$AR_{i,t} = \alpha_{i,t} + \beta_1 RELIGIOUS_i + \beta_2 \log(TNA_{i,t-1}) + \beta_3 \log(AGE_{i,t-1}) + \beta_4 TO_{i,t-12} + \beta_5 EXP_{i,t-12} + \beta_6 SD_{i,t-1} + \varepsilon_{i,t} \quad (4.7)$$

AR_i is the monthly abnormal return, $Religious_i$ is a dummy variable that takes on unity for a religious fund, and zero otherwise; and the other variables are previously defined in (4.2). The coefficient of interest is β_1 which measures the abnormal performance of the religious funds relative to the secular socially responsible funds. The time unit is one month.

[Insert Table 4.11]

From Table 4.11, religious funds continue to weakly under-perform the secular socially responsible funds by at least -0.14% per month, even after controlling for various fund characteristics. Fama and Macbeth regressions, which address serial correlation in performance, produce consistent results. Fund size also has a significantly negative impact on the abnormal return of the fund.

4.4.6 Performance and Industry Concentration

Lastly, to examine whether the poor performance of a religious fund is related to its industry concentration, I estimate specification (4.8)

$$AR_{i,t} = \alpha_{i,t} + \beta_1 RELIGIOUS_i + \beta_2 ICI_{i,t-1} + \beta_3 RELIGIOUS_i \times ICI_{i,t-1} + \beta_4 \log(TNA_{i,t-1}) + \beta_5 \log(AGE_{i,t-1}) + \beta_6 TO_{i,t-4} + \beta_7 EXP_{i,t-4} + \beta_8 SD_{i,t-1} + \varepsilon_{i,t} \quad \text{.....(4.8)}$$

where ICI is the industry concentration index of the fund. The time unit is quarterly since fund holdings are reported on a quarterly basis. I expect β_3 to be significant and negative if a higher industry concentration arises mechanically due to screening and leads to

inefficient diversification for the religious fund. I also expect β_1 to become non-negative and insignificant once the ICI variable and the interaction term are controlled for.

[Insert Table 4.12]

When alpha is computed using the CRSP market index and the S&P 500 total return index as in Column 1 and 2 of Table 4.12, respectively, β_3 is significantly negative. From Column 1, β_3 is -3.684. Hence, for religious funds, the marginal change of alpha with ICI is -2.448 (= 1.236 – 3.684), i.e., when ICI changes by one standard deviation of 0.05519, alpha changes by -0.135% (= -2.448*0.05519). Furthermore, β_1 turns positive and statistically insignificant, which is as expected if the under-performance of religious fund is related to its industry concentration. However, when alpha is computed using the DS400 index, β_3 is negative but insignificant. Lastly, under Fama-Macbeth regressions, β_3 is again negative but insignificant. Since the time unit is quarterly and the length of the time series is only 56, the power of Fama-Macbeth regression is greatly reduced due to the short time-series.

4.5 Conclusion

In this chapter, I find that investors in religious funds exhibit flat flow-to-performance sensitivity. Furthermore, religious funds perform worse by at least -0.21% per month relative to market indices such as the CRSP value-weighted market index, the S&P 500 total return index and the DS 400 index. Religious funds also perform worse relative to the secular socially responsible funds by about -0.13% per month. In terms of Sharpe ratio, the religious portfolio is statistically significantly less well-diversified than both the

CRSP market index and the S&P500 total return index, but not the DS400 index. In terms of their industry concentration, the average religious fund is also significantly more concentrated than the average secular socially responsible fund. I further find evidence that the poor performance of religious funds is related to their industry concentration.

Next, I separate the religious funds into church and non-church funds. I find that investors in non-church funds exhibit flat sensitivity to both positive and negative past returns of the fund. On the other hand, while investors of church funds exhibit flat sensitivity to past positive performance of the fund, they move flows into the fund when past returns are negative. This is an interesting finding and suggests that investors of church funds increase their support when fund performance is poor.

Last but not least, I examine whether church funds differ from non-church funds in terms of diversification and performance. The portfolio of church funds is significantly less well-diversified than all three market indices while the portfolio of non-church funds is only significantly less well-diversified than the CRSP market index and the S&P 500 total return index, but not the DS 400 index. However, the industry concentration of church funds does not differ significantly from that of non-church funds. Church funds also do not differ significantly from non-church funds in terms of the abnormal returns computed using the four-factor model.

Appendix A
Religious denomination of faith-based funds

No.	Fund Family	Religious Denomination	Sponsored by Religious Institution	Screening Guidelines
1	Amana Funds	Islamic	No	Alcohol, gambling, and pornography, and non-Islamic banks. Avoids interest income.
2	Azzad Funds	Islamic	No	Alcohol, tobacco, gambling, pornography, meat products, weapons, conventional financial institutions. Avoids interest income.
3	Aquinas Funds	Catholic	No	Guidelines established by Catholic Bishops. Screens for abortion, contraceptives, embryonic stem cell research, weapons of mass destruction, human rights, environmental responsibility and fair employment practices.
4	Ave Maria Funds	Catholic	No	Guidelines established by Catholic Bishops. Screens for anti-family practices such as non-marital partner benefits, abortion, pornography, and contributors to Planned Parenthood.
5	Catholic Funds	Catholic	No	Catholic values
6	Capstone Social Ethics and Religious Values Funds	Seventh-Day Adventist	No	Alcohol, tobacco, gambling, caffeine, meat, and pornography.
7	Timothy Plans	Judeo-Christian	No	Abortion, pornography, anti-family entertainment, non-married lifestyles, alcohol, tobacco and gambling)
8	AB Funds	Southern Baptist	Yes. Southern Baptist Convention.	Liquor, tobacco, gambling, pornography or abortion.

9	MMA Praxis Funds	Anabaptist Christian	Yes. Mennonite Church.	Supports the environment, employment, and human rights. Screens out weapons, alcohol, tobacco, gambling, nuclear power.
10	New Covenant Funds	Presbyterian	Yes. Presbyterian Church	Alcohol, gambling, weapons
11	Noah Fund	Christian	No	Alcohol, tobacco, gambling, pornography, and abortion
12	Shepherd Large Cap Growth Fund	Christian	No	Alcohol, tobacco, gambling, pornography, non-married lifestyles, abortion
13	Christian Stewardship Funds	Christian	No	Christian values

Table 4.1
Summary statistics

Panel A reports the no. of funds and the fund age for the sample. Fund age is computed from the first trading date of the fund to present. Multiple share classes are value-weighted by total net assets of the fund. Panel B reports the annual time-series trend of monthly total net assets (TNA), annual expenses, annual turnover ratio, and industry concentration index (ICI) of the funds. TNA includes all share classes of the fund. Sample period is from Jan 1993 to Dec 2006.

Panel A: Sample funds

	Religious	Church Funds	Non-church Funds	Secular Socially Responsible Fund
#Funds	38	13	25	79
Mean age (yr)	6.7	5.8	4.6	12.8
Median age (yr)	4.9	5.4	6.4	8.7

Panel B: Time series trend of fund's characteristics.

	Total Monthly Assets (millions)				Expense Ratio (%)				Turnover Ratio (%)			
Year	Religious	Church	Non-Church	Secular	Religious	Church	Non-Church	Secular	Religious	Church	Non-Church	Secular
1993	10	0	10	406	1.58	-	1.58	1.05	28.65	-	28.65	45.15
1994	10	7	10	376	1.62	2.38	1.56	1.10	42.94	210.23	29.00	56.95
1995	10	9	11	374	1.97	2.38	1.56	1.13	119.62	172.87	29.00	56.73
1996	21	32	10	379	1.91	2.31	1.74	1.20	74.67	124.79	34.03	75.49
1997	30	46	13	393	1.69	1.71	1.67	1.27	91.62	128.68	58.45	69.35
1998	39	60	18	478	1.70	1.70	1.70	1.26	82.34	100.33	36.00	67.04
1999	43	68	20	570	1.66	1.72	1.60	1.26	71.38	78.67	46.57	63.98
2000	49	81	26	629	1.64	1.67	1.63	1.29	60.57	24.67	47.00	64.37
2001	60	77	52	478	1.53	1.66	1.48	1.32	43.37	50.50	51.68	74.69
2002	115	194	45	400	1.31	1.13	1.46	1.33	57.01	76.29	62.80	71.57
2003	102	203	30	411	1.33	1.15	1.46	1.34	57.97	65.93	44.23	83.02
2004	108	226	40	505	1.35	1.16	1.45	1.29	50.67	90.13	41.95	57.57
2005	133	258	52	554	1.26	1.13	1.34	1.28	51.85	56.94	26.15	62.68
2006	149	263	79	597	1.25	1.10	1.35	1.23	50.49	106.94	46.50	60.35
Average	63	109	30	468	1.56	1.63	1.54	1.24	63.08	106.94	41.57	64.92

Panel B Cont'd

	ICI			
Year	Religious	Church	Non-Church	Secular
1993	0.118	-	0.118	0.073
1994	0.212	0.586	0.118	0.086
1995	0.162	0.206	0.119	0.091
1996	0.091	0.098	0.085	0.083
1997	0.098	0.119	0.084	0.089
1998	0.090	0.095	0.087	0.087
1999	0.143	0.143	0.142	0.092
2000	0.104	0.067	0.122	0.087
2001	0.098	0.110	0.094	0.091
2002	0.113	0.114	0.113	0.097
2003	0.105	0.109	0.101	0.091
2004	0.118	0.117	0.119	0.086
2005	0.115	0.089	0.125	0.093
2006	0.123	0.106	0.129	0.094
Average	0.121	0.151	0.111	0.089

Table 4.2
Fund flow and past performance

This table reports the coefficients of the monthly panel regression of the general form: $NMG_{i,t} = \beta_0 + \beta_1 RET_{i,t-1} + \beta_2 NEGDUM*RET_{i,t-1} + \beta_3 \log(TNA_{i,t-1}) + \beta_4 \log(AGE_{i,t-1}) + \beta_5 TO_{i,t-12} + \beta_6 EXP_{i,t-12} + \beta_7 SD_{i,t-1} + \beta_8 NMG_{i,t-1} + \varepsilon_{i,t}$. Sample period is Jan 1993 to Dec 2006. Column (1)-(4) report the results for religious funds while column (5)-(8) report the results for secular socially responsible funds. NMG is the new money growth of the fund computed as $(TNA_{i,t} - TNA_{i,t-1}(1 + RET_{i,t}))/ TNA_{i,t-1})$. $RET_{i,t-1}$ is the raw monthly returns of the fund in the previous month. NEGDUM is a dummy that takes on unity if $RET_{i,t-1}<0$, and zero otherwise. $TNA_{i,t-1}$ is the total net assets of the fund lagged by one month. $AGE_{i,t-1}$ is the fund's age (in months) lagged by one month. $EXP_{i,t-12}$ is the annual expense ratio lagged by 12 months. $TO_{i,t-12}$ is the annual turnover ratio lagged by 12 months. $SD_{i,t-1}$ is the standard deviation of fund returns over the past 24 months up to month t-1. Year dummies are included. Standard errors are clustered by fund for OLS regressions. Fama-Macbeth regressions are run each month and the estimates are averaged across the sample period. P-values are reported in parenthesis. NMG is winsorized at 2.5% and 97.5%. ***,**,* represent 1%, 5%, and 10% significance level, respectively.

	Dependent variable is monthly new money growth							
	Religious Funds				**Secular Socially Responsible Funds**			
	OLS		FAMA-MACBETH		OLS		FAMA-MACBETH	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$RET_{i,t-1}$	0.0427	0.0383	-0.0424	0.1755	**0.1779**	**0.2444**	**0.2833**	**0.6070**
	[0.121]	[0.616]	[0.695]	[0.572]	**[0.000]*** **	**[0.000]*** **	**[0.000]*** **	**[0.001]*** **
NEGDUM		0.0105		0.2433		**-0.1650**		-0.3878
$*RET_{i,t-1}$								
		[0.939]		[0.785]		**[0.001]*** **		[0.241]
$Log(TNA_{i,t-1})$	-0.0036	-0.0036	-0.0028	-0.0028	-0.0021	-0.0022	-0.0033	-0.0032
	[0.000]***	[0.000]***	[0.649]	[0.651]	[0.000]***	[0.000]***	[0.000]***	[0.000]***
$Log(AGE_{i,t-1})$	-0.0048	-0.0048	-0.0087	-0.0091	-0.0084	-0.0082	-0.0120	-0.0121
	[0.010]***	[0.010]**	[0.040]**	[0.034]**	[0.000]***	[0.000]***	[0.000]***	[0.000]***
TURNOVER $_{i,t-12}$	-0.0015	-0.0014	0.0051	0.0053	-0.0026	-0.0030	-0.0064	-0.0065
	[0.569]	[0.569]	[0.215]	[0.204]	[0.083]*	[0.041]**	[0.000]***	[0.000]***
EXPENSES $_{i,t-12}$	-0.0826	-0.0779	0.1550	0.1710	0.0067	-0.0081	0.0497	0.0328
	[0.836]	[0.846]	[0.425]	[0.391]	[0.962]	[0.954]	[0.747]	[0.839]
$NMG_{i,t-1}$	0.3240	0.3241			0.3228	0.3212		
	[0.000]***	[0.000]***			[0.000]***	[0.000]***		
INTERCEPT	0.0400	0.0401	0.0552	0.0573	0.0547	0.0520	0.0804	0.0799
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Obs	2798	2798	2800	2800	11484	11484	11488	11488
R-squared	0.248	0.248	0.065	0.034	0.246	0.247	0.099	0.084
# groups	-	-	168	168	-	-	168	168
# funds	38	38	38	38	79	79	79	79
Clustered by Fund	Yes	Yes	-	-	Yes	Yes	-	-

Table 4.3
Differences in flow-performance sensitivity for church funds

This table reports the coefficients of the monthly panel regression of the general form: $NMG_{i,t} = \beta_0 + \beta_1 RET_{i,t-1} + \beta_2 NEGDUM_{i,t-1}*RET_{i,t-1} + \beta_3 CHURCH_i*RET_{i,t-1} + \beta_4 CHURCH_i* NEGDUM_{i,t-1}*RET_{i,t-1} + \beta_5 CHURCH_i + \beta_6 log(TNA_{i,t-1}) + \beta_7 log(AGE_{i,t-1}) + \beta_8 TO_{i,t-12} + \beta_9 EXP_{i,t-12} + \beta_{10} NMG_{i,t-1} + \varepsilon_{i,t.}$ The sample consists of religious funds for the period Jan 1993 to Dec 2006. NMG (%) is the new money growth of the fund computed as $TNA_{i,t} - TNA_{i,t-1}(1 + RET_{i,t}))/ TNA_{i,t-1}$. $RET_{i,t-1}$ is the raw monthly returns of the fund in the previous month. $NEGDUM_{i,t-1}$ is a dummy that takes on unity if $RET_{i,t-1}<0$, and zero otherwise. $CHURCH_i$ is a dummy that takes on unity if the religious fund is managed and distributed by churches, and zero otherwise. $TNA_{i,t-1}$ is the total net assets of the fund lagged by one month. $AGE_{i,t-1}$ is the fund's age (in months) lagged by one month. $EXP_{i,t-12}$ is the annual expense ratio lagged by 12 months. $TO_{i,t-12}$ is the annual turnover ratio lagged by 12 months. Monthly time fixed effects are included. Standard errors are clustered by fund for OLS regressions. Fama-Macbeth regressions are run each month and the estimates are averaged across the sample period. P-values are reported in parenthesis. NMG is winsorized at 2.5% and 97.5%. ***,**,* represent 1%, 5%, and 10% significance level, respectively.

	Dependent variable is monthly new money growth			
	Religious Funds			
	OLS		FAMA-MACBETH	
	(1)	(2)	(3)	(4)
$RET_{i,t-1}$	0.0416	0.0132	0.0243	0.0944
	[0.132]	[0.865]	[0.841]	[0.688]
$NEGDUM*RET_{i,t-1}$		0.0624		1.7146
		[0.649]		[0.416]
$CHURCH_i*RET_{i,t-1}$	-0.0011	0.1081	**-0.2621**	0.1517
	[0.979]	[0.129]	**[0.019]****	[0.492]
$CHURCH_i*NEGDUM*RET_{i,t-1}$		**-0.2136**		**-1.0722**
		[0.061]*		**[0.044]****
$CHURCH_i$	-0.0031	-0.0059	-0.0001	-0.0038
	[0.277]	[0.068]*	[0.973]	[0.404]
$Log(TNA_{i,t-1})$	-0.0031	-0.0032	-0.0045	-0.0044
	[0.002]***	[0.002]***	[0.474]	[0.488]
$Log(AGE_{i,t-1})$	-0.0049	-0.0047	-0.0074	-0.0068
	[0.005]***	[0.008]***	[0.096]*	[0.135]
$TURNOVER_{i,t-12}$	-0.0015	-0.0013	0.0071	0.0067
	[0.560]	[0.591]	[0.093]*	[0.118]
$EXPENSES_{i,t-12}$	-0.1124	-0.1319	0.0119	-0.0173
	[0.779]	[0.740]	[0.952]	[0.936]
$NMG_{i,t-1}$	0.3210	0.3206		
	[0.000]***	[0.000]***		
INTERCEPT	0.0405	0.0413	0.0571	0.0552
	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Obs	2798	2798	2800	2800
R-squared	0.249	0.250	0.060	0.004
# groups	-	-	168	168
# funds	38	38	38	38
Clustered by Fund	Yes	Yes	-	-

Table 4.4
Transformed Sharpe Ratio

This table presents the transformed difference of the Sharpe Ratio between two portfolios according to Jobson and Korkie (1981). RELIGIOUS - MKT represents the difference in Sharpe Ratio between the religious portfolio and the market portfolio. SECULAR - MKT represents the difference in Sharpe ratio between the secular socially responsible portfolio and the market portfolio. CHURCH - MKT represents the difference in Sharpe ratio between the church religious portfolio and the market portfolio. NON-CHURCH - MKT represents the difference in Sharpe Ratio between the non-church religious SRMF and the market portfolio. Market portfolios are (i) the CRSP value-weighted market index in Panel A, (ii) the S&P500 total return index in Panel B, and (iii) the DS 400 index in Panel C. The average excess return for each portfolio is computed as the raw returns less the 30-days t-bill rate over the sample period Jan 1993 to Dec 2006. Z-statistics are reported. ***, **, * indicate significance at the 1%, 5% and 10% level respectively.

Panel A: CRSP value-weighted market index as market portfolio

	RELIGIOUS-MKT	SECULAR-MKT	CHURCH-MKT	NON-CHURCH-MKT
$\hat{SR}_{ab}$	**-7.51E-05****	-3.98E-05	**-6.73E-05****	**-1.18E-04****
$\sqrt{\varphi}$	**3.74E-05**	3.80E-05	**3.13E-05**	**4.91E-05**
Z	**-2.004**	-1.045	**-2.150**	**-2.395**

Panel B: S&P 500 total return index as market portfolio

	RELIGIOUS-MKT	SECULAR-MKT	CHURCH-MKT	NON-CHURCH-MKT
$\hat{SR}_{ab}$	**-7.03E-05*****	-5.04E-05	**-7.13E-05*****	**-1.25E-04****
$\sqrt{\varphi}$	**2.49E-05**	3.31E-05	**2.32E-05**	**6.29E-05**
Z	**-2.829**	-1.531	**-3.074**	**-1.995**

Panel C: DS 400 index as market portfolio

	RELIGIOUS-MKT	SECULAR-MKT	CHURCH-MKT	NON-CHURCH-MKT
$\hat{SR}_{ab}$	-6.66E-05	-4.55E-05	**-7.14E-05***	-1.25E-04
$\sqrt{\varphi}$	6.65E-05	4.10E-05	**3.81E-05**	8.09E-05
Z	-1.00	-1.111	**-1.874**	-1.545

Table 4.5
Industry concentration index

This table examines the industry concentration index (ICI) of religious and secular socially responsible funds. Dependent variable is the ICI of each fund constructed following the approach of Kacperczyk, Sialm and Zheng (2005). Religious is a dummy variable that takes on unity if the fund is a religious fund, and zero otherwise. Church is a dummy variable that takes on unity if the fund is sponsored by churches, and zero otherwise. The time unit is a quarter. Turnover is the turnover ratio of the fund lagged by one year. EXPENSE is the expense ratio of the fund lagged by one year. SIZE is the natural logarithm of total net assets summed across all share classes of the fund lagged by one quarter. AGE is the natural logarithm of fund age in months lagged by one quarter. SD is the standard deviation of monthly fund returns over the past six quarters up to the previous quarter. Year dummies are included to control for time variation. For OLS regressions in Column (1) and (2), standard errors are clustered by fund. Column (3) and (4) report the results for Fama-Macbeth regressions. Sample period is Jan 1993 to Dec 2006. ***, **, * indicate significance at the 1%, 5% and 10% level respectively.

	Dependent variable is the fund ICI			
	OLS		**Fama-Macbeth**	
	(1)	(2)	(3)	(4)
RELIGIOUS	**0.019**	0.017	**0.017**	**0.014**
	[0.081]*	[0.149]	**[0.000]*****	**[0.002]*****
CHURCH		0.005		0.018
		[0.794]		[0.118]
$TURNOVER_{t-4}$	0.004	0.004	0.008	0.007
	[0.467]	[0.541]	[0.000]***	[0.004]***
$EXPENSE_{t-4}$	-1.906	-1.918	-1.209	-1.259
	[0.048]**	[0.047]**	[0.000]***	[0.000]***
$LOG(SIZE_{t-1})$	-0.008	-0.008	-0.009	-0.009
	[0.004]***	[0.004]***	[0.000]***	[0.000]***
$LOG(AGE_{t-1})$	-0.001	-0.000	0.004	0.005
	[0.934]	[0.942]	[0.036]**	[0.011]**
SD_{t-1}	0.333	0.328	0.446	0.269
	[0.066]*	[0.070]*	[0.003]***	[0.042]**
INTERCEPT	0.130	0.131	0.109	0.111
	[0.000]***	[0.000]***	[0.000]***	[0.000]***
R-squared	0.122	0.122	0.092	0.097
# obs	2216	2216	2216	2216

Table 4.6
Buy-and-hold portfolio returns relative to market index returns

This table uses simple t-tests to examine the monthly return differences for a fund portfolio minus the market index. In Panel A, the fund portfolios are (i) an equally-weighted portfolio of religious funds in column (1) to (3), and (ii) an equally-weighted portfolio of secular socially responsible funds in column (4) to (6). In Panel B, the fund portfolios are (i) an equally-weighted portfolio of church religious funds in column (1) to (3), and (ii) an equally-weighted portfolio of non-church religious funds in column (4) to (6). Market indexes are (i) the CRSP value-weighted market index, (ii) the S&P 500 total return index, and (iii) the DS 400 index. Sample period is from Jan 1993 to Dec 2006. P-values are reported. ***, **, * indicate significance at the 1%, 5% and 10% level respectively.

Panel A: Religious and secular socially responsible funds

	Religious Funds			**Secular Socially Responsible Funds**		
	(1)	(2)	(3)	(4)	(5)	(6)
	CRSP Market Index Returns	S&P500 Total Returns	DS400 Returns	CRSP Market Index Returns	S&P500 Total Returns	DS400 Returns
Monthly Returns Difference	**-0.23%**	-0.22%	-0.24%	-0.089%	-0.079%	-0.095%
P-value	**0.017****	0.106	0.117	0.105	0.413	0.409
# Obs	168	168	168	168	168	168
# funds	38	38	38	79	79	79

Panel B: Church and non-church religious funds

	Religious Funds					
	Church Religious Funds			**Non-Church Religious Funds**		
	(1)	(2)	(3)	(4)	(5)	(6)
	CRSP Market Index Returns	S&P500 Total Returns	DS400 Returns	CRSP Market Index Returns	S&P500 Total Returns	DS400 Returns
Monthly Returns Difference	**-0.42%**	**-0.42%**	**-0.45%**	**-0.20%**	-0.19%	-0.21%
P-value	**0.020****	**0.015****	**0.024****	**0.083***	0.263	0.247
# Obs	168	168	168	168	168	168
# funds	13	13	13	25	25	25

Table 4.7
Performance analysis using unconditional factor model

This table presents the performance results using the four-factor model for (i) an equally-weighted portfolio of religious funds in column (1) to (4), and (ii) an equally-weighted portfolio of secular socially responsible funds in column (5) to (8). The four-factor model loads on the value-weighted market index net of risk-free rate, the size (SMB) factor, the book-to-market (HML) factor, and the momentum factor (UMD). Market indexes are (i) the CRSP value-weighted market index, (ii) the S&P 500 total return index, and (iii) the DS 400 index. Dependent variable is the monthly portfolio returns net of the risk-free rate. Sample period is from Jan 1993 to Dec 2006. Alpha is the risk and style-adjusted abnormal monthly return. Robust standard errors are used. P-values are indicated in brackets. ***, **, * indicate significance at the 1%, 5% and 10% level respectively.

	Dependent variable is the monthly portfolio returns net of risk-free rate					
	Religious Portfolio			**Secular Socially Responsible Portfolio**		
	(1)	(2)	(3)	(4)	(5)	(6)
ALPHA (%)	**-0.21** **[0.009]*** **	**-0.25** **[0.003]*** **	**-0.24** **[0.023]** **	-0.06 [0.219]	**-0.12** **[0.019]** **	-0.11 [0.171]
$MKTRF_t$	0.8543 [0.000]***			0.9345 [0.000]***		
$SP500RF_t$		0.8581 [0.000]***			0.9464 [0.000]***	
$DS400RF_t$			0.8040 [0.000]***			0.8929 [0.000]***
SMB_t	0.1477 [0.000]***	0.3206 [0.000]***	0.3236 [0.000]***	0.0826 [0.000]***	0.2733 [0.000]***	0.2781 [0.000]***
HML_t	0.0299 [0.293]	0.0139 [0.656]	0.0561 [0.156]	0.0540 [0.002]***	0.0411 [0.056]*	0.0919 [0.005]***
UMD_t	0.0273 [0.080]*	0.0528 [0.006]***	0.0323 [0.202]	-0.0192 [0.079]*	0.0102 [0.423]	-0.0112 [0.578]
Obs	168	168	168	168	168	168
R-Squared	0.933	0.919	0.883	0.977	0.973	0.942
# funds	38	38	38	79	79	79

Table 4.8

Performance differences between religious and secular socially responsible funds

This table presents the performance differences between an equally-weighted portfolio of religious funds and an equally-weighted portfolio of secular socially responsible funds using the four-factor model. The four-factor model loads on the value-weighted market index net of risk-free rate, the size (SMB) factor, the book-to-market (HML) factor, and the momentum factor (UMD). Market indexes are (i) the CRSP value-weighted market index, (ii) the S&P 500 total return index, and (iii) the DS 400 index. Dependent variable is the difference in monthly returns between the religious portfolio and the secular socially responsible portfolio. Sample period is from Jan 1993 to Dec 2006. Alpha is the risk and style-adjusted abnormal monthly return of the difference portfolio. Robust standard errors are used. P-values are indicated in brackets. ***, **, * indicate significance at the 1%, 5% and 10% level respectively.

Dependent variable is the difference in monthly portfolio returns (Religious minus Secular)			
	(1)	(2)	(3)
ALPHA (%)	**-0.15 [0.054]***	**-0.14 [0.077]***	**-0.13 [0.090]***
$MKTRF_t$	-0.0801 [0.000]***		
$SP500RF_t$		-0.0883 [0.000]***	
$DS400RF_t$			-0.0889 [0.000]***
SMB_t	0.0652 [0.000]***	0.0473 [0.011]**	0.0455 [0.014]**
HML_t	-0.0241 [0.362]	-0.0273 [0.300]	-0.0359 [0.192]
UMD_t	0.0466 [0.001]***	0.0426 [0.002]***	0.0435 [0.001]***
Obs	168	168	168
R-Squared	0.220	0.232	0.239

Table 4.9
Performance of church and non-church religious funds using unconditional factor model

This table presents the performance results for an equally-weighted portfolio of church religious funds in Column (1)-(3) and an equally-weighted portfolio of non-church religious funds in Column (4)-(6). A religious fund is classified as a church fund if the fund is sponsored by churches, and a non-church fund otherwise. Dependent variable is the monthly portfolio returns minus the risk-free rate. The four-factor model loads on the value-weighted market index net of risk-free rate (MKTRF), the size (SMB) factor, the book-to-market (HML) factor and the momentum factor (UMD). Market indexes are (i) the CRSP value-weighted market index, (ii) the S&P 500 total return index, and (iii) the DS 400 index. Sample period is from Jan 1993 to Dec 2006. Alpha is the risk and style-adjusted abnormal monthly return. Robust standard errors are used. Robust standard errors are used. P-values are indicated in brackets. ***, **, * indicate significance at the 1%, 5% and 10% level respectively.

	Dependent variable is monthly portfolio returns net of risk-free rate					
	Church Religious Funds			Non-Church Religious Funds		
	(1)	(2)	(3)	(5)	(6)	(7)
ALPHA (%)	**-0.18 [0.015]****	**-0.21 [0.004]*****	**-0.21 [0.012]****	**-0.26 [0.008]*****	**-0.30 [0.004]*****	**-0.28 [0.027]****
$MKTRF_t$	0.5670 [0.000]***			0.9702 [0.000]***		
$SP500RF_t$		0.5744 [0.000]***			0.9715 [0.000]***	
$DS400RF_t$			0.5386 [0.000]***			0.9074 [0.000]***
SMB_t	0.0121 [0.623]	0.1275 [0.000]***	0.1306 [0.000]***	0.2155 [0.000]***	0.4111 [0.000]***	0.4139 [0.000]***
HML_t	0.1252 [0.000]***	0.1166 [0.000]***	0.1452 [0.000]***	-0.0206 [0.526]	-0.0406 [0.280]	0.0052 [0.913]
UMD_t	-0.0406 [0.008]***	-0.0236 [0.117]	-0.0366 [0.047]**	0.0497 [0.012]**	0.0779 [0.001]***	0.0543 [0.079]*
Obs	155	155	155	168	168	168
R-Squared	0.892	0.890	0.845	0.932	0.916	0.880
# funds	13	13	13	25	25	25

Table 4.10
Performance differences between church and non-church funds

This table presents the performance differences between an equally-weighted portfolio of church funds and an equally-weighted portfolio of non-church funds using the four-factor model. The four-factor model loads on the value-weighted market index net of risk-free rate, the size (SMB) factor, the book-to-market (HML) factor, and the momentum factor (UMD). Market indexes are (i) the CRSP value-weighted market index, (ii) the S&P 500 total return index, and (iii) the DS 400 index. Dependent variable is the difference in monthly returns between the church portfolio and the non-church portfolio. Sample period is from Jan 1993 to Dec 2006. Alpha is the risk and style-adjusted abnormal monthly return of the difference portfolio. Robust standard errors are used. P-values are indicated in brackets. ***, **, * indicate significance at the 1%, 5% and 10% level respectively.

Dependent variable is the difference in monthly portfolio returns (Church minus Non-Church)			
	(1)	(2)	(3)
ALPHA (%)	0.089 [0.440]	0.101 [0.394]	0.097 [0.431]
$MKTRF_t$	-39.455 [0.000]***		
$SP500RF_t$		-38.894 [0.000]***	
$DS400RF_t$			-36.272 [0.000]***
SMB_t	-19.867 [0.000]***	-27.646 [0.000]***	-27.805 [0.000]***
HML_t	14.970 [0.001]***	16.258 [0.000]***	14.470 [0.003]***
UMD_t	-7.956 [0.004]***	-8.903 [0.003]***	-7.980 [0.010]***
Obs	155	155	155
R-Squared	0.759	0.745	0.727

Table 4.11
Multivariate analysis of fund performance

This table examines the abnormal performance of religious funds relative to the secular socially responsible funds using a panel framework. Dependent variable is the alpha (%) computed using the four-factor model with the factor loadings estimated on a rolling basis using 24 months of lagged fund returns. Religious is a dummy variable that takes on unity if the fund is a religious fund, and zero otherwise. The time unit is one month. Turnover is the turnover ratio of the fund lagged by one year. EXPENSE is the expense ratio of the fund lagged by one year. SIZE is the natural logarithm of total net assets summed across all share classes of the fund lagged by one month. AGE is the natural logarithm of fund age in months lagged by one month. SD is the standard deviation of monthly fund returns over the past 24 months up to the previous month. Year dummies are included to control for time variation. For OLS regressions in Column (1) to (3), standard errors are clustered by fund. In Column (4) to (6), the Fama-Macbeth regressions are presented. Sample period is Jan 1993 to Dec 2006. ***, **, * indicate significance at the 1%, 5% and 10% level respectively.

	Dependent variable is the alpha (%) computed using four-factor model					
	OLS			**Fama-Macbeth**		
	(1)	(2)	(3)	(4)	(5)	(6)
RELIGIOUS	**-0.139**	**-0.141**	**-0.140**	**-0.178**	**-0.177**	**-0.190**
	[0.072]*	**[0.070]***	**[0.082]***	**[0.071]***	**[0.072]***	**[0.055]***
$TURNOVER_{t-12}$	-0.025	-0.016	-0.016	-0.013	-0.008	-0.005
	[0.504]	[0.678]	[0.680]	[0.852]	[0.910]	[0.948]
$EXPENSE_{t-12}$	-12.816	-12.225	-12.050	-4.902	-4.770	-4.527
	[0.046]**	[0.058]*	[0.062]*	[0.531]	[0.539]	[0.558]
$LOG(SIZE_{t-1})$	-0.053	-0.056	-0.058	-0.065	-0.067	-0.070
	[0.002]***	[0.001]***	[0.000]***	[0.004]***	[0.003]***	[0.002]***
$LOG(AGE_{t-1})$	0.008	0.017	0.023	0.074	0.076	0.084
	[0.854]	[0.695]	[0.602]	[0.112]	[0.099]*	[0.062]*
$STDEV_{t-11}$	1.611	1.409	0.975	-1.053	-1.021	-0.715
	[0.549]	[0.613]	[0.743]	[0.779]	[0.787]	[0.851]
INTERCEPT	0.241	0.223	0.345	-0.020	-0.029	-0.041
	[0.318]	[0.355]	[0.166]	[0.933]	[0.900]	[0.851]
#obs	7490	7490	7490	7490	7490	7490
R-squared	0.006	0.006	0.014	0.001	0.001	0.001
Market index used in computing alpha	CRSP Market Index	S&P 500 Total Return	DS 400 Returns	CRSP Market Index	S&P 500 Total Return	DS 400 Returns

Table 4.12

Multivariate analysis of fund performance and industry concentration

This table examines the abnormal performance of religious funds relative to the secular socially responsible funds conditioned on the industry concentration of the fund. Dependent variable is the alpha (%) computed using the four-factor model with the factor loadings estimated on a rolling basis using 24 months of lagged fund returns. Religious is a dummy variable that takes on unity if the fund is a religious fund, and zero otherwise. The industry concentration index (ICI) of each fund is constructed following the approach of Kacperczyk, Sialm and Zheng (2005). The time unit is one quarter. Turnover is the turnover ratio of the fund lagged by one year. EXPENSE is the expense ratio of the fund lagged by one year. SIZE is the natural logarithm of total net assets summed across all share classes of the fund lagged by one quarter. AGE is the natural logarithm of fund age in months lagged by one quarter. SD is the standard deviation of monthly fund returns over the past six quarters up to the previous quarter. Year dummies are included to control for time variation. For OLS regressions in Column (1) to (3), standard errors are clustered by fund. In Column (4) to (6), the Fama-Macbeth regressions are presented. Sample period is Jan 1993 to Dec 2006. ***, **, * indicate significance at the 1%, 5% and 10% level respectively.

	Dependent variable is the alpha (%) computed using four-factor model					
	OLS			**Fama-Macbeth**		
	(1)	(2)	(3)	(4)	(5)	(6)
RELIGIOUS	0.256	0.285	0.199	0.111	0.109	0.086
	[0.326]	[0.293]	[0.503]	[0.724]	[0.728]	[0.784]
ICI_{t-1}	1.236	1.211	0.797	1.523	1.593	1.496
	[0.188]	[0.200]	[0.417]	[0.179]	[0.161]	[0.206]
RELIGIOUS* ICI_{t-1}	**-3.684**	**-3.850**	-2.998	-1.891	-1.893	-1.786
	[0.045]**	**[0.046]****	[0.157]	[0.571]	[0.574]	[0.598]
$TURNOVER_{t-12}$	-0.166	-0.163	-0.169	-0.231	-0.234	-0.245
	[0.076]*	[0.081]*	[0.065]*	[0.083]*	[0.078]*	[0.062]*
$EXPENSE_{t-12}$	12.474	10.604	7.860	25.850	24.951	22.255
	[0.279]	[0.351]	[0.472]	[0.086]*	[0.096]*	[0.144]
$LOG(SIZE_{t-1})$	-0.092	-0.093	-0.095	-0.072	-0.074	-0.071
	[0.003]***	[0.002]***	[0.001]***	[0.057]*	[0.048]**	[0.050]**
$LOG(AGE_{t-1})$	0.094	0.093	0.077	0.112	0.110	0.095
	[0.216]	[0.225]	[0.286]	[0.152]	[0.156]	[0.209]
$STDEV_{t-11}$	-2.686	-1.539	-1.337	-12.466	-12.486	-10.660
	[0.659]	[0.812]	[0.839]	[0.072]*	[0.079]*	[0.133]
INTERCEPT	-0.262	-0.120	0.392	-0.185	-0.153	0.093
	[0.607]	[0.817]	[0.441]	[0.695]	[0.739]	[0.835]
#obs	2147	2147	2147	2147	2147	2147
R-squared	0.035	0.039	0.063	0.001	0.000	0.000
Market index used in computing alpha	CRSP Market Index	S&P 500 Total Return	DS 400 Returns	CRSP Market Index	S&P 500 Total Return	DS 400 Returns

CHAPTER 5

Conclusion

5.1 Summary

In Chapter Two and Three, I posit and find strong evidence that managerial controlling power has direct wealth implications on the firm's suppliers because of the ability of management to protect implicit agreements with suppliers. Using complete loss of managerial power under management turnover in Chapter Two, and partial control loss of management through the use of stock financing in mergers in Chapter Three, I find strong evidence that control dilution of management has a large negative wealth impact on the firm's suppliers, especially under circumstances where suppliers are most vulnerable to breach of implicit contracts.

In Chapter Four, I find that the average investor in religious funds exhibits flat flow-to-performance sensitivity, as would be predicted by the doctrine of religious loyalty. Furthermore, religious funds sponsored by churches experience positive fund flows when past return is negative. Religious funds under-perform major market indices and the secular socially responsible funds by at least -0.13% per month. The average religious

fund also has a higher industry concentration than the average secular socially responsible fund, and the poor performance of religious funds is related to their industry concentration. Lastly, I find no evidence that church's sponsorship affect fund concentration and performance.

5.2 Future Work

As mentioned in Chapter One, the area of managerial controlling power and wealth implications on stakeholders is relatively under-explored. In future work, I plan to examine how the governance structures of a firm can affect relationship-specific investments by suppliers. The difficulty in such a study comes from the endogeneity of anti-takeover provision adoptions. It is my goal to explore new methodologies that can address this endogeneity problem.

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