Unpleasant shocks or welcome surprises? What information is conveyed in merger announcements?

Author: Ayse Basak Tanyeri
Boston College

The Carroll Graduate School of Management

Department of Finance

UNPLEASANT SHOCKS OR WELCOME SURPRISES? WHAT INFORMATION IS CONVEYED IN MERGER ANNOUNCEMENTS?

a dissertation by

AYSE BASAK TANYERI

submitted in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy in Finance

August, 2006

[This digitized version of a dissertation is based on a departmental copy, which may or may not be the same version as the one approved by the student's doctoral committee.]
Acknowledgements

I am indebted to my dissertation committee chair, Edward J. Kane, for his invaluable mentoring throughout my years of study at Boston College. I am thankful to my committee members, Hassan Tehranian and Phil Strahan, for their encouragement and guidance. I am grateful to my parents, Ibrahim and Ergul Tanyeri, and my brother, Onur Tanyeri, for all their unwavering support during the past six years.
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Dissertation advisor: EDWARD J. KANE

Abstract

This paper investigates two issues: how much merger announcements surprise the market and what market responses to the announcement reveal about the motives underlying the proposed deal. Using a simultaneous-equations framework, we model investor anticipations in the first equation and abnormal returns in the second equations. Our analysis indicates that investors can successfully predict bidders but not target candidates. Cumulative abnormal returns to bidders whose candidacy was widely anticipated in the market prove significantly larger in magnitude than returns to bidders whose candidacy wasn’t anticipated. Bidder abnormal returns differ insignificantly from zero when market expectations are met, whereas bidder returns prove significantly positive when markets are surprised that the firm made a bid. This favorable market response to the surprise in bidder identity suggests that to an important extent managerial merger motives serve shareholder interests.
Acknowledgements

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1 Introduction

1.1 Statement of Purpose

This dissertation investigates market responses to the information conveyed in merger announcements. To this end, this study addresses two research questions. How much merger announcements surprise the market? What do market responses to announcement surprises reveal about managerial motives that drive mergers?

If outside forces randomly selected the firms that propose and receive bids, merger announcements would be exogenous. Consequently, market responses to mergers announced by the outside force would measure nothing but the complete effect of the merger disclosure on bidder and target shareholder wealth. However, managers, not outside forces, decide whether and when their firms propose or solicit a merger bid. The managerial decision to propose or solicit a bid is not random. The information managers have about firm operations and prospects feeds into managerial motives -motives to generate shareholder value and opportunistic benefits - to shape the decision of whether, with whom, and when to merge. Opportunistic benefits are any monetary or nonmonetary consequences of managerial decisions that increase utility of the manager and decrease shareholder wealth.

Investors know that managers choose to merge when and only when it serves managerial interests. Investors evaluate firm, industry and management characteristics that may motivate mergers to assess both the likelihood of mergers and the effect of mergers on shareholder value. Investor anticipations about bidder and target candidacy
concern the extent to which markets successfully predict the identity of bidder and target candidates and the timing of merger announcements. The counterpart of investor anticipations -- announcement surprises -- concerns the extent to which markets cannot predict the identities of the merger partners and the timing of announcements.

A crucial assumption of event studies is that analysts can identify a short window of time in which the market learns event-related information. Investor anticipations mean that some of the merger-related information is stale at the time of announcements. In an informationally efficient market, share prices incorporate new information rationally and instantaneously. In such markets, share prices incorporate the expected impact of anticipated mergers prior to the announcements (Schipper and Thompson, 1983; Asquith, et al., 1983; Malatesta and Thompson, 1985). To the extent that a merger is anticipated, bidder and target returns around merger announcements do not reflect market responses to all information that announcements convey. Stock price changes reflect market responses to new information that wasn’t anticipated prior to the announcement.

This study begins by estimating investor anticipations about bidder and target candidacy and developing a measure of announcement surprises. The larger the announcement surprise, the more information the announcement reveals about previously unobservable motives of management. Then, this study investigates market responses to information about previously unobservable motives.

Investors evaluate the new information that announcements reveal and price post-announcement enterprises. To price enterprises, investors would like to understand the motives driving managerial decisions and have access to all information available to
management. Managers’ unique position as decision makers provides them with “private” information about business prospects (Myers and Majluf, 1984). Managerial private information and motives are, by definition, not publicly known. However, investors do observe managerial decisions, which investors presume to be based on managerial motives and private information.

Mergers are investment decisions from which investors can learn about managerial private information and motives. Merger announcements reveal bidder and target managerial preferences to join forces. To be unanticipated, information must throw light on previously unobservable information and motives of management. If investors judge the net effect of the unanticipated information to be detrimental to shareholder wealth, returns around announcements would be negative. If investors evaluate the net effect to benefit shareholders, price changes would be positive. This study seeks to draw conclusions about how faithfully merger motives serve shareholder incentives by analyzing market responses to unanticipated information.

1.2 The endogeneity of investor anticipations and market responses to merger announcements

Investor anticipations and market responses to announcements are endogenous. Investors evaluate the information about previously unobservable motives that announcements reveal to price post-announcement enterprises. Investor anticipations determine how unanticipated this information is. Market responses to announcements and investor anticipations are endogenous since market responses to announcements depend on how unanticipated the information that announcements convey are.
The endogeneity of investor anticipations and market responses means that parameter estimates of a single-equation model of market responses would exhibit simultaneous-equations bias. Heckman (1979) developed a two-stage selection model designed to eliminate this kind of simultaneous-equations bias.

Heckman built his selection model to study the wages women earn. Members of the sample (women who receive wages) choose to work. The choice means there is endogenous self-selection incorporated in the data on wages. The decision to work depends on the wages women can earn. Hence, the decision to work and the wage earned are mutually determined.

We adapt Heckman's two-stage selection model to study investor anticipations and market responses to merger announcements. We imbed market responses to merger announcements in a two-stage framework. The first-stage equations model investor anticipations about bidder and target candidacy. The second-stage equations model market responses to merger announcements.

First-stage equations model the likelihood that a firm proposes and receives at least one bid in the next quarter. We use these models of bidder and target candidacy to study how much a proposed deal surprises the market and to obtain measures of unanticipated information that announcements reveal.

Second-stage equations model market responses to announcements. We identify market responses to merger announcements with abnormal returns around merger announcements. To extract market responses to announcements, and distinguish them from stock price changes due to ordinary operations of the bidder and target candidate,
we need to model “normal returns”. A market model benchmarks normal returns\(^1\). Daily abnormal returns are the difference between observed and normal returns.

The endogeneity of investor anticipations and market responses to announcements means that error terms from the first-stage and second-stage equations are correlated. Heckman’s two-stage selection model relies on the correlation structure in the error terms to eliminate the simultaneous-equations bias using an instrumental variable: Heckman’s lambda.

Second-stage models of abnormal returns use Heckman’s lambda to study market responses to unobservable motives. Algebraically, Heckman’s lambda is an inverse odds ratio calculated from the coefficient estimates of candidacy models. For a bidder candidate, Heckman’s lambda is an inverse transformation of the probability of proposing a bid, whereas for a target candidate, it is an inverse transformation of the probability of receiving a bid. Intuitively, Heckman’s lambda maps into a measure of announcement surprise. The larger the announcement surprise about bidder and target candidacy, the larger are bidder and target Heckman’s lambda, respectively. A large announcement surprise implies that investors foresaw little about managerial motives. The larger the announcement surprise, the more information announcements reveal about motives that are unobservable prior to the announcement.

\(^1\) Brown and Warner (1985) analyze the advantages and disadvantages associated with using different models to benchmark normal returns in event studies.
1.3 Modeling investor anticipations about bidder and target candidacy

Managers may engage in mergers for several reasons. On the one hand, managers may seek merely to generate shareholder value. Theoretical models establish that managers may merge to generate shareholder value by: channeling human and financial capital to better uses; accessing economies of scale and scope; and enhancing market power [Gort (1969); Holmes and Schmitz (1995); Fluck and Lynch (1999); Jovanovic and Rousseau (2002)]. Alternatively, incentive conflicts between managers and shareholders may also motivate mergers by allowing opportunistic managers to generate value for themselves at the expense of shareholders [Jensen and Meckling (1976); Jensen (1986); Datta et al. (2001); Hartzell et al. (2004)].

Two opposing views explore whether and how managers might use mergers financed with overvalued equity either to generate shareholder wealth or to protect opportunistic benefits managers might enjoy. On the one hand, overvalued equity may motivate mergers by enabling managers to generate value for pre-merger shareholders at the expense of post-merger shareholders. Rhodes-Kropf and Viswanathan (2004) and Shleifer and Vishny (2003) argue that managers generate long-run value for pre-merger shareholders by using their overly “expensive” equity to buy targets cheap. In the short run, once investors infer that shares are overvalued, shareholder wealth declines. On the other hand, Jensen (2005) argues that overvaluation intensifies incentive conflicts between managers and shareholders. Hence, overvalued equity may tempt managers to destroy shareholder value in an attempt to protect opportunistic benefits at the expense of
both pre- and post-merger shareholders. This class of mergers destroys shareholder value in both the short and long run.

1.3.1 Summary of findings on investor anticipations

We run cross-sectional probit regressions to estimate separately the likelihood that a firm proposes and receives at least one bid in the next quarter. Each regression incorporates proxies for motives to generate shareholder value and opportunistic benefits.

In our data, proxies for the potential of managers to generate shareholder value and opportunistic benefits prove significantly related to investor anticipations. Investors rely on firm and industry characteristics such as the frequency of merger activity in the industry, prior merger activity of the firm, profitability, cash reserves, and asset size to predict candidacy. Profitable firms with sizable cash balances, experiencing price run-ups, and which engaged in mergers in the past prove significantly more likely to make bids. Profitable firms with small market shares, cash balances, price run-ups, operating in industries with high frequencies of merger activity and which engaged in mergers in the past prove significantly more likely to receive bids.

We find that a mix of motives underlies the merger decision. To capture the extent of investor anticipations fully, we must develop proxies for shareholder value and opportunistic benefits. Focusing on a single characteristic of the firm or the industry (such as whether the firm had prior merger activity or whether the industry is going through a high frequency of merger activity) would underestimate investor anticipations about bidder and target candidacy.
Models of investor anticipations about bidder and target candidacy provide predictions for the probability that a firm proposes or receives at least one bid in the next quarter. The predictive power of our models of bidder candidacy proves higher than the predictive power of our models of target candidacy. The low predictive power of the target-candidacy models suggests either: (i) that investors cannot foresee target candidacy as successfully as they can foresee bidder candidacy, or (ii) that investors can foresee target candidacy as successfully as they can foresee bidder candidacy, but the models do not as adequately portray the predictability of target candidates as they do of bidders.

If investor inability to predict target candidates successfully is driving the low predictive power of the target-candidacy models, then the information that announcements reveal about target candidates is staler than the information they reveal about bidder candidates. The staler the information, the smaller should be market responses in an efficient market. Consequently, on average, market responses to announcements of receiving bids should be more substantial than market responses to announcements of proposing bids.

Surveying merger studies, Jensen and Ruback (1983), Jarrell, Brickley and Netter (1988) and Andrade, Mitchell and Stafford (2001) report that cumulative abnormal returns to target shareholders are substantial (around twenty percent) whereas cumulative abnormal returns to bidder shareholders are approximately 0. Competing bidders and the threat of competitors might explain why target shareholders enjoy significantly higher abnormal returns than bidder shareholders do [Jennings and Mazzeo (1993)]. Roll (1986) suggests that bidder management’s inability to assess correctly the value that mergers
generate (or in Roll’s words “managerial hubris”) may also explain why target abnormal returns are higher.

Evidence that target candidacy is less predictable than bidder candidacy does not totally explain the disparity between target and bidder abnormal returns. However, our finding clarifies that the information announcements convey about targets is staler than the information about bidders. The staler the information, the smaller the market responses should be. Consequently, this asymmetry in investor anticipations about bidder and target candidacy helps to explain why target abnormal returns are larger in magnitude than bidder abnormal returns.

1.4 Modeling market responses to merger announcements

Market responses to merger announcements reflect how price the new information that announcements convey. First, we explain how the second-stage models use Heckman’s lambda to estimate market responses to information about previously unobservable managerial motives. Then, we investigate what market responses to information about unobservable motives imply about how faithfully managers serve shareholder interests.

1.4.1 Heckman’s lambda as a measure of announcement surprises and the information revealed about managerial motives

Bidder and target Heckman’s lambdas represent the degree of surprise about bidder and target candidacy, respectively. The larger the surprises about merger candidacy, the more information announcements convey about motives of management.
To isolate the change in investor expectations about the effect of managerial motives on bidder and target shareholder wealth, the second-stage models of market responses use Heckman's lambda.

Merger motives look to increase shareholder value and opportunistic managerial benefits. We cannot directly disentangle the information about motives to generate shareholder value from the motives to generate opportunistic benefits. The coefficient of Heckman’s lambda estimates market responses to information about unobservable motives. When markets infer managerial motives to focus mostly on the shareholder value that mergers generate, market responses to information about motives should be positive. However, when markets infer that managerial motives predominantly concern opportunistic benefits management reaps through the merger, market responses should be negative.

1.4.2 Information that merger announcements disclose

Merger announcements disclose the provisional intent of bidder and target management to join forces. Joining forces means combining bidder and target businesses into a single enterprise. Combining bidder and target enterprises changes the cash flows previously projected for the separate enterprises. The riskiness of cash flows also figures to change as a result of the merger.

The real-options approach to valuing a firm provides an insightful framework within which to think about whether and how a merger might create or destroy value. Real options give companies that make investments the right, but not the obligation, to
exploit opportunities to make incremental investments (or disinvestments) in the future at lower cost than would have been possible without the current investment.

Prior to a merger announcement, bidder and target management hold respective options (options that are not directly tradable) to acquire and to sell the target firm. The exercise price for these options is the offer price (some combination of stock, cash and other securities) proposed to target shareholders. When and if the merger goes through, pre-merger enterprises cease to exist as independent entities; shareholders relinquish their ownership stake in the pre-merger enterprises. Bidder shareholders trade in their stock in the pre-merger firm and pay the offer price to secure the expected cash flows associated with the post-merger enterprise. Target shareholders sell the target firm for the offer price, a price that may include an ownership stake in the post-merger enterprise.

Exercising merger options changes real options about how to employ post-merger enterprise assets, how to invest in additional real and financial assets, and whether to disinvest in the enterprise’s post-merge assets. What is called “merger fit” depends on the extent to which the change in the distribution of cash flows serves bidder and target shareholder interests. Investors evaluate the merger fit to forecast the shareholder value that the merger generates.

Merger terms and negotiating environment determine how the shareholder value that the merger generates is distributed between bidder and target shareholders. Merger announcements specify the provisional terms of the merger contract. Merger terms enumerate how the bidder and target management plan to carry out the transition from

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2 Smith and Triantis (2001) provide a detailed analysis of merger activity in the real options framework.
operating as stand-alone enterprises to operating as a combined enterprise. The concept of a negotiating environment relates to whether competing bidders are vying for the target, how receptive target management is to a merger and whether target management can resist if they choose.

1.4.3 Regression Strategy

Numerous empirical studies calculate changes in bidder and target stock prices around merger announcements to study market responses to the information these announcements disclose\(^3\). Each merger announcement is unique in the information it discloses about: timing of the merger; firm, management, and industry characteristics of merger partners; terms of the contract; and characteristics of the stock market at the time of the announcement. These empirical studies focus on one particular aspect of the information that merger announcements reveal and investigate how cross-sectional differences in the information disclosed affect bidder and target cumulative abnormal returns. In contrast, this study first determines how stale the information that announcements reveal is before it assesses how the information affects stock prices.

We identify market responses with bidder and target cumulative abnormal returns centered on merger announcements. We measure announcement surprises with Heckman’s lambda. The pecking order theory of Myers and Majluf (1984) predicts that managers of overvalued firms are more likely use equity to finance investment projects, whereas managers of undervalued firms are more likely to use cash. The mix of cash and

equity used might therefore indicate an effort to take advantage of temporary mispricing in share prices. Regressions of bidder and target abnormal returns on Heckman's lambda and an indicator for all-equity deals can test this hypothesis.

Cross-sectional differences in the information disclosed should affect cumulative abnormal returns. We include controls for the merger fit and negotiating environment. Proxies for merger fit include whether the firms are located in the same state, whether the firms operate in the same line of business, and whether the bidder and target are public firms. Proxies for the negotiation environment include whether the target has anti-takeover provisions at the time of the merger bid, whether target management is receptive to a merger, and whether the target is in bankruptcy proceedings at the time of the bid.

1.4.4 Summary of findings on bidder and target abnormal returns

Markets are surprised by merger announcements for small, unprofitable firms that have small price run-ups and cash balances and little prior experience with mergers. Market responses to bids from such firms prove significant and positive. The positive market response implies that investors assess mergers to be positive net present value projects for this type of firms.

We cannot distinguish how the information that announcements convey breaks down between the pursuit of shareholder value or opportunistic benefits. The positive market response implies only that, on balance, unanticipated managerial motives produce value for bidder shareholders.
Markets are surprised by merger announcements for large, unprofitable firms that have large price run-ups and cash balances and whose managers have little prior experience with mergers either personally or in their industry. Market responses to announcements to bids received by these firms prove positive and significant. However, the market responses to target surprises are less significant than those to bidder surprises. Furthermore, the significance of market responses to target surprises is lost in different specifications of the returns regressions. Models of target candidacy perform poorly in predicting target candidates. Consequently, the degree of surprise doesn’t change across deals. Hence, Heckman’s adjustments for surprises are not needed.

1.5 Organization of this study

Chapter 2 reviews related research on merger announcements and explains how this study fits in the literature. Our contribution in this study is threefold: (i) we develop a more complete model of investor anticipations than is available in previous literature; (ii) we analyze what market responses to information about previously unobservable motives mean for how faithfully managers serve shareholder interests and; (iii) we compile a comprehensive sample of merging and nonmerging firms in the period from 1982 to 2004.

Chapter 3 develops the research methods that this study employs and contrasts our research methods with those of prior studies. We then discuss how to adapt Heckman’s two-stage framework to model investor anticipations and market responses to merger announcements. Finally, we describe the regressors our models use.
Chapter 4 begins by describing the sampling procedure for compiling the data on merging and nonmerging firms. Then, the chapter discusses the restrictions that the data-coverage requirements of different databases impose on the sample.

Chapter 5 and 6 estimate the two-stage model. Chapter 5 estimates models of candidacy and compares the predictive power of bidder and target-candidacy models. Using the Chapter 5 regressors to calculate Heckman's measure of surprise as a regressor, Chapter 6 estimates regressions of bidder and target abnormal returns. The focus of the chapter is to evaluate the statistical and economic significance of Heckman's lambda. This analysis seeks to determine what market responses to announcement surprises imply about managerial motives.

Chapter 7 carries out some robustness tests. It analyzes the sensitivity of our findings to different specifications of the two-stage model. The chapter also investigates cross-sectional differences in market responses to announcements.

Chapter 8 summarizes the findings and develops implications. The chapter concludes by identifying opportunities for future research.
2 Related literature and how this study fits in the literature

Previous empirical studies use two approaches to measure investor anticipations about merger activity. The first approach relies on finding a firm or industry characteristic that investors use to distinguish firms, which are more likely to make bids from firms that are not [Schipper and Thompson (1983); Asquith et al. (1983); Malatesta and Thompson (1985); Fuller et al. (2004); Ismail (2005); Song and Walkling (2000 and 2005)]. The second approach relies on predictive models that use characteristics of firm, management and industry to study whether merger activity is predictable [Palepu, (1986); Ambrose and Megginson (1992); Akhigbe et al. (2004)].

We use an alternative approach -- a simultaneous-equations framework -- to investigate investor anticipations and market responses to announcement surprises. In the following analysis, we discuss the different ways in which these studies investigate investor anticipations and contrast our approach with previous research.

2.1 Studies using a firm or industry characteristic to measure investor anticipations

Schipper and Thompson (1983) and Asquith et al. (1983) are the first to study investor anticipations and how investor anticipations change the way we interpret announcement abnormal returns. Following their lead, other studies use a strand of papers uses a single firm or industry characteristic to measure investor anticipations [Malatesta and Thompson (1985); Fuller et al. (2004); Ismail (2005); Song and Walkling (2000 and 2005)]. Schipper and Thompson (1983) and Malatesta and Thompson (1985) focus on the existence of merger programs as a way to identify investor anticipations. Asquith et al.
(1983), Fuller et al. (2004), and Ismail (2005) differentiate between anticipated and unanticipated announcements by looking at the frequency of bids. Song and Walkling (2000 and 2005) measure the time elapsed between subsequent bids in an industry to proxy the surprise associated with merger announcements.

Table 1 describes the sample and methods of the studies which focus on a single characteristic, and summarizes the main findings. Panel A describes the studies which use merger programs, Panel B the studies which use bid frequency, and Panel C the studies which use time elapsed between subsequent bids.

2.1.1 Studies focusing on merger programs


Schipper and Thompson (1983) explain their rationale for focusing on merger programs as “… Share prices of firms which undertake acquisition programs should fully reflect the expected value of those programs as soon as the entire program is announced or anticipated. … once the expected value of an entire acquisition program is capitalized, changes in the value of an acquiring firm surrounding individual merger announcements will reflect only the surprise associated with the terms of the individual mergers.” The authors concentrate on announcements of merger programs since stock price reactions
around program announcements measure the expected value of all mergers in the program more accurately than stock price reactions around individual announcements do.

Schipper and Thompson (1983) scan the financial press, and identify thirty firms listed on NYSE that announced merger programs between 1952 and 1968. Abnormal returns in the announcement month prove positive and statistically significant from zero. Furthermore, positive abnormal returns begin to accumulate about thirty months before the announcements. The authors conjecture that the markets anticipated the announcements.

Schipper and Thompson (1983) could not identify the specific announcements date in most program announcements. Hence, the announcement dates can be interpreted as the dates when the process of policy change towards acquisitions was completed. The absence of accurate announcement dates and the use of long event-windows confound the finding that markets anticipate merger program announcements.

Malatesta and Thompson (1985) develop a model formalizing the intuition that stock price reactions to merger announcements reflect both the economic importance of events and the extent to which events are surprises. Using the model, the authors derive the hypotheses that the economic impact of mergers and expected announcement effect are positive, and that acquisitions are partially anticipated. Malatesta and Thompson (1985) use stock price data for thirty firms that announced merger programs (Schipper and Thompson (1983) sample) to estimate the value of acquisitions made by frequently acquiring firms. Their hypotheses are tested using the parameter estimates of a market
model. The authors find supporting evidence that the economic impact of mergers and expected announcement effect are positive, and that acquisitions are partially anticipated.

Merger announcements resolve uncertainty about: whether there will be a merger; the timing of the merger; and the economic impact of the merger. Malatesta and Thompson (1985) assume that: acquisition programs are perpetual, and are anticipated to yield acquisition attempts at a constant frequency; and the economic impact of each merger attempt is constant. By assumption, Malatesta and Thompson’s model focuses exclusively on the uncertainty about merger timing. Hence, in the context of this model when the authors discuss partial anticipation of announcements, they mean that investors anticipate the timing of announcements.

2.1.2 Studies focusing on frequent bidders

Asquith et al. (1983), Loderer and Martin (1990), Fuller et al. (2004), and Ismail (2005) reason that initial bids in merger programs are much less anticipated than subsequent bids. These studies track the bidding record of firms. The rank of a bid in a merger program is a proxy for whether markets anticipated the bid or not. Similarly, bids of frequent bidders are more anticipated compared to bids of infrequent bidders. The authors expect abnormal returns to more-anticipated announcements to be smaller in magnitude than returns to less-anticipated announcements. Abnormal returns to initial bids in merger programs and bids of infrequent bidders prove significantly larger in magnitude than returns to bids that occur later in the merger program. These studies find evidence supporting the hypotheses that initial bids in merger programs, and bids of infrequent bidders are unanticipated compared to bids of frequent bidders.
Asquith, et al. (1983) sample the 1979 Fortune 1000 firms which made at least one bid between 1955 and 1963. Two-day abnormal returns (starting one day prior and ending on the announcement day) for first bids by frequent bidders are both statistically and economically larger in magnitude than returns to subsequent bids. However, these results are not robust to expanding the event-window.

Loderer and Martin (1990) sample firms, which are not covered on CRSP (Center for Research in Security Prices), that make at least one bid between 1966 and 1984. The authors identify acquisition series, which start after a two-year (or more) of no-acquisition hiatus, and end with an analogous two-year no-acquisition hiatus, for each bidding firm. Six-day abnormal returns (starting five days prior to and ending on the announcement day) to initial bid announcements prove significantly greater in magnitude than returns to subsequent bids.

Fuller et al. (2004) focus on frequent bidders in an attempt to hold bidder characteristics constant while examining the pattern of announcement returns. If the same firm makes different types of acquisitions (with different merger terms) in a short period of time, most of the variation in bidder’s returns is due to factors other than new information about the bidder. The authors sample firms making five or more successful bids within three years between 1990 and 2000 to investigate how returns to bidders making bids for public, private and subsidiary targets, using cash and stock vary by merger terms and target characteristics. Five-day abnormal returns (starting two days prior to and ending two days after the announcement date) to initial bids in the three-year bid series are larger in magnitude than returns to fifth and higher ranked bids. The finding
supports the hypothesis that initial bids are less anticipated and hence, abnormal returns to these bids are larger in magnitude than subsequent bids.

In the same spirit as Fuller et al. (2004), Ismail (2005) compiles bids from frequent bidders to investigate the variation in bidder's returns while holding bidder characteristics constant. Sample bids are compiled from SDC (Security Data Company) merger database. Sample firms are US, public, nonfinancial firms covered in CRSP which propose bids between 1985 and 2004. The author tracks the acquisition history of firms throughout the sample period, rather than focusing on bids made in three years as Fuller et al. (2004) do. Five-day abnormal returns (starting two days prior to and ending two days after the announcement date) to bidders, which do not engage in multiple acquisitions, prove significantly larger than bidders, which do.

2.1.3 Studies focusing on the time elapsed between subsequent bids in the industry

Song and Walkling (2000 and 2005) develop an intuitive measure to distinguish anticipated from unanticipated announcements. The authors name this measure the dormant period, and define it as the length of time (in months) in between succeeding merger bids in and industry. Song and Walkling (2000 and 2005) classify an announcement as “unanticipated” if the dormant period is greater one year, and as “anticipated” if the dormant period is less than one year.

Song and Walkling (2000 and 2005) conjecture that unanticipated merger announcements reveal information about merger prospects of rivals of the bidder and target. The authors hypothesize that rivals of initial acquisition targets earn abnormal returns at the time of the announcement because of the increased probability that they
will be targets themselves. Similarly, rivals of initial bidder rivals earn abnormal returns because of the increased probability that they will be bidders themselves.

Song and Walkling (2000) compile acquisition bids using Mergerstat Review for the period from 1982 to 1991. Rival firms of targets earn significant and positive returns at the time of unanticipated bids. Furthermore, rivals that subsequently become targets earn significantly higher abnormal returns than rivals that do not. Song and Walkling (2005) use the SDC merger database to identify bids made by US, nonfinancial firms covered in CRSP in the period from 1985 to 2001. The authors find that at the time of an unanticipated merger announcement, abnormal returns to rival firms of bidders that will become bidders themselves prove significant and positive.

The findings support the hypothesis that unanticipated merger announcements reveal information about merger prospects of rivals of bidder and target candidates. By scrutinizing merger frequency in the industry, markets seem to be anticipating whether a firm will propose or receive a bid prior to its merger announcement. On the one hand, studies using merger programs and frequency of bids to identify investor anticipations provide evidence that investors anticipate announcements. On the other hand, Song and Walkling (2000 and 2005) provide evidence on when investors start anticipating announcements, and the impact of these anticipations on share prices.

2.2 Studies using predictive models to forecast target candidates

A complementary body of research uses predictive models to analyze which firms become target candidates [Palepu (1986); Ambrose and Megginson (1992); Akhigbe et al. (2004)]. The objective of these studies is to determine whether investors can earn
abnormal returns by investing in firms that the models predict as potential targets. Hence, these studies don’t investigate investor anticipations; rather they seek to test the market efficiency hypothesis in the context of mergers.

Palepu (1986) uses public information available prior to announcements to study whether investors correctly predict target candidates. The author uses a logit model in which the endogenous variable takes on the value one if the firm receives bid in the next year, and zero if it does not. The coefficients of the model are estimated using a sample of mining and manufacturing firms that were acquired during the period 1971 to 1979, and a sample of firms that were not acquired as of 1979. The author finds that the models provide a statistically significant explanation of a firm’s acquisition probability. However, the magnitude of this explanatory power is low. The model explains only 12.45 percent of the variation in acquisition probability.

Ambrose and Megginson (1992) extend the Palepu (1986) model by incorporating measures of insider and institutional shareholdings, and by examining the deterrent effect of various takeover defenses. The authors randomly sample a quarter of the firms listed on NYSE or ASE in 1981, which have data available on CRSP and COMPSTAT. Scans of Wall Street Journal and CRSP in the years 1981 to 1986 identify which of the sample firms received bids in this period. The authors find that extending the model increases the predictive power significantly. However, explanatory power remains low.

In contrast to Palepu (1986) and Ambrose and Megginson (1992), Akhigbe et al. (2004) are not interested in the predictability of target candidates. Rather, they focus on how investor anticipations affect announcement abnormal returns. Akhigbe et al. (2004)
interpret the predicted probability of a bank becoming a target candidate as a proxy for investor anticipations about target candidacy. The higher is the predicted probability, the more markets anticipate the bank to become a target. The authors use these predicted probabilities to investigate how abnormal returns vary with investor expectations.

Akhigbe et al. (2004) compile all bank acquisitions occurring between 1987 and 2001 using SDC mergers database. Nontarget banks are all banks that did not receive bids between 1987 and 2001, and which are covered in CRSP. A logit model estimates the probability of any bank receiving a merger bid. The predictive power of the model is high. The model classifies 81.1 percent of the banks correctly.

Based on the median predicted probabilities, Akhigbe et al. (2004) split their target-bank sample into two. The authors fail to find a significant difference in mean cumulative abnormal returns -- event window from one day before to one day after announcements -- between high-probability (above median) and the low-probability (below median) subsamples. The findings indicate that investor anticipations are not reflected in share prices prior to the merger announcements.

2.3 Studies using conditional event-study methodology

Eckbo, Maksimovic and Williams (1990) use a simultaneous-equations framework to study abnormal bidder and target returns. The authors model investor anticipations of: merger activity; regulatory authorities’ challenge of mergers; and legal resolution of any merger challenges. We also use a simultaneous-equations framework to study investor anticipations and announcement returns. However, Eckbo, Maksimovic and Williams (1990) study stresses the information revealed in the regulatory challenge
and the legal resolution of the challenge whereas this study stresses the unanticipated information revealed about managerial motives.

Eckbo, Maksimovic and Williams (1990) compile a sample of horizontal mergers (which shareholders approved) between 1963 and 1981. The authors track the mergers to determine whether they face regulatory challenges and how these challenges are resolved. Some of the announcements are faced with regulatory challenges to the proposed mergers. Some of the challenges receive a favorable judgment that allows them to complete the merger while others do not.

The Eckbo, Maksimovic and Williams (1990) model can successfully predict bidders, but not target candidates. As a result, the correction for simultaneous-equations bias proves significant in bidder cumulative abnormal regressions, and not target regressions. The authors conjecture that managers' of bidders, but not targets, have private information about potential synergies from proposed mergers. The coefficient of managerial private information proves positive suggesting that markets react favorably to revelations about managerial private information.

2.4 What this study adds to the literature

This study advances the literature in three ways: (i) we analyze what market responses to announcement surprises reveal about unanticipated managerial motives; (ii) we develop a more complete model of investor anticipations; and (iii) we compile a comprehensive sample of merging and nonmerging firms during the period from 1982 to 2004.
The endogenous nature of investor anticipations and market responses means that announcement abnormal-returns reflect the change in expectations about merger value and stand-alone enterprise value. The econometrically correct way to study market responses to announcements is to model the selection and structural equations together. The selection equation models managerial merger choice. The structural equation models market responses to merger announcements, i.e. abnormal returns.

The first-stage selection model lets us adjust the structural equation for the self-selection bias by generating Heckman’s lambda. Heckman’s lambda is a continuous, instrumental variable that allows us to analyze and test market responses to previously unobservable motives.

Merger programs, the frequency of merger bids, and the time elapsed between bids are used to differentiate anticipated and unanticipated deals, and to boil the selection equation to a single instrumental variable. While this approach represents an easy and intuitive way to address investor anticipations, we believe that to capture investor anticipations, it is better to incorporate multiple merger motives that include elements of outstanding theories. The result is that models of investor anticipations capture the extent of investor anticipations more accurately than do models that focus on a single firm or industry characteristic.

The predictive models of Palepu (1986) and Ambrose and Megginson (1992) model the selection equation and incorporate multiple merger motives. However, these studies do not consider the inherent link between investor anticipations and announcement returns. Their sole aim is to determine whether target candidates can be
predicted using public information. Furthermore, in estimating their models, the authors
do not consider the full universe of merging and nonmerging firms; rather, they focus on
subsets of the merging and nonmerging firms mainly for ease of computation.

Akhigbe et al. (2004) use a predictive model with multiple merger motives to
estimate investor anticipations. The authors consider the link between investor
anticipations and announcement returns. However, their model of investor anticipations
and announcement returns is econometrically unsound. The authors plug the predicted
merger probabilities into the structural equation without considering the distributional
properties and the correlation structure of the errors in the selection and structural
equations. The authors only consider mergers of financial firms whereas we focus on
nonfinancial firms.

Our study differs from the Eckbo, Maksimovic and Williams (1990) in three
respects. First, we focus on how investor anticipations and announcement abnormal
returns whereas Eckbo, Maksimovic and Williams (1990) stress the effects of the
regulatory challenges and the resolution of these challenges. Second, we consider the
effect of information asymmetries and conflicts of interest in our model, whereas Eckbo,
Maksimovic and Williams (1990) assume incentive conflicts and information
asymmetries away. We believe that relaxing the Modigliani and Miller (1953)
assumptions of no frictions yield interesting results about how market frictions change
managerial investment decisions and affect investors’ pricing of the post-merger
enterprise. Third, our sample is composed of both merging and nonmerging firms
whereas the Eckbo, Maksimovic and Williams (1990) sample consists of only merging
firms. Prabhala (1997) shows that conditional event study methods yield more precise and efficient results only when the sample consists of both event and non-event firms.
3 Research Methods

This section describes the research method we use to investigate market responses to announcements. First, we review the research methods that related studies employ to model market responses, and discuss the problems associated with using a single-equation model. Second, we develop a two-equation framework to model investor anticipations and market responses, and explain our strategy to identify the system of equations. Third, we describe the predictors of bidder and target candidacy, and the variables that affect market responses to announcements.

3.1 Single-equation models that investigate market responses to announcements

In their surveys about merger studies, Jensen and Ruback (1983), Jarrell, Brickley and Netter (1988) and Andrade, Mitchell and Stafford (2001), find that a single equation models market responses to announcements. Cumulative abnormal returns to bidder and target shareholders (henceforth CAR) are defined as cumulated returns around a merger announcement that are benchmarked against "normal" returns, which the merging firms would have realized had they not announced the merger. A market model with CRSP equally-weighted or value-weighted index as the market portfolio generates normal returns. CARs identify market responses to announcements. Equations 1 and 2 represent the single-equation models that investigate, respectively, bidder and target cumulative abnormal returns. We let $\text{CAR}_B$ and $\text{CAR}_T$ represent bidder and target cumulative abnormal returns. The regressors (X) are proxies for factors that determine the abnormal
returns to bidder and target shareholders. $\mu_B$ and $\mu_T$ are assumed to be mean-zero, constant variance error terms.

1. \[ CAR_B = X_B \alpha_B + \mu_B, \]
2. \[ CAR_T = X_T \alpha_T + \mu_T. \]

### 3.1.1 Problems associated with using a single-equation model

Jarrell, Brickley and Netter (1988) state that "... Many of the studies reviewed in this paper are event studies that measure the effects of certain unanticipated events (such as a takeover or other control contest) on stock prices after correcting for overall market influence on security returns. Any finding of abnormal returns, therefore, shows how the stock market views the impact of the event on the firm's common stockholders." As Jarrell, Brickley and Netter (1988) point out, for abnormal returns to measure the impact of mergers on bidder and target shareholder value, mergers must be exogenous and unanticipated.

If outside forces randomly selected the firms that propose and solicit bids, merger announcements would be exogenous and complete surprises. However, it is managers, and not outside forces who determine whether and when their firm proposes or solicits a bid. Furthermore, investors evaluate publicly available information about the firm, industry, and management team to assess both the likelihood of mergers and their effect on bidder and target shareholder value. Consequently, investor anticipations about bidder and target candidacy mean that merger announcements are neither exogenous nor unanticipated.
Abnormal returns around announcements don’t measure the impact of mergers, rather they measure the impact of unanticipated information that announcements convey. Single-equation models of bidder and target abnormal returns ignore the endogeneity of market responses and investor anticipations. However, the endogeneity of merger announcements means that \( u_B \) and \( u_T \) in equations 1 and 2 are not mean-zero, constant-variance error terms. Furthermore, if the regressors in equations 1 and 2 include variables that investors may use to predict bidder and target candidacy, then the error terms, \( u_B \) and \( u_T \), and the regressors are correlated.

Malatesta and Thompson (1985), Fuller et al. (2004), Ismail (2005) and Song and Walkling (2000 and 2005) use instrumental variables – such as the existence of merger programs, the frequency of merger bids, or the time elapsed between bids – to address the problem of endogeneity in the single-equation model. While this approach represents an easy and intuitive way to address investor anticipations, a two-equation framework that explicitly models the correlation structure between investor anticipations and market responses is the econometrically correct model to use. Furthermore, the two-equation model incorporates multiple merger motives to estimate investor anticipations whereas the single-equation model relies on a single firm or industry characteristic.

3.2 Developing a two-equation model to investigate market responses to announcements

Our goal is to link investor anticipations and market responses. We first analyze a model that abstracts from two market frictions: incentive conflicts and information
asymmetries between shareholders and management. Then, we introduce incentive conflicts and information asymmetries into the model and analyze how these frictions alter the research method. Finally, we discuss the assumptions we make to identify the system of equations.

3.2.1 Benchmark model with no incentive conflicts and information asymmetries

The benchmark model assumes incentive conflicts and information asymmetries between shareholders and management away. Assuming incentive conflicts away means that management works solely to generate shareholder value. The absence of information asymmetries means that managerial motives are transparent. Transparency signifies that announcements cannot provide new information about managerial motives. We let $M_B$ and $M_T$ denote, respectively, bidder and target managerial motives to propose and solicit a bid. Equations 3 and 4 partition the bidder and target management’s merger decision, respectively:

$$
3 \quad M_B > 0 \text{ bidder proposes a merger bid;}
$$

$$
M_B < 0 \text{ bidder doesn’t propose a merger bid.}
$$

$$
4 \quad M_T > 0 \text{ target solicits a merger bid;}
$$

$$
M_T < 0 \text{ target doesn’t solicit a merger bid.}
$$

Managers self-select into the sample. But investors do not need to draw inferences about managerial motives. Hence, investor anticipations about bidder and target candidacy and market responses to announcements are not linked. Merger announcements only disclose information about the confidential items of negotiation and
the terms of the merger contract. Econometrically, a single-equation structural model is sufficient to study the impact of merger announcements on bidder and target shareholder value. Equations 5 and 6 model market responses to announcements. The regressors \((X)\) represent proxies for the confidential items of negotiation, and merger terms. \(\eta_b\) and \(\eta_T\) are mean-zero, constant-variance error terms.

\[
5 \quad CAR_B \mid M_B > 0 = CAR_B = X_B \alpha_B + \eta_B;
\]

\[
6 \quad CAR_T \mid M_T > 0 = CAR_T = X_T \alpha_T + \eta_T.
\]

### 3.2.2 Two-equation model with incentive conflicts and information asymmetries

We introduce two market frictions, information asymmetries and incentive conflicts, and investigate how these frictions alter the research method. The presence of incentive conflicts means that managers may strive to generate opportunistic benefits at the expense of shareholder value. Information asymmetries arise because we assume that managers, as decision-makers, have timelier and finer information than investors about current and planned operations of the firm. Information asymmetries between management and investors mean that managerial motives are opaque.

Equations 7 and 8 model managerial merger choice to, respectively, propose and solicit bids. \(M_B^*\) and \(M_T^*\) denote imperfectly observable bidder and target managerial motives, respectively. The regressors, \(Z_B\) and \(Z_T\), represent firm, industry, management characteristics that investors might use to predict bidder and target candidacy.
$Z_B Y_B$ and $Z_T Y_T$ represent investor anticipations about bidder and target managerial motives, respectively. $\varepsilon_B$ and $\varepsilon_T$ represent unanticipated managerial motives.

$M'_B = Z_B Y_B + \varepsilon_B$;

7 $M'_B > 0$ bidder proposes a merger bid;
$M'_B < 0$ bidder doesn't propose.

$M'_T = Z_T Y_T + \varepsilon_T$;

8 $M'_T > 0$ target solicits a merger bid;
$M'_T < 0$ target doesn't solicit.

Equations 9 and 10 model, respectively, bidder and target cumulative abnormal returns conditional on firms proposing and soliciting bids. Upon observing announcements, investors draw inferences about motives driving mergers. The inferences drawn about managerial motives influence how investors price the post-announcement enterprises. Therefore, the error terms in equations 7 and 9, and 8 and 10 are correlated.

9 $\text{CAR}_B \mid M'_B > 0 = X \beta_B + (\varepsilon_B \mid M'_B > 0) \beta_{\varepsilon_B} + \eta_B$;

10 $\text{CAR}_T \mid M'_T > 0 = X \beta_T + (\varepsilon_T \mid M'_T > 0) \beta_{\varepsilon_T} + \eta_T$.

In this model, investors learn from merger announcements in two ways. First, announcements reveal information about the confidential items of negotiations, and merger terms ($X_B$ and $X_T$). Second, announcements also reveal information about previously unobservable managerial motives ($\varepsilon_B \mid M'_B > 0$ and $\varepsilon_T \mid M'_T > 0$). Hence,
market responses to merger announcements are tied to anticipations about bidder and target candidacy.

3.2.3 Estimation of the two-equation model

To study the wages women earn, Heckman (1979) develops a two-stage selection model with a correction for simultaneous-equations bias. Members of the sample choose to work. The choice means there is self-selection. The decision to work depends on the wage that women can earn; the working decision and the wage earned are simultaneously determined.

We adapt Heckman's two-stage selection model to study how investor anticipations influences market responses to announcements. The first stage analyzes the merger decision and investor anticipations. Equations 7 and 8 represent the merger decision and investor anticipations. The second stage analyzes cumulative abnormal returns to bidders and targets. Heckman's lambda is an instrumental variable constructed from the merger decision (first-stage selection model) parameter estimates. Heckman's lambda adjusts for the simultaneous-equations bias that arises in a single-equation structural model when the structural and selection equations are both influenced by the same variables. In bidder and target equations, Heckman's lambdas are inverse transformations of the probability of proposing and soliciting a bid respectively. The more an announcement surprises the market, the more information about unanticipated merger motives is revealed, and the larger is Heckman's lambda. We let
$\lambda_j = \left( \epsilon_j | M_j^* > 0 \right) = \frac{\phi(-Z_j \lambda_j)}{1 - \Phi(-Z_j \lambda_j)}$, $j = B, T$. Equations 11 and 12 represent the second-stage structural models of bidder and target CARs, respectively:

11 \[ CAR_B | M_B^* > 0 = X \beta_B + \lambda_B \beta_{AB} + \eta_B; \]

12 \[ CAR_T | M_T^* > 0 = X \beta_T + \lambda_T \beta_{XT} + \eta_T. \]

A priori one cannot assign a negative or positive coefficient estimate to Heckman's lambda in the regressions of cumulative abnormal returns. Unanticipated managerial motives promise to be a mix of the shareholder value and opportunistic managerial benefits the merger generates. Heckman's lambda is an inverse transform of investor anticipations. It measure surprise. Its coefficient would be positive when investors assess merger motives to promote interests of shareholders more than opportunistic motives might harm them.

3.2.4 Identification in the two-stage model

Econometrically, the nonlinear character of Heckman's lambda identifies the two-stage selection model. One can use the same set of variables linearly in the selection and structural equations, and both equations would be identified. A solid rationale for isolating variables that might drive the merger decision without affecting market responses to announcements (and vice versa) provides a stronger basis for identifying the model.
Prior to the announcement, investors approximate managerial motives using publicly available information. To estimate investor anticipations about bidder and target candidacy, we only use information publicly available prior to announcements. In estimating market responses to announcements, we introduce proxies for the confidential items of negotiations, merger terms, the fit between merger partners, and unanticipated managerial motives.

We exclude public information available prior to the announcement from our model of announcement abnormal returns on the grounds that, in an efficient market, share prices should already reflect this information. We do not include information on the items of negotiations, merger terms and merger fit in the selection model on the grounds that investors don’t have access to this confidential information prior to announcements. Information on merger terms and partner identity is private knowledge prior to the announcement.

The assumption about market efficiency identifies the system of equations. In robustness tests, we relax the assumption of market efficiency. We introduce proxies for information available prior to the announcement in the structural model to analyze how sensitive our results are to the assumption about market efficiency.

3.3 Describing the endogenous variables used to estimate the two-equation model

This section describes the exogenous variables that we use to estimate models of bidder and target equations (equations 7 and 8), and market responses to announcements (equations 11 and 12). First, we describe the proxies for managerial motives that may predict bidder and target candidacy. Second, we describe the proxies for the confidential
items of negotiation, merger terms, and bidder and target fit that may influence cumulative abnormal returns to bidder and target shareholders.

### 3.3.1 Predictors of bidder and target candidacy

In a Modigliani-Miller (1958) world with no market frictions, markets would completely anticipate managerial motives. Merger announcements would only reveal information about confidential items of negotiation and merger terms. In reality, markets can only partially anticipate managerial motives due to information asymmetries and conflicts of interest. In this chapter, we review studies that analyze the merger motives of management. We rely on these studies to identify predictors of bidder and target candidacy.

In a Modigliani-Miller (1958) world with no incentive conflicts and information asymmetries managers would only work to generate shareholder wealth. The Modigliani-Miller model implies that bidder and target management, respectively, would propose and solicit bids only when the merger serves shareholder interests. Two important frictions that change the predictions of the Modigliani-Miller model are: incentive conflicts between management and shareholders, and information asymmetries between bidder and target management, and shareholders.

Some models emphasize the incentive conflicts between shareholders and managers and highlight the importance of opportunistic managerial benefits in motivating
merger activity. Management has two conflicting goals: to increase shareholder wealth and to increase opportunistic benefits at the expense of shareholders. Myers and Majluf (1984) stress information asymmetries and show that mispricing in share prices may alter investment decisions. Managers as decision-makers have private information about firm operations and prospects. Two opposing views investigate whether managers utilize their information advantage in mergers to serve shareholders or to protect managerial opportunistic benefits. On the one hand, managers, who believe their stock to be overvalued, may try to generate long-run value for pre-merger shareholders at the expense of post-merger shareholders [Hansen (1987); Schleifer and Vishny (2003); Rhodes-Kropf and Viswanathan (2004)]. On the other hand overvaluation may intensify incentive conflicts between managers and shareholders. Managers may be tempted to destroy shareholder value using mergers financed with overvalued equity in an attempt to protect opportunistic benefits at the expense of both pre- and post-merger shareholders (Jensen, 2005). Table 4 tabulates theoretical studies according to their focus on different merger motives, and their assumptions about market frictions.

We want to explain how the individual regressors that predict candidacy relate to relevant managerial motives and constraints. We first review the studies that focus on shareholder value creation, and describe the proxies we adopt to represent motives to generate shareholder value. Then, we review studies that introduce information

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4 Jensen and Meckling (1976) model managerial investment decisions when imperfect contracting and costly monitoring allow management to pursue opportunistic benefits. Jensen (2004), Datta et al. (2001),
asymmetries and incentive conflicts, and how introducing these frictions change the predictions of the Modigliani-Miller model. Finally, we describe the proxies we adopt to represent motives to generate opportunistic benefits, and motives to exploit information asymmetries.

3.3.1.1 Proxies for managerial motives to generate shareholder value

A strand of theoretical and empirical studies test whether and how the different ways in which managers generate shareholder value affect announcement abnormal returns or operating performance [Gort (1969); Holmes and Schmitz (1995); Mitchell & Mulherin (1996); Fluck and Lynch (1999); Maksimovic & Phillips (2001); Andrade, Mitchell, and Stafford (2001)]. Another strand of empirical studies investigates whether investors can predict target candidacy using proxies that represent motives to generate shareholder value [Palepu (1986); Ambrose and Megginson (1992); Akhigbe et al. (2004)]. We are interested in identifying proxies to represent managerial merger motives. Hence, our focus is to review theoretical models that develop the different ways in which mergers may generate shareholder value, and describe the proxies empirical studies use to represent managerial motives to generate shareholder value. We then discuss which of these proxies we adopt, and why.

and Hartzell et al. (2004) study how opportunistic benefits motivate merger activity.
3.3.1.1 Review of theoretical studies that stress the different ways in which mergers generate shareholder value

Theoretical studies, that assume incentive conflicts and information asymmetries away, focus on how mergers may generate shareholder value. These studies establish that mergers may generate shareholder value by: capitalizing on differences in valuation about the firm; channeling human and financial capital to better uses; accessing economies of scale and scope; and enhancing market power [Gort (1969); Holmes and Schmitz (1995); Fluck and Lynch (1999)].

Gort (1969) cites two reasons that may motivate management to propose and receive merger bids. First, consolidation may increase revenues by enhancing market power, and/or decreases costs by achieving economies of scale and scope. Second, bidder and target shareholders may disagree about the value of the target firm. In the second case, both parties may expect to gain from the merger even though neither party foresees a rise in value from combining businesses. The author models discrepancies in valuation arising from how different investors weigh and process information. The author also hypothesizes that economic disturbances, such as rapid changes in technology and stock prices, make differences in information-processing capacity more important, which in turn prompt mergers.

Unlike Gort (1969), Holmes and Schmitz (1995) and Fluck and Lynch (1999) concentrate on how managers may achieve economies of scale and scope rather than focusing on the firm and industry characteristics that may aid the firm in achieving economies of scale and scope. Holmes and Schmitz (1995) develop a model of business
failure and sale. In this model, two components of the management and business pairing (namely, match quality and business quality) determine firm value. Intuitively, match quality refers to how much shareholder value a particular management-business pairing will generate. Business quality refers to the potential of the business to generate shareholder value, independent of the quality of the management-business pairing. The authors show that mergers generate shareholder value by channeling investment opportunities (firms with high business quality) to management teams who are better equipped to manage them (managers which have high match quality).

Fluck and Lynch (1999) develop a model in which the target and bidder use mergers to access capital markets that are not available to them as stand-alone firms. Mergers generate shareholder value by enabling managers to finance positive net present value, which they would not have been able to finance without the merger.

3.3.1.1.2 Descriptions of the proxies we adopt to represent motives to generate shareholder value

Table 5 tabulates the empirical implications of theoretical merger studies, the empirical studies that test these implications, and the proxies used to represent the managerial motives. Panels A, B and C respectively categorize the empirical predictions according to the theoretical model's assumptions about frictions such incentive conflicts and information asymmetries. First, this section reviews the proxies that Table 5 tabulates. Second, it describes the proxies we adopt. Third, this section predicts a positive or negative relation between the proxies, and bidder and target candidacy.
3.3.1.1.2.1 Sales shock and square of sales shock

Some studies test whether industry-wide shocks affect announcement abnormal returns [Gort (1969); Palepu (1986); Mitchell and Mulherin (1996); Maksimovic and Phillips (2001); Andrade, Mitchell, and Stafford (2001)]. Mitchell and Mulherin (1996) argue that economic disturbances would cause rapid changes in employee and sales. The authors use two variables sales shock and employment shock to measure whether the industry experienced differences in sales and employee growth relative to all the industries. Sales (employment) shock is the absolute value of the difference between industry sales (employment) growth and average sales (employment) growth for all industries.

We adopt the Mitchell and Mulherin (1996) sales-shock variable as a proxy for economic disturbances that may motivate mergers. We define sales shock as the absolute value of the difference between the industry's two-year sales growth and the median sales growth for all firms. Sales growth is the ratio of net sales 9 quarters prior to the announcement minus net sales 1 quarter prior to the announcement to net sales 9 quarters prior. In light of both the economic disturbance hypothesis, and the information asymmetry models, we predict that firms in industries experiencing sales shocks are more likely to both make and receive acquisition bids. To account for convexity in the sales-

\[ k \text{ light of both the economic disturbance hypothesis, and the information asymmetry models, we predict that firms in industries experiencing sales shocks are more likely to both make and receive acquisition bids. To account for convexity in the sales- } \]

\[ \text{growth variable that rely on industry classification, the two-digit SIC codes reported in CRSP-COMPSTAT identify industries. If there are fewer than five firms in an industry, the single-digit SIC code is used.} \]

\[ \text{If data on net sales 9 quarters prior are missing, we find the next nonmissing sales data and calculate the two years sales growth by extrapolating. For example, if we only have nonmissing data 5 quarters prior, the two- year sales growth is the ratio of net sales 5 quarters prior minus net sales 1 quarter prior to net sales 5 quarters prior multiplied by two. This procedure of extrapolation is used in all proxies that rely on lagged data.} \]
shock variable, we include a second variable, the square of sales shock. Firms may desire to reallocate resources if the shock is direr. Hence, we predict that the coefficient of the square of sales shock variable is positive in both the bidder and target-candidacy models.

3.3.1.2.2 Share turnover

Gort (1969) predicts that discrepancies in valuation cause merger activity. We define share turnover as the ratio of the number of shares traded to number of shares outstanding, and use it as a proxy for discrepancies in valuation. The fewer shares traded relative to shares outstanding, the less transparent the share price is and the harder it is to discern the extent of discrepancies in valuation between bidder and target management. We predict that the more opaque the shares of a firm are, the more likely management is to propose and receive bids.

3.3.1.2.3 Sales growth

The need to respond to economic disturbances and develop economies of scale and scope, as well as the possibilities for building market power support the idea that growth in demand might predict bidder and target candidacy. Growth in production [Gort (1969)], growth in sales [Palepu (1986); Ambrose and Megginson (1992); and, Mitchell and Mulherin (1996)], growth in assets [Akhigbe et al. (2001)], and growth in employees [Mitchell and Mulherin (1996)] are used to test the hypothesis that demand growth predicts bidder and target candidacy.

We use sales growth to proxy for growth in demand. According to Gort (1969), when investors disagree about the valuation of firm, it is cheaper to grow through
acquisitions than it is through capacity expansions. Hence, on the one hand Gort (1969) predicts that demand growth encourages merger activity. On the other hand, Gort (1969) cites that if developing economies of scale and scope is motivating management, then demand growth discourages mergers since it is cheaper to build capacity than it is to buy it in growing industries. Hence, we can't predict the sign of the sales growth variable in bidder and target-candidacy models.

3.3.1.2.4 Concentration ratio

Models of economic disturbances and market power both imply that barriers to entry predict bidder and target candidacy. Gort (1969) and Eckbo, Maksimovic, and Williams (1990) use the concentration ratio as a proxy for barriers to entry. Concentration ratio is a measure of how much of the output (according to Gort (1969)) or sales (according to Eckbo, Maksimovic, and Williams (1990)) the four largest firms in the industry control.

We adopt Eckbo, Maksimovic, and Williams’ (1990) proxy for barriers to entry and define concentration ratio as the ratio of sales of the largest four firms (in terms of sales) to total industry sales. However, Baumol (1982) defines perfectly contestable markets as markets in which entry is absolutely free and exit is absolutely costless. In a perfectly contestable market, the threat of entry is sufficient to force an incumbent to set prices at marginal cost. Hence, a high concentration ratio need not indicate high barriers to entry, but economies of scope enjoyed by incumbents. If economies of scope exist, concentration ratio might predict bidder and target candidacy.
3.3.1.2.5 Change in size

Some studies investigate whether and how the desire to reduce cost through economies of scale and scope might affect bidder abnormal returns. If economies of scale or scope exist, changes in the average size of firm (measured pre-merger) and in the number of firms in the industry would predict bidder and target candidacy. Gort (1969) uses the change in size and the change in number of firms in the industry to investigate this issue. However, some other empirical studies use size and not the change in size in their studies [Palepu (1986); Ambrose and Megginson (1992); Maksimovic and Phillips (2001); Moeller et al. (2004)]. Similarly, Eckbo, Maksimovic, and Williams (1990) use the number of nonmerging firms, rather than the change in size to study how the structure of the industry affects merger activity.

We use the log of assets to proxy size. The hypothesis of economies of scale predicts that larger firms are more likely to propose bids and that smaller firms are more likely to solicit bids. We define change in size as the ratio of the change in the book value of assets of the firm nine quarters prior to the announcement to assets one quarter prior to the announcement.

3.3.1.2.6 Return on assets

Financial ratios such as Tobin’s Q, average excess return, accounting return on equity, return on assets, and capital-to-asset ratio [Lang et al. (1989); Palepu (1986);

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7 If data on total assets 9 quarters prior are missing, we find the next nonmissing sales data and calculate the two years sales growth by extrapolating. For example, if we only have nonmissing data four quarters prior, the change in size is the ratio of the change in assets in the previous year prior to announcement over assets 5 quarters prior multiplied by two.
Ambrose and Megginson (1992); Akhigbe et al. (2004)] and ratios, such as total factor productivity and value added per worker [Maksimovic and Phillips (2001)], that represent whether the firm is on the frontier of the production function, may be used to proxy for the concepts of “business and match quality” that Holmes and Schmitz (1995) develop. Lang et al. (1989) define Tobin's Q as the ratio of the firm’s market value to the replacement cost of its assets. Ambrose and Megginson (1992) define average excess return as the difference between observed returns and expected returns – generated using a market model. Palepu (1986) defines accounting return on equity as the ratio of net income before extraordinary items and discontinued operations to common and preferred equity. Akhigbe et al. (2004) defines capital-to-asset ratio as the ratio of total equity to total assets. Maksimovic and Phillips (2001) define total factor productivity as the output produced for given amount of inputs minus predicted output – predicted output estimated using a translog industry-production-function. Maksimovic and Phillips (2001) define value added per worker as the ratio of sales minus the cost of materials to the number of workers.

We use profitability to proxy for business and match quality. We define returns on assets (ROA) as the ratio of book value of net income before extraordinary (or nonrecurring) items to total assets. Economies-of-scale hypothesis predicts that profitable firms are more likely to achieve efficiency gains and are more likely to propose bids. Unprofitable firms make more likely target candidates since they show greater room for improvement.
3.3.1.1.2.7 Mismatch in resources and growth opportunities

Fluck and Lynch (1999) show that firms may engage in mergers to overcome financial difficulty. Financial synergy may enable the post-merger enterprise to recognize and pursue options to invest in additional assets and projects. Palepu (1989), and Ambrose and Megginson (1992) test whether a mismatch in capital resources of the firm and its sales growth opportunities predict target candidacy. The authors hypothesize that firms with high (low) growth opportunities and constrained (unconstrained) access to capital markets are more likely to receive (propose) acquisition bids. The authors also use leverage and liquidity to proxy for financial constraints.

We adopt the mismatch in resources and growth opportunities variable of Palepu (1989), and Ambrose and Megginson (1992). Mismatch in resources and growth opportunities indicator takes on the value one if the two-year sales growth is larger (smaller) than the industry median and the ratio of long-term debt to total assets is lower (higher) than the industry median. We predict that firms with a mismatch in capital resources and growth opportunities are more likely to make and solicit bids.

3.3.1.2 Proxies for managerial motives to generate opportunistic benefits

A strand of theoretical and empirical studies investigates whether motives to generate opportunistic benefits motivate mergers [Manne (1965); Jensen and Meckling (1976); Jensen (1986)]. This chapter reviews the theoretical models that stress managerial motives to generate opportunistic benefits, and the empirical studies that develop proxies for how management generates opportunistic benefits. We then discuss which of these proxies we adopt, and why.
3.3.1.2.1 Review of theoretical studies that stress the different ways in which mergers generate shareholder value

Jensen and Meckling (1976) model incentive conflicts between managers and shareholders. Mergers are investment projects that may present managers with the opportunity to generate private benefits. Managers may enjoy monetary and nonmonetary opportunistic benefits related with managing a larger company. Monetary benefits include possible increases in salary and bonuses that the manager may enjoy for managing a larger company. Nonmonetary benefits may include possible increases in status or openings to further the career of the managers. These monetary and nonmonetary benefits are opportunistic since they increase the utility of managers at the expense of shareholders. The model implies that managers may engage in mergers not to generate shareholder value, but to generate opportunistic benefits.

To mitigate incentive conflicts, compensation contracts and corporate-governance rules seek to influence management to act in shareholder interests. Jensen and Meckling (1976) show that the better managerial incentives align with shareholder interests, and the more effective monitoring is, the more intent management is to increase shareholder value, and the less likely it is to engage in activities that destroy shareholder value.

The Jensen and Meckling (1976) model implies that management may engage in mergers to generate opportunistic benefits. Consequently, the model predicts that management who wish to generate opportunistic benefits is more likely to propose bids. Monitoring, and better-designed compensation contracts reign in the managerial desire to
generate opportunistic benefits through mergers, and decrease the probability that managers engage in merger activity.

Manne (1965) views mergers as disciplining mechanisms, and not as projects that can be used to generate opportunistic benefits. According to Manne, firms, whose managers enjoy large opportunistic benefits and destroy large amounts of shareholder value, are more likely to become target candidates. These firms make likely target candidates since there is room to generate shareholder value by improving monitoring, and redesigning the compensation contracts to better align the incentives of managers with those of shareholders.

Jensen (1986) defines free cash flow as cash flow left after the firm has invested in all positive NPV projects. Jensen argues that managers with an abundance of free cash flow are more likely to squander shareholder value. The empirical implication of Jensen’s argument is that firms with more free cash flow are more likely to become bidders.

3.3.1.2.2 Descriptions of the proxies we adopt to represent managerial motives to generate opportunistic benefits

Empirical models that focus on how incentive conflicts between managers and shareholders affect abnormal returns to bidder and target shareholders pose two research questions. First question investigates the monetary opportunistic-benefits that bidder and target management may enjoy as a result of completing mergers, and how these benefits affect announcement returns [Grinstein and Hribar (2003); and Hartzell et al. (2004)]. Second question investigates nonmonetary opportunistic benefits and, the conditions,
under which managers find it easier to generate and consume opportunistic benefits [Lang et al. (1991); Datta et al. (2001)].

Monetary opportunistic-benefits that managers may enjoy include potential bonuses that may received for completing deals, increases in salary tied to managing larger companies, and grants of new options for engaging in mergers. Merger announcements disclose whether and how much monetary benefits bidder and target management will enjoy. Prior to announcements, there is no public information about these benefits. Hence, we cannot use information about these benefits to predict bidder and target candidacy. However, it is possible to identify the conditions that make it easier for management to generate and consume monetary and nonmonetary opportunistic benefits.

3.3.1.2.2.1 Equity-based compensation and ownership stake

There is no consensus in the literature on how stock options and managerial equity ownership affect firm performance. Some studies argue that on average CEO ownership and equity-based compensation are too low [Morck, Shleifer, and Vishny (1988)]. If equity-based incentives and managerial ownership are indeed on average too low, then management with high equity stake and whose compensation depends more on the firm’s performance is “better” motivated to serve shareholder interests. As such, these firms should perform better. An alternative view suggests that firms and managers contract optimally; managerial ownership and equity rewards are optimal [(Demsetz and

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8 Core, Guay and Larcker (2005) provide a detailed survey of the executive compensation and incentives literature.
Lehn (1985). This view predicts no ex-ante relation between firm performance and equity rewards and managerial ownership.

Datta et al. (2001) investigate how executive compensation packages affect the shareholder value mergers generate. The authors analyze the equity-based compensation of top managers. Equity-based compensation is the Black-Scholes value of new options granted to the top five executives in the year preceding the acquisition divided by their total compensation in the same year. The authors find a positive relation between equity-based compensation, and announcement returns, and a negative relation between equity-based compensation and the premium paid. The authors also introduce a proxy for the equity ownership of CEOs. Executive stock ownership is defined as the sum of all previously granted/acquired common and restricted stock owned by the top 5 executives owned at the year-end preceding the acquisition divided by the total number of shares outstanding. The evidence indicates that higher equity ownership and equity-based compensation can be used to align managerial incentives with those of shareholders.

We adopt the proxies for Datta et al. (2001), equity-based compensation and ownership stake. Equity-based compensation is the ratio of the Black-Scholes value of options granted to the CEO to total compensation in the year prior to the announcement. Ownership stake is the ratio of shares owned by the CEO to total number of shares outstanding in the year prior to the announcement. In light of the conflicting views in the literature, we cannot make any clear predictions on whether and how equity rewards and managerial ownership predict bidder and target candidacy.
3.3.1.2.2 Retirement years and governance index

The balance of power between shareholders and managers influence whether and what kinds of mergers managers engage in. The balance of power between shareholders and managers depend on how much power the manager has over the board. The more power managers have relative to shareholders, the more entrenched managers are. Managerial entrenchment relates to the power of management to determine corporate strategy without fear of reprisal from the board of directors. Entrenched managers may or may not choose to serve the interests of shareholders.

Hartzell et al. (2004) argue that the longer a CEO works for a company, the harder it is to dismiss her. Decreasing the threat of dismissal may tempt managers to engage in value destroying activity. The authors use the expected number of years until retirement (retirement years) as a proxy for how entrenched the CEO is. The authors define retirement years as the maximum of 0 or 65 minus the age of the CEO. We define retirement years as the number of years the CEO has under the company’s pension plan. The more years the CEO worked the more entrenched is the CEO. We predict that the desire to generate opportunistic benefits is less checked in entrenched managers. On the one hand, the desire to generate opportunistic benefits enlarges the set of deals available to bidders. On the other hand, the desire to protect opportunistic benefits restricts the set of deals available to targets.

Other proxies for managerial power include indicators for whether: the CEO is also the chairman of the board; the CEO is on the nominating committee; CEO is founder [Grinstein and Hribar (2001); Moeller (2005)]. The percentage of independent board
members is another proxy for managerial power [Grinstein and Hribar (2001); Moeller, 2005]).

Anti-takeover defenses -- such as poison pills, anti-takeover charter amendments, classified boards, fair-price requirements, voting rights, supermajority requirements, blank-check preferred-stock authorizations, and dual-class recapitalizations -- may also reinforce the power of management in resisting mergers [Ambrose and Megginson (1992)]. Moeller (2005) use the governance index constructed by Gompers, Ishi and Metrick (2003) to measure the balance of power between shareholders and managers. The index is constructed from twenty-four unique corporate-governance variables based on charter and bylaw provisions, firm-level provisions, and state laws. The variables can be classified into five categories: tactics for delaying hostile bidders, voting rights, director protection, other takeover defenses and state laws. The governance index is composed of variables (variables concerning delaying hostile bidders and takeover defenses) that can allow managers to deter unwanted merger attempts. The higher is the index, the more power managers have relative to shareholders.

We use the governance index constructed by Gompers, Ishi and Metrick (2003) to measure the balance of power between shareholders and managers. We predict that management with more power over boards (higher values of the governance index, and more retirement years) are more likely to make bids, and more likely to resist bids.

3.3.1.3 Proxies for managerial motives to exploit information asymmetries

A strand of theoretical and empirical studies investigates whether motives to exploit information asymmetries motivate mergers [Myers and Majluf (1984); Hansen
(1987); Rhodes-Kropf and Viswanathan (2004)]. This chapter reviews the theoretical models that stress managerial motives to exploit information asymmetries. We then describe the proxies that empirical studies develop to test the theoretical models. We go on to discuss which of these proxies we adopt, and why.

3.3.1.3.1 Review of theoretical studies that investigate how management may exploit information asymmetries

Myers and Majluf (1984) model investment decisions when there are information asymmetries but no incentive conflicts between managers and shareholders. This means that managers have private information about the operations and prospects of the firm, which lets them price the firm more accurately than shareholders can. If markets misprice shares of the firm, it affects how managers finance positive net-present-value projects. Managers choose to issue equity if the firm is overvalued, but use cash if the firm is undervalued. Under these circumstances, investors rationally infer whether the firm is overvalued or undervalued based on its financing choice, and reprice the firm accordingly. Management of undervalued (or correctly valued), who are financially constrained and are cognizant of the information costs associated with issuing equity, may pass up some positive net present value projects that need to be financed with equity since issuing equity incorrectly signals overvaluation and decreases the wealth of existing shareholders. For financially constrained firms, the net present value of the investment project should be sufficiently high to compensate for the decrease in value that existing shareholders suffer due to the issuance of equity.
Bidder and target management may have proprietary information about the value of their own firms and/or the value of the merged firm. Mergers are a good setting in which to apply this information-asymmetry model [Hansen (1987); Rhodes-Kropf and Viswanathan (2004)]. However, as Jensen (2005) emphasizes incentive conflicts between managers and shareholders may lead managers to use mergers to generate or protect opportunistic benefits by exploiting their information advantage.

3.3.1.3.1.1 Theoretical studies that only assume information asymmetries between bidder and target managers

In merger transactions, the information asymmetry may exist between partners. Bidder and target management may both have proprietary information about the value of their own firm, but may not have as much information about the value of the counterpart’s firm.

Assumptions about who has what private information determine whether and under what conditions a merger goes through. Rhodes-Kropf and Viswanathan (2004) investigate the merger decision when the only the bidder has proprietary information. Hansen (1987) investigates the merger decision under two conditions: when only the target has proprietary information; and, when both the target and the bidder have proprietary information.

Hansen (1987) shows that when only the target has proprietary information, bidder management always prefers to finance the merger using equity. When cash is used to finance the merger, the target will sell only when its value is less than the offer made.
Bidders can offset this lemon problem by offering equity and sharing in any gains that target shareholders might enjoy due to mispricing in their stock.

When both the bidder and target have proprietary information, the bidder signals its value using the mix of equity and cash in the offer. The target rationally infers the value of bidder firm from the type (cash or equity) and size (the percentage of equity offered) of the offer made, and accepts the offer if it is greater than target value. Hansen (1987) shows that the probability of the bid being rejected offsets the gains from cheating the target by falsely signaling that the bidder is of higher value than it actually is. As in Myers and Majluf, when the bidder is financially constrained and cannot offer cash, the value the merger generates should be sufficiently high to compensate existing shareholders for the decrease in value resulting from an equity offer. Otherwise, bidder management will pass up some value-creating mergers. The Hansen model predicts that: undervalued firms who are financially constrained are less likely to make bids; and, undervalued firms are less likely to solicit bids.

Rhodes-Kropf and Viswanathan (2004) model the merger decision when bidder management has proprietary information about value of both their firm and the merged enterprise. The model assumes that: there is more than one bidder for the target; and the bidders bid in a second-price auction. In a second-price auction, the winner pays the price bid by the second-highest bidder. A second-price auction ensures that all bidders bid their true valuation of the merged firm.

The assumption that all mergers generate shareholder value and the use of second-price auctions ensures that mergers generate shareholder value for target shareholders.
However, the information asymmetry about bidder value and the incremental shareholder value created in the merger obstructs the target from differentiating between a bid with an overvalued bidder, and an incremental shareholder-value that is low, and a bid with and undervalued bidder, and an incremental shareholder-value that is high. Targets engage in mergers that generate shareholder value. Yet, the mergers that go through are not necessarily the deals that would have generated the most value for target shareholders.

To overcome the problem posed by information asymmetries, target management always asks for a cash bid if the bidder has cash on hand or can get financing elsewhere. However, to the extent that the bidders cannot finance the merger using cash, the problem persists.

Rhodes-Kropf and Viswanathan (2004) predicts that: overvalued bidders are more likely to win takeover battles; bidders that can generate more shareholder value from the post-merger enterprise are more likely to win takeover battles; bidders in overvalued sectors are more likely to win takeover battles; and mispricing in security prices has common industry-wide and market-wide components. As a result, mergers cluster across industries and time.

3.3.1.3.1.2 Theoretical studies that assume information asymmetries and incentive conflicts

Overvalued equity exacerbates incentive conflicts between managers and shareholders (Jensen, 2005). Managers of overvalued firms may engage in mergers to sustain overvaluation and protect the opportunistic benefits they gain due to overvaluation. These mergers hurt the core business and destroy shareholder value.
The more overvalued bidders are the more opportunistic benefits management has at stake. Hence, overvalued firms are more likely to propose and less likely to receive bids.

Where information asymmetries exist between management and investors, the literature predicts that abnormal returns to bidders and targets in equity-financed mergers are more negative than returns in cash-financed mergers. These studies differ in their prediction about the long-run market responses to equity-financed mergers. On the one hand, Hansen (1987) and Rhodes-Kropf and Viswanathan (2004) maintain that mergers generate shareholder value. Hence, even though equity-financed mergers reveal overvaluation in the short run, they generate both bidder and target shareholder value in the long run. On the other hand, Jensen (2005) maintains that managers may merge to protect opportunistic benefits, in which case mergers destroy shareholder value both in the short and long run.

3.3.1.3.2 Descriptions of the proxies we adopt to represent managerial motives to exploit information asymmetries

3.3.1.3.2.1 High-information-asymmetry indicator

Mispricing of shares may be due to hidden information or opaqueness in accounting reports. The ratio of market-to-book value of common stock (market-to-book) is a loose proxy for mispricing. Market-to-book is a measure of the effect of "intangible assets" that accountants find too hard to quantify and put on the books. Hence, market-to-book measures opaqueness as well. The higher is market-to-book, the

We construct the high information-asymmetry indicator to address both mispricing and uncertainty in share prices. High information-asymmetry takes on the value one if the share is overvalued (higher book-to-market than the industry median) and opaque (lower share turnover relative to the industry median). Rhodes-Kropf and Viswanathan (2004) hypothesize that overvalued and opaque firms are more likely to make and solicit acquisition bids in order to exploit the overvaluation in their shares.

### 3.3.1.3.2.2 Price run-up

We define price run-up as changes in share prices in the two years prior to the announcement, and use it as a proxy for mispricing. The higher the price run-up, the more overvalued the firm is. According to Rhodes-Kropf and Viswanathan (2004), overvalued firms are more likely to propose and less likely to receive bids.

### 3.3.1.4 Proxies for multiple merger motives

#### 3.3.1.4.1 Merger intensity

Rhodes-Kropf and Viswanathan (2004) assume information asymmetries, and predict that mergers cluster across industries and time. Gort (1969) assumes information asymmetries away, and also predicts that mergers cluster. These two hypotheses are
observationally equivalent. We use *merger intensity* to analyze whether prior merger activity in the industry predicts bidder and target candidacy.

We define *merger intensity* as the ratio of the number of firms, which made or received bids in the last two years, to the number of firms in the industry one quarter prior to the announcement. We hypothesize that the higher the merger intensity, the more likely the firms in that industry are to make and receive bids.

### 3.3.1.4.2 Previous mergers

Managers may engage in a program of mergers to generate shareholder value, secure opportunistic benefits, and/or exploit information asymmetries [Holmes and Schmitz (1995); Schipper and Thompson (1983); Maletesta and Thompson (1985); Asquith et al. (1983); Loderer and Martin (1990); Fuller et al. (2004); Ismail (2005)]. We track the merger record of firms to construct a variable (*previous mergers*) that counts the number of times a firm received or solicited bids in the 8 quarters prior to the announcement. We predict that firms which have engaged in merger activity before are more likely to both make and solicit acquisition bids.

### 3.3.1.4.3 Cash ratio

Lang et al. (1991) test the free-cash-flow hypothesis of Jensen (1986) using the ratio of cash flows to total assets. The authors find that bidder abnormal returns are significantly negatively related to cash flow for firms with low Tobin's Q. The study provides evidence that managers in firms with more free cash flow enjoy opportunistic benefits related to mergers, and as a result the shareholders suffer.
We use cash ratio, the ratio of cash and marketable securities to total assets one quarter prior to the announcement, to proxy free cash flow. According to Jensen (1986) firms with more free cash flow are more likely to make and less likely to solicit bids. However, cash ratio may also proxy for financing constraints. Fluck and Lynch (1999) predict that firms with more cash are more likely to both make and solicit bids. Consequently, we predict a positive relation between bidder candidacy and cash flows, and we can't predict a relation between cash flows and target candidacy.

3.3.2 Variables that influence market responses to announcements

This section explores the variables that may influence market responses. Partner identity determines whether and how much shareholder value combining the bidder and target generates. First, this section describes the proxies for the fit of the bidder and the target. The confidential items of negotiation and merger terms influence how the shareholder value the merger generates is distributed between bidder and target shareholders. Second, this chapter describes the variables to proxy for confidential items of negotiation and merger terms.

3.3.2.1 Proxies for fit of bidder and target

Merger announcements disclose the identity of the merger partner. By joining forces, the merger partners combine the assets-in-place of the stand-alone enterprises. Combining assets-in-place change the value and composition of the real options that can be written on them. The more fit the merger partners are, the more shareholder value the merger generates by increasing the value of existing options and by generating new
options. A merger may increase the value of real options through decreases in capital requirements for investments, or increases in projected cash flows and option timing flexibility [Smith and Triantis (1995)]. This section describes the proxies investors may use to represent the different ways in which the merger generates (or destroys) shareholder value.

3.3.2.1.1 Same-industry indicator

Operating in the same line of business affects the extent to which the assets-in-place for the stand-alone enterprises complement and substitute each other. An important aspect of the fit between the merging firms relates to whether the merger is increasing the scope of business (diversifying mergers) or whether the merger is decreasing the scope of business (focus-increasing mergers). There is a considerable amount of research looking into whether diversifying operations is beneficial [Villalonga (2004); Campa and Kedia (2002)]. Although the magnitude of the diversification discount widely varies across studies, consensus in the literature is that diversified firms fare worse than their focused counterparts. We construct an indicator, same industry, which takes on the value one if the merging firms are in the same industry\textsuperscript{9}. We hypothesize that focus-increasing mergers generate more shareholder value than diversifying mergers.

\textsuperscript{9} We use the four-digit SIC codes as reported in SDC to define industries. If there are less than five firms in an industry, we use the three-digit SIC codes and if there are less than five firms in the three-digit SIC codes we use the two-digit SIC codes. We do not use the SIC codes reported in CRSP-COMPUSTAT since we don't have CRSP-COMPUSTAT data for all our merging firms.
3.3.2.1.2 Same-state indicator

Having similar corporate cultures may also influence the fit between the partners. Corporate culture is hard to quantify. One measure that is easy to quantify and is positively related to corporate culture is geographic proximity. Firms operating in closer proximity are likely to have a similar culture. Same state is an indicator variable that takes on the value one if main operations of bidder and target are in the same state. There are two conflicting views on corporate culture and how it affects the fit between partners. Similar firms may benefit more from mergers since they have an easier time adjusting to operating together. An opposing view argues that differing firms benefit more from mergers since cultural diversity offers more opportunities for improvement [Chakrabarti, et al. (2005)].

3.3.2.1.3 Bidder-public and target-public indicators

The ownership structure of the merger partner is another factor that affects the bidder and target returns. Bradley and Sundaram (2004) find that bidder returns are lower when the target is a public firm. We use two indicators, target public and bidder public, which take on the value one if the target and bidder are public firms respectively. We hypothesize that targets, which are public, secure more value for their shareholders perhaps because their bargaining power relative to private firms is higher.

3.3.2.1.4 Deal value and relative value

Asquith et al. (1983) suggest that the larger the value of the deal relative to the size of the bidder and the target, the greater the magnitude of bidder and target
cumulative returns should be. Moeller et al. (2005) find that in their sample deals with value of over 1 billion dollars erode bidder shareholder by 7.38 dollars per 100 dollars invested in the period from 1991 to 2001. This evidence suggests that the absolute as well as relative size of deals affect bidder returns.

We use two variables, deal value and relative value, to represent the absolute and relative size of proposed deals. We define deal value as the value of the deal in billion dollars. We define relative size as the ratio of the value of the deal (in millions) to the market value of common stock (in millions)\(^{10}\).

3.3.2.2 Proxies for confidential items of negotiation, and merger terms

Merger announcements disclose information about the confidential items of negotiation and merger terms. Investors use the information about confidential items of negotiation and merger terms to determine how the value that mergers generate is divided between bidder and target shareholders. This chapter describes the proxies for confidential items of negotiation and merger terms.

3.3.2.2.1 All-equity indicator

We use the variable, all-equity indicator, to proxy for information revealed about medium of payment. The all-equity indicator takes on the value 1 if target shareholders are paid using only bidder stock and 0 otherwise. We predict that an all-equity payment decreases abnormal returns to both bidder and target shareholders.

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\(^{10}\) SDC compiles value of deal in 1,000,000 dollars. We divide deal value by 1,000, and report it in 1,000,000,000 dollars. CRSP-COMPUSTAT compiles number of shares outstanding (in millions) and the
3.3.2.2 Unwelcoming-attitude indicator

Jennings and Mazzeo (1993) investigate the structure of takeover bids, and the frequency of observing competing bids. The authors find that target management resistance is associated with an increased likelihood of competition arising and with an increase in target shareholder wealth between the announcement and outcome dates. An initial negative or unsolicited CEO recommendation to the board about the merger strengthens bargaining power of the target since the bidder has to present a sufficiently enticing bid to overcome the initial resistance. On the flip side, resistance might deter the bidder from continuing with the merger.

We use an indicator to proxy for target CEO resistance to the deal. Unwelcoming-attitude indicator takes on the value one if management's initial recommendation is negative or management did not solicit the bid.

3.3.2.3 Anti-takeover-defenses indicator

Ambrose and Megginson (1992) investigate how anti-takeover measures affect the probability that a firm receives a merger bid. The premise is that having anti-takeover measures in place makes a hostile takeover more unlikely. To the extent this premise holds, anti-takeover defenses strengthens target bargaining power since the bidder has to secure target management approval. An indicator variable (anti-takeover defenses) represents whether the target has anti-takeover defenses in place.

closing price of common stock in that quarter. We define market value of common stock as the product of
3.3.2.2.4 Target-bankrupt indicator

Target bargaining power varies inversely with any urgency that target shareholders feel about selling the firm. The extreme is shareholders of bankrupt firms that are in dire need. Target shareholders may also be using the merger to transfer value from their creditors. The target bankrupt indicator takes on the value one if the target is in bankruptcy proceedings at the time of the merger announcement.

We hypothesize that competition, resistance from target management, and target anti-takeover measures strengthen the bargaining power of target shareholders whereas bankruptcy proceedings weaken it. We expect bidder and target abnormal returns to respond to differences in bargaining power.

common shares outstanding and closing price of common stock.
4 Sampling Frame

To estimate investor anticipations and to investigate market responses to announcements, we need to identify subsamples of merging and nonmerging firms. We first describe our sampling procedure for identifying merging and nonmerging firms. Then, we enumerate our data sources for the variables and discuss the restrictions that the data sources impose on our sample.

4.1 Identification of the merging and nonmerging subsamples

Bidder and target subsamples are compiled from the Security Data Company’s (henceforth SDC) US Mergers and Acquisitions database. A nonmerging firms subsample is compiled from the CRSP-COMPUSTAT combined database. Appendices A and B report the SDC and CRSP-COMPUSTAT command files we use to download, respectively, the subsamples of merging and nonmerging firms. Appendix C contains the STATA command file we use to ready the sample of merging and nonmerging firms for econometric analysis.

4.1.1 Sampling frame for merging firms

SDC began recording merger deals in 1977. To obtain as comprehensive a sample as we can, we start our dataset at this date. We sample firms that announce mergers between January 1, 1977 and December 31, 2004. The earliest announcement date is 11/16/1977, and the latest announcement date is 12/30/2004. We stop sampling deals on December 31, 2004 because we can only obtain financial-statement information up to this date.
Deals that clearly transfer control rights between bidder and target management convey more information than deals in which control rights are not transferred. By only sampling deals that show an intent to transfer control rights, we focus on announcements that reveal considerable information. Intent to transfer control rights is characterized by two conditions: bidders own less than fifty percent of outstanding target shares; and propose to own more than fifty percent of outstanding target shares when and if the merger is completed.

The data items in SDC labeled as menumain and formc classify transactions into 12 and 10 categories, respectively. We rely on the SDC definitions to exclude all transaction categories that show no intent to transfer control rights.

The menumain data item in SDC classifies merger transactions into 12 categories: disclosed value, undisclosed value, leveraged buyouts, tender offers, spinoffs, recapitalizations, self-tenders, exchange offers, repurchases, SP, acquisition of remaining interest, and privatization. Disclosed and undisclosed value transactions are self-explanatory. Leveraged buyouts (LBOs) include deals when an investor group, investor or firm offers to acquire a company, taking on extraordinary amounts of debt with plans to repay it with funds generated from the company, or with revenue earned by selling off the newly acquired company’s assets. A deal is an LBO if the investor group includes management or the transaction is identified as such in the financial press, and

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11The definitions of data items are compiled from SDC help files.
100 percent of the company is acquired. *Tender offers* are formal offers of determined nomination to acquire a public company’s shares made to equity holders\(^\text{12}\).

The formc data item in SDC classifies merger deals into 10 categories: *merger, acquisition, acquisition of majority interest, acquisition of partial interest, acquisition of remaining interest, acquisition of assets, acquisition of certain assets, recapitalization, buyback, and exchange offer*. Formc classifies deals as: *acquisition of majority interest* if the acquirer holds less than fifty percent of target shares and seeks to acquire fifty percent or more; *merger* if either a combination of business takes place, or a hundred percent of the stock of a public or private company is acquired and; *acquisition* if a hundred percent of a company is spun off or split off\(^\text{13}\).

\(^\text{12}\) We exclude spinoffs, recapitalizations, self-tenders, exchange offers, repurchases, SPs, and, acquisitions of remaining interest to make sure that there is a transfer of control between two different enterprises. We exclude privatizations since the transfer of control from government-controlled firms requires a separate analysis that also investigates the regulatory environment. Spinoffs are tax-free distributions of shares of a company of a unit, subsidiary, division, or another company’s stock, or any portion thereof, to its shareholders. Recapitalizations are deals in which the company issues a special one-time dividend in the form of cash, debt securities, preferred stock, or assets, while allowing shareholders to retain an equity interest in the company. In *exchange offers*, a public company offers to exchange new securities for its outstanding securities. A company offers to buy back its equity securities or securities convertible into equity through in a self-tender offer. *Self-tenders* are all deals in which a company announces a self-tender offer, recapitalization, or exchange offers. *Repurchases* are deals in which a company buys back its shares in the open market or in privately negotiated transactions, or a company’s board authorizes the repurchase of a portion of its shares. *SP* covers all deals in which a company is acquiring a minority stake (i.e. up to 49.99 percent or from 50.1 to 99.99 percent) in the target company. In *acquisitions of remaining interest*, a company is acquiring the remaining minority stake (i.e. from at least 50.1 percent ownership to 100 percent ownership) which it did not already own in a target company. *Privatizations* are deals in which a government or government-controlled entity sells shares or assets to a non-government entity.

\(^\text{13}\) We exclude acquisitions of partial interest, acquisitions of remaining interest, acquisitions of assets, acquisitions of certain assets, recapitalizations, buybacks and exchange offers to make sure that there is a transfer of control between two different enterprises. Acquisition of partial interest are deals in which the acquirer holds less than 50 percent and is seeking to acquire less than 50 percent or the acquirer holds more than 50 percent and is seeking to acquire less than 100 percent of the target shares. Acquisition of assets and acquisition of certain assets are deals in which respectively, the assets and “certain assets” of a company, subsidiary, division, or branch are acquired. Menumain and formc report identical definitions for exchange offers, acquisitions of remaining interest, and recapitalizations. Buybacks are deals in which the company buys back its equity securities or securities convertible into equity, either on the open market, through privately negotiated transactions, or through a tender offer.
Sample firms are nonfinancial US enterprises. We restrict the universe to US firms since share price, financial statement, executive compensation and corporate governance data restrictions on foreign firms are very strict. The financial regulatory environment forces different information that the announcements of financial institutions reveal.

For a deal to be included in the sample either the bidder or the target needs to be a public company since share price information cannot be observed for non-public firms. SDC classifies the organizational form of firms according to what is declared in financial statements and business news sources. SDC distinguishes five organizational forms: government, joint venture, private, public, and subsidiary. In the government organization form, a government holds the controlling ownership stake. In the joint-venture organizational form, two or more corporate bodies co-operate on a project or business according to the rules specified in the joint-venture contract. A firm that is not listed on a major exchange is classified as private whereas a firm, which is listed, is classified as public. A subsidiary is a division of another company. The parent company may be government-owned, joint venture, private or public. Any firm SDC is unable to identify as belonging to the above five categories is classified as unknown in type.

Applying our selection criteria to the SDC database produces 18,325 deals. We classify any firm with a one-digit SIC code of 6 as a financial firm. Of the 18,325 deals that SDC compiles as having nonfinancial bidder and targets, we drop 53 deals because either the bidder or the target is a financial firm. We drop 41 more deals in which the
CUSIPs\textsuperscript{14} and names of the bidder and target are identical since these firms escaped the SDC filter. Finally, the merging-firms sample covers 18,231 deals in which a US, nonfinancial firm made a bid with the intent to buy target control rights in another US nonfinancial firm.

4.1.2 Sampling frame for nonmerging firms

New information about firms arrives every day. New information leads investors to re-estimate both the probability of merger activity along and the expected value on shareholder value. It is not possible to identify every new piece of information that affects investor expectations about merger activity. Recognizing that investors dynamically update their expectations, we want to use data that are recorded at frequent intervals. Quarterly industrial CRSP-COMPUSTAT database compiles the most frequent financial-statement data. The observation unit in the database is a firm quarter.

We apply the same sample-selection criteria to the nonmerging firms as we apply to the merging firms. We construct the universe of US, nonfinancial firm-quarters. The sample covers 110 quarters running from the third quarter of 1977 to fourth quarter of 2004. We then identify these quarters as bidder, target, or nonmerging firm-quarters. Based on SDC announcement dates from our merging-firms sample, a quarter is identified as a bidder-quarter for any firm that proposes at least one bid\textsuperscript{15} in the next financial-statement-release quarter, and a target-quarter for any firm that receives at least

\textsuperscript{14} SDC provides the six-digit CUSIP, which uniquely identifies an issuer of securities (a firm).

\textsuperscript{15} A firm may propose or solicit more than one bid in any one quarter.
one bid in the next quarter. A quarter is a nonmerging firm-quarter for any firm that neither proposes nor receives any bids in the next quarter.

To construct predictors for bidder and target candidacy, we need to uniquely identify firms as bidders, targets or nonmerging firms in each quarter. We drop any firm quarter which we cannot uniquely identify as bidder, target or nonmerging firm-quarter. The unique identifier in CRSP-COMPUSTAT database is the GVKEY\textsuperscript{16} number. Some firm-quarters are perfect double counts\textsuperscript{17}. We drop the extras. Some firms change the release dates of their financial statements. As a result, around the change in release dates, some nonmerging firms have two sets of data (one set for the previous fiscal year date, and one set for the new fiscal year date) in the same quarter\textsuperscript{18}. We sort the data according to the observation number assigned by STATA and drop the first observation for double-counted firms that result from a change in the fiscal year.

The bidder subsample covers 8,092 quarters; the target subsample 3,855 quarters; and the nonmerging subsample 515,209 quarters. 3,896 firms propose 8,406 bids in 8,092 quarters. 3,442 firms solicit 3,932 bids in 3,855 quarters. 14,105 firms neither propose nor solicit bids in 515,209 quarters.

4.2 \textit{Data restrictions}

To construct predictors of bidder and target candidacy, we need to extract data from financial statements, managerial compensation contracts and the governance

\textsuperscript{16}GVKEY is the unique company identifier that COMPUSTAT database uses. COMPUSTAT User Manual provides detailed information about GVKEY.

\textsuperscript{17}All the data items are identical in these double-counts.

\textsuperscript{18}The data items in these double-counts are not identical.
environment of the firm. We take financial-statement data from CRSP-COMPUSTAT quarterly industrial database. Compensation-contract data come from COMPUSTAT Executive Compensation database (henceforth EXECOMP). Governance data come from Investor Responsibility Research Center database (henceforth IRRC).

We identify the repricing of post-announcement enterprises with abnormal returns centered on announcements. EVENTUS calculates returns centered on event dates. To price the post-announcement enterprises, investors evaluate the fit between the bidder and target, the merger terms, and the negotiation items. The Research Methods chapter describes the variables we use as proxies. Data on merger terms and negotiation items comes from SDC.

First, we describe the relevant data sources. Then, we analyze the restrictions that data coverage on EVENTUS, CRSP-COMPUSTAT, EXECOMP, and IRRC impose on the sample of merging and nonmerging-firm samples.

4.2.1 The restrictions imposed by EVENTUS data

4.2.1.1 Calculating 3-day, 7-day, 15-day, and 29-day announcement returns

This study analyzes on the short-term price impact of merger announcements on bidder and target shareholders. We identify the price impact with abnormal returns. Abnormal returns are the difference between observed and “normal” returns. To calculate abnormal returns, one must benchmark “normal returns”. We use the market-model to estimate “normal returns” for the merging firms.

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19 Brown and Warner (1985) provide a detailed analysis of different short-horizon event-study methods.
Bidder and target cumulative abnormal returns around merger announcements are obtained from the EVENTUS database. Appendix D presents the EVENTUS command file that we use to compile the abnormal returns. Market-model estimation starts 256 days prior to the announcement and stops 30 days prior to the announcement. We require that each firm to have at least 30 observations for the market-model estimation.

We study 3-day, 7-day, 15-day and 29-day cumulative abnormal returns centered on merger announcements. EVENTUS calculates cumulative abnormal returns (henceforth CARs) by summing daily abnormal returns over respectively the three, seven and eleven-day event windows.

EVENTUS fails to report 3-day, 7-day, 15-day and 29-day CARs for respectively, 7.27 percent, 7.27 percent, 7.25 percent, and 7.23 percent, of the bids proposed. EVENTUS fails to report 3-day, 7-day, 15-day and 29-day CARs for respectively, 8.90 percent, 8.83 percent, 8.83 percent, and 8.80 percent, of the bids received.

4.2.1.2 Confirming announcement dates

Identifying the correct announcement date is crucial to calculating abnormal returns. We rely on the announcement dates SDC provides. To check the reliability of SDC announcement dates, we randomly picked 74 deals and checked the validity of the announcement dates on LexisNexis and Factiva.

To construct the random sample, we first sort the deals according to announcement dates, and assign observation numbers. Second, the RANDBETWEEN function of EXCEL provides 50 random numbers that can range from 1 to 12,338, and 24 random numbers that can range from 12,239 to 18,231. Third, using the random numbers,
we pick the sample of 74 deals. Table 8 lists bidder and target names, the announcement
dates SDC provides, and the corresponding announcement dates we find in LexisNexis
for these deals. For the deals in which SDC and LexisNexis disagree about the
announcement date, we run an additional search in Factiva.

In 62 of the 74 deals, the announcements dates we find in LexisNexis match
perfectly with the announcement dates SDC provides. We could not find any mention of
7 deals in LexisNexis. In 3 deals, the SDC and LexisNexis announcement dates diverge
by 3 days. LexisNexis announcement date is on a Monday, whereas the SDC
announcement date is a Friday or Thursday. We conjecture that a late-Friday
announcement would be reported in the newspapers on Monday. Hence, we are not
worried about the discrepancy in announcement dates for these three deals. In 2 of the
deals, SDC provides incorrect announcement dates.

The announcement dates on Factiva agree with the SDC announcement dates for
one of the seven deals that we fail to find an announcement date in LexisNexis. For one
missing announcement, Factiva reports the announcement date as one day later than the
SDC date. For another missing announcement, Factiva reports the announcement date as
two months earlier than SDC. For 5.41 percent of the deals, neither LexisNexis nor
Factiva searches find an announcement date.

SDC reports incorrect announcement dates in 2 deals. In one deal, SDC records
the date in which the target rejects the offer as the announcement date. However, the
Factiva search shows that at the time of refusal of the first bid, the bidder announces
intention to launch the second bid for the same company. In the other deal, SDC reports
the date the bidder files for protection under Chapter 11 as the announcement date. The correct announcement date is 2 months prior to the date that SDC reports.

In 2.70 percent of the deals we checked, SDC announcement dates are incorrect. Incorrect announcement dates mean that we can’t identify market responses to announcements. However, SDC provides reliable announcement dates for the vast majority of deals. This justifies our using SDC to compile the sample of merging firms. As a robustness test, we use longer event-windows to overcome small discrepancies in announcement dates - such as 3-day discrepancies,

4.2.2 The restrictions imposed by CRSP-COMPUSTAT data

Financial statements are a major source of firm-specific information that investors can use to evaluate future merger activity. Restricting ourselves to the CRSP-COMPUSTAT database lets us construct the proxies that require financial-statement data. CRSP-COMPUSTAT does not have the required coverage for 6.56 percent of bidder quarters, 7.50 percent of target quarters, and 17.99 percent\(^{20}\) of nonmerging-firm quarters. As SDC starts compiling merger data beginning 1977, we surrender eight firm-quarters from third quarter of 1977 to third quarter of 1979 to build the previous mergers and merger intensity variables that rely on the merger record of both merging and nonmerging firms.

To investigate whether the requirement of CRSP-COMPUSTAT data coverage changes the composition of bidder and target firms, we analyze the distribution of bidder

\(^{20}\) 531 of 8,092 bidder quarters, 289 of 3,855 target quarters, and 92,701 of 515,209 nonmerging quarters don’t meet the CRSP-COMPUSTAT coverage requirement.
and target cumulative abnormal returns. Table 9 partitions nonmerging firms according to CRSP-CMPUSTAT coverage. Table reports mean, standard deviation, and number of observations for 3-day, 7-day, 15-day, and 29-day bidder and target CARs of bids that CRSP-CMPUSTAT covers in Panel A, and that it doesn't cover in Panel B. Panel C reports the t-statistic for the t-test of the null hypothesis that the mean CARs in the two subsamples are equal. On the one hand, bidder CARs around bids that CRSP-CMPUSTAT covers prove significantly lower than CARs that it doesn't cover. On the other hand, we observe no significant difference for target CARs.

The difference in means indicates that there may be other significant differences in the two subsamples. Table 10 investigates whether the distribution of bids that CRSP-CMPUSTAT covers and doesn't cover come from a common population. Panel A and B report the z-statistic for the Mann-Whitney, the p-value for the Kolmogorov-Smirnov, and the \( \chi^2 \)-statistic for the Kruskall-Wallis test in the bidder and target samples, respectively. All three tests reject the null hypothesis of a common population for the distribution of 3-day bidder CARs in the two subsamples. However, the tests fail to reject the null hypothesis for the distribution of 7, 15, and 29-day bidder CARs and target CARs in all windows.

By requiring CRSP-CMPUSTAT data coverage, we exclude a preponderance of bidders whose deal making the market approves. The difference in mean bidder CARs between the two subsamples indicates that bids which CRSP-CMPUSTAT covers aren't representative of the population of all bids. In light of this evidence, we stress that
our results relate to the subsample of bids that CRSP-COMPUSTAT covers and not that average CARs in this subsample lie below those found in the universe of all bids.

4.2.3 The restrictions imposed by EXECOMP data

The compensation contract is an important tool for aligning shareholder and managerial incentives. Investors can use information about managerial compensation in estimating the degree of incentive conflict, merger probabilities, and the impact of merger proposals. We obtain data on management characteristics and executive compensation from the EXECOMP database.

The frequency of data in the EXECOMP database is annual. EXECOMP covers firms that were or currently are included the S&P 1500 index. Observations in EXECOMP start in 1992. EXECOMP covers 1,635 bidder-years, 488 target-years, and 12,707 nonmerging-firm-years.

We check how EXECOMP affects the representativeness of the sample and how these differences restrict the inferences our analysis produces. Table 11 investigates whether the distributions of CARs differ between the subsamples of firms that EXECOMP covers and those it doesn’t cover. The table compares mean, standard deviation and number of observations of bidder and target CARs for bids that EXECOMP covers in Panel A with deals that EXECOMP doesn’t cover in Panel B. Panel C reports the t-test for the null hypothesis that the means are equal in the two subsamples. On the one hand, bidder CARs in all event windows prove significantly lower for bids that EXECOMP covers than those that it doesn’t cover. On the other hand,
only the 29-day target CAR proves significantly lower in the subsample with EXECOMP coverage.

Table 12 tests whether the distributions of CARs in the two subsamples come from a common population. Table reports the z-statistic for the Mann-Whitney, p-value for the Kolmogorov-Smirnov, and the $\chi^2$-statistic for the Kruskal-Wallis tests for bidders in Panel A, and for targets in Panel B. All three tests reject the null hypothesis of a common population for bidders, and fail to reject the null for targets.

The distribution of bidder CARs prove significantly different for the subsample of bids that EXECOMP covers. The distribution of target CARs doesn’t differ in the two subsamples. The bidder subsample that is covered in EXECOMP is not representative of the SDC-CRSP bidder firms sample in terms of abnormal cumulative returns.

The difference in means and the difference in distributions of bidder CARs indicate that the subsample which EXECOMP covers isn’t representative of the population. EXECOMP picks firms that realize significantly lower CARs. Our benchmark model of bidder and target candidacy excludes predictors that rely on EXECOMP data. In the robustness tests, we develop specifications that include predictors that rely on EXECOMP, and test whether introducing these variables improves our estimates of investor anticipations.

4.2.4 The restrictions imposed by the IRRC data

Monitoring and governance affect managerial incentives and decisions. Investors can use information about monitoring and governance procedures to estimate probability
and impact of merger proposals. We obtain corporate governance variables from Investor Responsibility Research Center (henceforth IRRC) database.

We lose great amount of data when we impose IRRC coverage. Currently the IRRC database covers six years of data (1990, 1993, 1995, 1998, 2000, 2002 and 2004). IRRC does not cover 94.28 percent of the nonmerging -quarters, 89.39 percent of bidder-quarters and 93.33 percent of target-quarters. We study how the data restriction changes the distribution of CARs and if these differences limit the inferences our analysis produce.

Table 13 describes the distributions of 3, 7, 15, and 29-day CARs for bids that IRRC covers in Panel A and for bids that IRRC doesn't cover in Panel B. Panel C reports the t-test for the null hypothesis that the means of the distributions are equal in the two subsamples. Mean bidder CAR (in all event-windows) and 29-day target CAR of bids that IRRC covers prove significantly lower than bids that IRRC doesn't cover.

Table 14 tests the null hypothesis that the CAR distributions of bids that IRRC covers and of bids that it doesn't cover come from a common population. Table reports the z-statistic for the Mann-Whitney, p-value for the Kolmogorov-Smirnov, and the $\chi^2$-statistic for the Kruskall-Wallis tests for bidders in Panel A, and for targets in Panel B. All three tests reject the null hypothesis of a common population for bidders, and fail to reject the null for targets.

The distribution of bidder CARs prove significantly different for the subsample of bids that IRRC covers. The distribution of target CARs doesn't differ in the two subsamples. The evidence indicates that the subsample of bids that IRRC covers may not
representative of the population. IRRC selects firms that realize significantly lower
CARs. In our benchmark model of bidder and target candidacy, we exclude predictors
that rely on IRRC data. In the robustness tests, we develop specifications that include
predictors that rely on EXECOMP, and test whether introducing these variables improves
our estimates of investor anticipations.
5 Predicting bidder and target candidacy

To identify bidder and target candidates, we presume that investors use variables that proxy for managerial motives. Chapter 3 describes the variables that might predict bidder and target candidacy. Chapter 4 enumerates the data sources that we use to construct the variables. This chapter investigates what variables (if any) can differentiate between bidder, target, and nonmerging quarters. We estimate models of bidder and target candidacy, and investigate to what extent investors anticipate bidder and target candidacy.

To estimate investor anticipations about bidder candidacy, we run ninety-seven probit regressions. To estimate parallel investor anticipations of receiving bids, we run another set of ninety-seven probit regressions. In both bidder and target regressions, the sample covers data from third quarter of 1979 to the fourth quarter of 2004. With two exceptions, the regressions are quarterly. The observations from the third quarter of 1979 to the fourth quarter of 1980 and the observations from the third to fourth quarters of 2004 are pooled into two cross-sections since the number of bidders or targets in these quarters is fewer than 10.

In bidder and target regressions, the endogenous variable takes on the value 1 if the firm proposes and receives at least one bid in the next quarter, respectively, and 0 otherwise. We compile predictors of bidder and target candidacy from three databases: financial-statement data come from CRSP-COMPUSTAT database; managerial-compensation-contract data come from EXECOMP database; and monitoring-data come from IRRC database. Since including EXECOMP and IRRC data severely restricts our
samples of merging and nonmerging firms\textsuperscript{21}, this chapter only examines variables that are constructed using financial-statement data. Chapter 7 tests specifications of bidder and target-candidacy models that introduce variables compiled from EXECOMP and IRRC.

5.1 Models for bidder candidacy

Probit regressions estimate equation 13 in 97 periods. $M_B$ is a dummy variable that takes on the value 1 if the firm proposes at least one bid in the next quarter, and 0 otherwise. Chapter 3 describes the predictors that we use to estimate equation 13.

$$M_B = \text{ROA}_B \times \gamma^{\text{ROA}}_B + \text{sales growth}_B \times \gamma^{\text{sales growth}}_B \times \text{resource-growth-mismatch indicator}_B \times \gamma^{\text{resource-growth-mismatch indicator}}_B + \text{sales shock}_B \times \gamma^{\text{sales shock}}_B + \text{sales shock squared}_B \times \gamma^{\text{sales shock squared}}_B + \text{price runup}_B \times \gamma^{\text{price runup}}_B + \text{share turnover}_B \times \gamma^{\text{share turnover}}_B + \text{high-information-asymmetry indicator}_B \times \gamma^{\text{high-information-asymmetry indicator}}_B + \text{merger intensity}_B \times \gamma^{\text{merger intensity}}_B + \text{cash ratio}_B \times \gamma^{\text{cash ratio}}_B + \text{size}_B \times \gamma^{\text{size}}_B + \text{change in size}_B \times \gamma^{\text{change in size}}_B + \text{concentration ratio}_B \times \gamma^{\text{concentration ratio}}_B + \text{previous mergers}_B \times \gamma^{\text{previous mergers}}_B + \epsilon_B.$$  

Equation 13

Table 15 reports the mean, standard deviation, 25\textsuperscript{th}, 50\textsuperscript{th}, and 75\textsuperscript{th} percentile values of the marginal-probability estimates. Marginal-probability estimates are the derivatives of the probability to propose a bid with respect to a particular exogenous variable. Equation 14 explains how STATA estimates marginal probabilities. Marginal probabilities are estimated at the median values for the continuous variables and at zero for the high-information-asymmetry and resource-growth-mismatch indicators.

\textsuperscript{21}Chapter 4 discusses the data restrictions that EXECOMP and IRRC databases impose.
\[ \frac{d}{dZ_i} \Phi(Z_i^B y_i^B) = \phi(Z_i^B y_i^B) y_i^B \] where \( i = \text{ROA, ... previous mergers,} \)

\( \Phi = \) cumulative density function of standard normal distribution
\( \phi = \) probability density function of standard normal distribution

The null hypothesis of no investor anticipations would be confirmed only if no regression slope differs insignificantly from 0. The last to second column in Table 15 reports the t-statistic for the t-test that tests the null hypothesis. We reject the null hypothesis for all the variables except resource-growth mismatch, concentration ratio, merger intensity, and size. Investors can anticipate bidder candidacy using proxies for managerial motives.

In proposing bids, we confirm the importance of three managerial motives: to generate shareholder value, to secure opportunistic benefits, and to exploit information asymmetries. Investor anticipations about bidder candidacy are influenced by proxies that represent motives to: generate shareholder value (such as ROA and sales-shock indicator), generate opportunistic benefits (such as cash ratio), and exploit information asymmetries (such as price runup and high-information-asymmetry indicator).

5.1.1 Proxies for motives to generate shareholder value

Management may generate shareholder value in three ways: by exploiting discrepancies in valuation [Gort (1969)]; by reallocating resources to withstand economic disturbances [Gort (1969); Mitchell and Mulherin (1996); Maksimovic and Phillips (2001); Andrade et al. (2001)]; by achieving economies of scale and scope [Gort (1969); Holmes and Schmitz (1995); Fluck and Lynch (1999)]; and by expanding market power.
[Gort (1969)]. Our findings lend some support to all three hypotheses about how mergers may generate shareholder value.

*Share turnover and concentration ratio* represent motives to exploit discrepancies in valuation. Table 15 shows that the coefficient of share turnover is significant and negative. The higher is the disagreement about the value of the firm (as proxied by higher trading in its shares), the less likely it is to propose a bid in the next quarter. We fail to find a significant relation between concentration ratio and bidder candidacy. The findings lend no support to the hypothesis that discrepancies about the value of firms motivate merger proposals.

*Sales shock* and *square of sales shock* proxy for motives to reallocate resources to manage economic disturbances. The economic-disturbances hypothesis is supported by the finding in Table 15 that firms who are experiencing larger sales shocks prove significantly more likely to propose bids. We also hypothesize that the direr a shock is the more motivated management should be to reallocate resources. However, Table 15 shows significant contradictory evidence in that the direr a shock is (the higher the square of sales shock) the less likely are firms to propose bids.

*Sales growth* proxies for motives to achieve economies of scale and scope and to build market power. Gort (1969) argues that there should be a positive relation between growth in demand and bidder candidacy if management wants to prevent competition while increasing capacity. However, if management wants to increase capacity to achieve economies of scale and scope, there should be a negative relation since, according to Gort (1969), it is cheaper to build capacity than buy capacity. The coefficient of sales growth –
the proxy for growth is negative and significant in Table 15. The negative coefficient indicates that achieving economies of scale and scope may motivate mergers.

Larger firms may be more likely to propose bids than smaller firms since it is easier for larger firms to achieve economies of scale and scope through proposing bids than soliciting them [Palepu (1986); Ambrose and Megginson (1992); Maksimovic and Phillips (2001); Moeller et al. (2004)]. An increase in size may also indicate the desire to expand. Size and change in size proxy for the level and the change in the size of a firm. In Table 15, the coefficient of size is insignificantly positive and the coefficient of change in size is significantly negative. The evidence fails to support the hypothesis that larger firms and firms that are increasing in size are more likely to propose mergers.

Mergers may enable firms to gain access to additional sources of capital [Fluck and Lynch (1999)], and to acquire growth options that the bidder management can better manage than the target management [Holmes and Schmitz (1995)]. Resource-growth-mismatch indicator represents motives to access new sources of capital. The indicator identifies firms with either growth opportunities but insufficient capital access, or insufficient growth opportunities and capital access. Table 15 finds no evidence to support this hypothesis as the resource-growth mismatch indicator proves insignificant.

ROA proxies for managerial competence. The more competent management is the higher should be the financial performance of the firm. The coefficient of ROA proves positive and significant. The more competent management is the more likely is the firm to propose a bid. The negative coefficient of sales growth and the positive coefficient of
ROA provide some evidence to support the hypothesis that motives to achieve economies of scale and scope might motivate merger proposals.

5.1.2 Proxies for motives to exploit information asymmetries

Management may generate shareholder value [Shleifer and Vishny (2003); Rhoades-Kropf and Viswanathan (2004)] or opportunistic benefits (Jensen, 2004) when it tries to exploit mispricing in the value of the firm. Price runup and high-information-asymmetry indicator proxy for motives to exploit management’s information advantage when markets misprice the value of the firm. Both hypotheses predict a positive relation between the same proxies. Therefore, the two hypotheses are empirically indistinguishable.

Table 15 shows that firms with larger price runups are significantly more likely to propose bids. This finding supports the hypothesis that managers of overvalued firms are tempted to acquire firms they would not have acquired if their equity was not overvalued.

Overvaluation with uncertainty about value drives merger activity. Double-sided information asymmetry models [Rhoades-Kropf and Viswanathan (2004)] reason that for target management to acquiesce to bids proposed by overvalued bidders, they must be fooled into thinking the bidder is less overvalued than it is. The high-information-asymmetry indicator is a proxy for both overvaluation and opaqueness in share prices. In Table 15, the coefficient of the high-information-asymmetry indicator is positive and significant. This finding supports the Rhoades-Kropf and Viswanathan hypothesis that mergers are motivated by overvaluation and opaqueness in share prices.
5.1.3 Proxies for multiple motives

We explore the possibility of multiple merger motives. Cash ratio, merger intensity, and previous mergers may represent more than one category of merger motives. Cash ratio and previous mergers may proxy for motives that seek shareholder value and opportunistic benefits. Merger intensity may proxy for motives that seek shareholder value and to exploit information asymmetries.

Fluck and Lynch (1999) predict that firms with restricted capital access are more likely to propose bids to access capital markets that they couldn't access as stand-alone firms. In this case, cash ratio may proxy for motives to achieve economies of scale and scope in financing new projects. Jensen (1986) offers a contradictory hypothesis and predicts that management with abundant free-cash-flows are more likely to propose mergers to generate opportunistic benefits. This suggests that cash ratio might also proxy for motives to generate opportunistic benefits. Jensen predicts a positive whereas Fluck and Lynch predict a negative influence of cash ratio on bidder candidacy. Table 15 shows that the coefficient of cash ratio is significant and positive. The findings support Jensen's free-cash-flow hypothesis.

It is well known that individual firms that have a history of merger activity are more likely to propose bids [Schipper and Thompson (1983); Maletesta and Thompson (1985); Asquith et al. (1983); Loderer and Martin (1990); Fuller et al. (2004); Ismail (2005)]. Motives to generate shareholder value may prompt management to acquire more than one company. It is also possible that management seeking to generate opportunistic benefits may engage in a succession of mergers. Similarly, if mispricing in shares persists
for some time, management may acquire a string of firms to exploit their information advantage. Table 15 shows that firms with a history of engaging in mergers are more likely to propose bids. Of all the predictors of bidder candidacy, merger intensity proves most significant.

According to Gort (1969), mergers cluster because economic disturbances are both date-specific and industry-specific. According to Rhoades-Kropf and (2004) clustering occurs because mispricing is both date-specific and industry-specific. Merger intensity may proxy for managerial motives to generate shareholder value and to exploit information asymmetries. Table 15 finds that the higher the merger intensity in the industry, the higher is the probability that firms propose bids. However, the coefficient of merger intensity proves insignificant.

5.2 Models for target candidacy

We follow the same strategy in estimating investor anticipations about target candidacy that we employ in analyzing bidders. Probit regressions estimate equation 15 in 97 periods. $M_T$ is an indicator that takes on the value 1 if the firm receives at least one bid in the next quarter, and 0 otherwise. Chapter 3 describes the proxies for each of the three categories of motives that predict target candidacy.
\[ M_T = ROA_T \gamma_{ROA} + sales\ growth_T \gamma_{sales\ growth} + resource-growth-mismatch\ indicator_T \gamma_{resource-growth-mismatch\ indicator} + sales\ shock_T \gamma_{sales\ shock} + sales\ shock\ squared_T \gamma_{sales\ shock\ squared} + price\ runup_T \gamma_{price\ runup} + share\ turnover_T \gamma_{share\ turnover} + high-inf\ ormation-asymmetry\ indicator_T \gamma_{high-inf\ ormation-asymmetry\ indicator} + merger\ intensity_T \gamma_{merger\ intensity} + cash\ ratio_T \gamma_{cash\ ratio} + size_T \gamma_{size} + change\ in\ size_T \gamma_{change\ in\ size} + concentration\ ratio_T \gamma_{concentration\ ratio} + previous\ mergers_T \gamma_{previous\ mergers} + \epsilon_T; \]

Table 16 reports the mean, standard deviation, 25th, 50th, and 75th percentile values of the marginal-probability estimates. Marginal-probability estimates are the derivatives of the probability to receive a bid with respect to a particular exogenous variable. Equation 16 explains how STATA estimates marginal probabilities. Marginal probabilities are estimated at the median values for the continuous variables and at zero for the high-information-asymmetry and resource-growth-mismatch indicators.

\[ \frac{\partial}{\partial Z_i} \Phi(Z_i^T \gamma_i^T) = \phi(Z_i^T \gamma_i^T) \gamma_i^T \quad \text{where } i = ROA, ..., previous\ mergers, \]

16 \[ \Phi = \text{cumulative density function of standard normal distribution} \]
16 \[ \phi = \text{probability density function of standard normal distribution} \]

The null hypothesis of no investor anticipations would be confirmed only if no regression slope differs insignificantly from 0. The last to second column in Table 16 reports the t-statistic for the t-test of 0 slopes. We reject the null hypothesis for all the variables except share turnover. As in investor anticipations about bidder candidacy, a
mix of motives prompts management to solicit bids. Investor anticipations about target candidacy are influenced by proxies that represent motives: to generate shareholder value (such as ROA and sales-shock indicator) and to generate opportunistic benefits (such as cash ratio).

5.2.1 Proxies for motives to generate shareholder value

ROA, resource-growth mismatch, sales shock, square of sales shock, sales growth, change in size, concentration ratio and share turnover proxy for the different ways in which management may generate shareholder value through mergers. ROA, resource-growth-mismatch indicator, sales growth, size and change in size represent motives to generate value by achieving economies of scale and scope. Share turnover and concentration ratio represent motives to merge due to disagreement about the value of the target. Sales shock and square of sales shock represent motives to generate value by reallocating resources when faced with industry-wide shocks. Our findings lend some support to all three hypotheses about how mergers may generate shareholder value.

The findings only partially support the Holmes and Schmitz (1995) hypothesis that to utilize superior management, firms with more qualified management will acquire firms with less qualified management. Tables 18 and 19 show that firms with higher ROA – proxy for managerial quality - prove significantly more likely both to propose and solicit bids, respectively.

Table 16 finds that firms with a mismatch in the growth opportunities and the access to finance the opportunities prove more likely to receive bids. The finding lends
support to the Fluck and Lynch (1999) hypothesis that financial synergies may motivate mergers.

Size and change in size are firm characteristics that might identify firms which are motivated to achieve economies of scale and scope [Gort (1969); Maksimovic and Phillips (2001)]. If firms are trying to achieve economies of scale and scope, smaller firms are more likely to be target candidates since it is harder for them to achieve economies of scale and scope through making bids than soliciting them. A decreasing trend in size might also identify likely target candidates. Table 16 finds that probability to solicit a bid is decreasing in size. We also find that probability to solicit a bid is decreasing in the change in size. Table 16 also shows that the coefficient of sales growth proves significant and negative. Firms losing market share may merge to exit the industry. The findings provide some support for the economies-of-scale-and-scope hypothesis.

We find no evidence that discrepancies in the value of firms, which should cause higher trading volumes, motivate mergers. Table 16 finds that the higher the concentration ratio, the significantly less likely are firms to receive bids. Gort (1969) hypothesizes that the higher the barriers to entry (as proxied for by higher concentration ratios), the more investors disagree about the value of firms in the industry, and a larger number of firms engage in mergers. Our findings do not provide any support for the hypothesis that discrepancies in valuation motivate firms to solicit bids.

Sales shock and square of sales shock represent motives to reallocate resources to manage economic disturbances. Table 16 finds supporting evidence for this hypothesis in
that firms that are experiencing larger sales shocks prove more likely to receive bids. As in bidder models, we find contradictory evidence to the hypothesis that the direr a shock is (proxied by square of sales shock), the more likely a firm is to propose a bid.

5.2.2 Proxies for motives to exploit information asymmetries

Information-asymmetry models argue that, while some managers who think their firm is overvalued may want to exploit their information advantage by buying other firms “cheap”, other managers may want to take advantage of their private information by selling their “expensive” firm. Price runup proxies for overvaluation in share prices. In contradistinction to the predictions of information-asymmetry models, Table 16 shows that the coefficient of price runup is negative and significant. Firms, whose share prices increased in the previous two years, are less likely receive bids. One reason may be that a runup in prices makes targets prohibitively expensive to buy.

Uncertainty about private values enables managers to hide their true goals. The double-sided information-asymmetry models predict that overvalued firms with greater uncertainty about their value are more likely to receive acquisition bids. This prediction is unsupported since the coefficient of high-information-asymmetry indicator proves negative and significant. To the contrary, undervalued firms with greater transparency in their share price are significantly more likely to be target candidates. Our findings indicate that information asymmetries may not motivate managers to receive bids.
5.2.3 Proxies for multiple motives

Firms with little cash on hand and needs to finance projects may solicit bids to access capital markets [Fluck and Lynch (1999)]. Pursuit of economies of scale and scope implies a negative influence of cash ratio on target candidacy. Jensen (1986) also predicts a negative influence of firm's cash ratio on target candidacy. According to the free-cash-flow hypothesis, managers with cash on hand are reluctant to solicit bids since mergers destroy the opportunistic benefits that cash holdings afford. Table 16 shows that the probability of receiving bids decreases with cash ratio. Firms with higher cash holdings may be less likely to receive bids either because management is reluctant to relinquish the control of cash or because higher cash holdings obliterate motives to merge in order to access capital markets.

Firms that have a history of merger activity are more likely to receive bids [Holmes and Schmitz (1995); Manne (1965)]. Receiving a bid in the past indicates that the firm may have high business-quality. The signal of high business-quality makes the firm a more likely target candidate [Holmes and Schmit (1995)]. Manne (1965) refers to mergers as a disciplining mechanism that gets rid of management teams which are incapable or unwilling to generate shareholder value. Hence, an unsuccessful bid in the past may indicate that there is the potential to generate shareholder value with a new management team. Furthermore, Mitchell and Lehn (1990) find that firms which previously proposed bids that destroyed shareholder value make likely target candidates. The coefficient of previous mergers proves positive and significant. Prior merger history predicts target candidacy.
Information-asymmetry models and the economic-disturbances hypothesis predict that mergers cluster across time and industry. *Merger intensity* captures the clustering effect. We find that firms operating in industries with higher levels of merger intensity are more likely to solicit bids.

### 5.3 Comparing the predictive power of models for bidder and target candidacy

Table 17 and Table 18 investigate the predictive power of bidder and target candidacy models, respectively. Panels A of Table 17 and Table 18 report the mean, standard deviation, 25th, 50th, 75th percentile values for the probability of bidding in the bidder and nonbidder subsamples as estimated by bidder-candidacy models, and the probability to receive bids in the target and nontarget subsamples as estimated by target-candidacy models. Nonbidder subsample covers targets and nonmerging firms, and nontarget subsample covers bidders and nonmerging firms. Panel B in both tables reports the mean, standard deviation, 25th, 50th, 75th percentile values for the $X^2$ statistic for the likelihood-ratio test and pseudo $R^2$.

In our sample, the fraction of firms that propose at least one bid in any quarter is 1.78 percent. If investors don't anticipate bidders, the average probability for any firm to bid should be 1.78 percent. Panel A of Table 17 reports that the average probability of bidding is 19.78 percent for bidders and 1.35 percent for nonbidders. Investors are correctly identifying that bidders are more probable to propose bids than nonbidders.

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22 The sample covers 7,559 bidder quarters, and 423,975 nonbidder quarters. Hence, the fraction of firms proposing at least one bid in a quarter is $7559/423975 = .0178$. 

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Panel B of Table 17 reports the average $R^2$ in the cross-sectional regressions as 37 percent, and a range of 23 percent to 73 percent. The null hypothesis that the model has no explanatory power is rejected in all ninety-seven regressions. Investors can anticipate bidder candidacy as is evidenced by the predictive power of the models.

The fraction of firms receiving a merger bid in any quarter is 0.85 percent. The null hypothesis that investors don’t anticipate target candidacy implies that the average probability for any firm to receive bids should be 0.85 percent. Panel A of Table 18 reports that the average probability to receive bids is 6.87 percent for targets and 0.76 percent for nontargets. Investors are predicting that targets are more likely to receive bids than nontargets.

Investors don’t seem to be doing as good a job in predicting target candidates as they do in predicting bidder candidates. Panel B of Table 18 reports that the average $R^2$ is 27 percent with a range of 13 percent to 68 percent. In all but 9 periods, the $R^2$ in the bidder model is higher than it is in the target model.

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23 The sample covers 3,564 target quarters, and 419,086 nontarget quarters. Hence, the fraction of firms receiving at least one bid in a quarter is $\frac{3564}{419086}=.0085$. 

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6 Market responses to merger announcements

This chapter investigates whether and how bidder and target cumulative abnormal returns vary with investor anticipations about bidder and target candidacy. We first describe the distribution of bidder and target cumulative abnormal returns. We then investigate whether investor anticipations affect the distribution of bidder and target abnormal returns. Finally, we analyze whether and how investor anticipations affect bidder and target abnormal returns in a two-stage model in which we control for the economic fit of the bidder and target and the confidential items of negotiation.

6.1 Univariate analysis

6.1.1 The distribution of bidder and target abnormal returns

This section describes the distribution of bidder and target abnormal returns using different event windows. Some bidders and targets show multiple bids on event days. 124 bidders propose 264 bids on the same day, and 22 targets receive 46 bids on the same day. We can’t distinguish separate market responses for bids proposed and received on the same days. Consequently, we exclude the bidders and targets that propose or receive more than one deal on the same day. In Chapter 7, we test whether our results are robust to including these deals.

Table 19 reports the mean, standard deviation, 25th, 50th, 75th percentile values for the distribution of 3-day, 7-day, 15-day, and 29-day cumulative abnormal returns for bidders in Panel A and for targets in Panel B. The mean bidder abnormal returns range
from 0 percent to 1.09 percent whereas mean target returns range from 19.92 percent to 25.57 percent.

6.1.2 Investor anticipations and the distribution of bidder and target cumulative abnormal returns

Evidence in cited in Chapter 5 rejects the null hypothesis that investors don’t anticipate bidder and target candidacy. We now investigate whether and how investor anticipations affect bidder and target abnormal returns. Announcements that surprise the market should convey more information than announcements that the market widely anticipated. Consequently, we hypothesize that abnormal returns to more-predictable bidder and target candidates should be larger in magnitude than returns to less-predictable bidder and target candidates.

6.1.2.1 Cumulative abnormal returns to anticipated and unanticipated bidder candidates

To test whether abnormal returns to more-predictable bidders differ from returns to less-predictable bidders, we split our sample of merging firms into two subsamples of anticipated bidders and unanticipated bidders. The probability to become a bidder is an inverse measure of how much the bidder surprises the market. The higher is the probability of proposing a bid, the more widely anticipated is the bidder. If the predicted probability of bidding is in the top 25th percentile, we identify a bidder as anticipated, and if the predicted probability is in the bottom 25th percentile, we identify a bidder as unanticipated.
Figure 1 through Figure 4 displays how the distributions of 3, 7, 15, and 29-day cumulative abnormal returns to anticipated bidders differ from those of unanticipated bidders. The plots of returns to anticipated and unanticipated bidders diverge most at the tails of the distributions. The tails of the return distributions are the places we expect investor anticipations to show themselves. The plots suggest that the magnitude of returns to unanticipated bidders is larger than those to anticipated bidders.

Table 20 reports the mean, standard deviation, and the number of observations for 3-day, 7-day, 15-day, and 29-day cumulative abnormal returns to unanticipated bidders in Panel A and to anticipated bidders in Panel B. The first column in Panel C reports the t-statistic for the t-test of the null hypothesis that the means of absolute values of CARs are equal in the two subsamples. As suggested by the figures, the magnitude of CARs to unanticipated bidders proves significantly higher than magnitude of CARs to anticipated bidders. The difference in magnitude supports our hypothesis that unanticipated deals convey more information than anticipated deals.

The t-statistics for the t-test, reported in the last to second column in Panel C, reject the null hypotheses that the mean of CARs to anticipated and unanticipated deals are equal. CARs to unanticipated bidders prove significantly higher than anticipated bidders. The positive market response to unanticipated deals suggests that, on average, markets evaluate unanticipated deals to be positive net-present-value projects. The information deals convey about unanticipated managerial motives serve shareholder interests.
The p-value for the variance-ratio test, reported in the last column in Panel C, leads us to reject the null hypotheses that the variance of CARs to anticipated and unanticipated deals is equal. The distributions of CARs prove significantly tighter around the mean for anticipated bidders than they do for unanticipated bidders. The tighter distribution of returns to anticipated bidders implies that announcements made by anticipated bidders disturb markets less than announcements of unanticipated bidders. This result confirms our hypothesis that anticipated deals would convey less information and generate a tighter distribution of returns.

Table 21 tests whether the distributions of abnormal returns in the anticipated and unanticipated samples come from a common population. The table reports the z-statistic, p-value, and chi²-statistic for the Mann-Whitney, Kolmogorov-Smirnov, and Kruskall-Wallis tests that the two subsamples are drawn from a common population, respectively. We reject the null hypothesis of a common population in all tests and event windows except for the Mann-Whitney test in the 7-day window. The distributions of CARs to unanticipated and anticipated bidders prove different.

To check whether the results are robust to alternative definitions of anticipation, we experiment with different breakpoints. We identify a bidder as anticipated if the predicted probability is larger than the median for all bidders, and as unanticipated if the predicted probability is smaller than the median. Table 22 reports the mean, standard deviation, and the number of observations for 3-day, 7-day, 15-day, and 29-day cumulative abnormal returns to unanticipated bidders in Panel A and to anticipated bidders in Panel B. The first column in Panel C reports the t-statistic for the t-test of the
null hypothesis that the means of absolute values of CARs are equal in the two subsamples. The magnitude of 3-day and 7-day CARs to unanticipated bidders prove significantly higher than CARs to unanticipated bidders. The magnitude of 15-day and 29-day CARs to unanticipated bidders prove insignificantly higher. The last two columns in Panel C report the t-statistic and p-value for the t-test and variance ratio test of the null hypotheses that, respectively, the mean and variance of CARs are equal in the two subsamples. The results remain qualitatively the same. CARs to unanticipated bidders prove significantly higher and tighter around the mean than CARs to anticipated bidders.

Previous studies find that mean bidder CARs using different event-windows vary around 0 percent [Jensen and Ruback (1983); Andrade and Stafford (2001)]. A finding of no abnormal returns implies that: (i) bidders engage in mergers that, on average, generate no value for their shareholders, or; (ii) abnormal returns around announcements are flawed estimates of market responses to mergers.

The finding of larger magnitude of CARs to unanticipated bidders lends support to the hypothesis that CARs may be flawed measures of market responses to mergers. In an efficient market, prices of bidder shares should incorporate the expected impact of investor anticipations prior to announcements. In this case, as the findings confirm, average CARs attenuate towards 0. However, when we identify a subset of unanticipated bidders, we find that CARs prove significantly positive. The evidence suggests that relying on CARs around announcements to draw conclusions about the shareholder value anticipated deals generate (or destroy) is misleading.
6.1.2.2 Cumulative abnormal returns to anticipated and unanticipated target candidates

As in our analysis of bidder returns, we split target candidates into two groups: anticipated and unanticipated candidates. If the predicted probability of receiving a bid is in the top (bottom) 25th percentile, we identify a target as anticipated (unanticipated). Figure 5 through Figure 8 display how the distributions of 3, 7, 15, and 29-day cumulative abnormal returns to anticipated targets differ from those of unanticipated targets. The plots of anticipated and unanticipated targets overlay each other more than those of anticipated and unanticipated bidders.

Table 23 investigates whether the distributions of CARs to anticipated and unanticipated targets differ. The table reports mean, standard deviation, and the number of observations for 3-day, 7-day, 15-day, and 29-day cumulative abnormal returns to unanticipated targets in Panel A and to anticipated targets in Panel B. The first column in Panel C reports the t-statistic for the t-test of the null hypothesis that the means of absolute values of CARs are equal in the two subsamples. The magnitude of CARs to unanticipated bidders differs insignificantly from magnitude of CARs to anticipated bidders. The t-statistics and p-values for the t-test, reported in the last two columns in Panel C, fail to reject the null hypotheses that the mean and variance of CARs are equal in the two subsamples. The findings offer no evidence that distributions of CARs to anticipated and unanticipated targets differ.

Table 24 tests whether the distributions of abnormal returns in the anticipated and unanticipated target samples come from a common population. Table reports the z-
statistic, p-value, and chi²-statistic for the Mann-Whitney, Kolmogorov-Smirnov, and Kruskall-Wallis tests that the two subsamples are drawn from a common population, respectively. We fail to reject the null hypothesis. The distributions of CARs to unanticipated and anticipated targets don’t prove different.

We also use an alternative definition of anticipation to split the sample. We identify a target candidate as anticipated if the predicted probability to receive a bid is larger than the median and as unanticipated if the predicted probability is smaller than the median. Table 25 investigates if the distributions of CARs to anticipated and unanticipated targets differ. The results remain qualitatively the same except for the tests of variances. The tests reject the null hypothesis that the variances of distributions are equal in the two distributions. The distributions of CARs in the unanticipated subsample are significantly tighter around the mean than those in the anticipated subsample. If unanticipated deals convey more information, CARs to unanticipated targets should prove looser around the mean than CARs to anticipated targets. The failure of target-candidacy models to successfully identify anticipated target candidates, and the use of a less precise identification scheme in categorizing anticipated and unanticipated deals may explain this result.

6.2 Two-stage model of investor anticipations and market responses

Section 6.1 suggests that investor anticipations about bidder candidacy affect cumulative abnormal returns around announcements. This section analyzes investor
anticipations and CARs in a two-stage model where we control for the fit and bargaining power of bidders and targets.

6.2.1 Regressions of bidder abnormal returns

Equation 17 seeks to explain whether and how investor anticipations affect market responses to merger proposals. The first four columns of Table 26 estimate different specifications of regression-equation 17. In all specifications, the endogenous variable is the 7-day bidder cumulative abnormal returns \((CAR_B)\). CARs may only be calculated upon a merger announcement \((M_B=1)\). Equation 18 describes how we construct Heckman’s lambda using the estimates of bidder-candidacy models \((-Z_{B,Y_B})\) that Table 15 reports.

\[
17 \quad (CAR_B | M_B = 1) = X\beta_B + \lambda_B \beta_{\lambda B} + \eta_B,
\]

\[
18 \quad \lambda_B = \frac{\phi(-Z_{B,Y_B})}{1 - \Phi(-Z_{B,Y_B})}.
\]

In specification 1 of Table 26, the regressor \((X)\) is the indicator for an all-equity deal. The economic fit between bidder and target determines how much total shareholder value that the merger generates. The bargaining power of bidder management relative to target management determines how the total shareholder value that the merger generates is shared between bidder and target shareholders. The next three specifications introduce regressors that proxy for the economic fit and bargaining power of bidders and targets.
The fifth specification uses all regressors except Heckman’s lambda to let us benchmark the results against a single-equation model that equation 19 describes.

\[ (\text{CAR}_B | M_B = 1) = X\beta_B + \epsilon_B. \]

Table 27 investigates whether introducing industry and time fixed effects alter the results presented in Table 29. Table 27 follows the same strategy as Table 26 to estimate equations 17 with one exception; it introduces industry and year fixed-effects. Industry indicators for 2-digit SIC-codes and year indicators for announcement years are included but not reported.

6.2.1.1 Heckman’s lambda as a proxy for managerial motives

Heckman’s lambda is an inverse transformation of the probability of proposing a bid. The larger is Heckman’s lambda, the larger is the surprise about bidder candidacy and the more information announcements convey about unobservable motives. We expect Heckman’s lambda to be significant if investors anticipate announcements. In Table 26 and Table 27, the coefficient for Heckman’s lambda proves positive and statistically significant in all specifications. The simultaneous-equation results support the findings of Section 6.1 that announcement surprises influence bidder abnormal returns.

Heckman’s lambda is economically as well as statistically significant. For a standard deviation change in Heckman’s lambda, bidder returns change by 48 to 51 basis points in different specifications of Table 26 and Table 27. Even though, we cannot pull apart the distinct pieces of information revealed, the positive market response to surprises about bidder candidacy implies that investors infer managerial motives to serve shareholder interests. For the market response to be positive, the information that
announcements convey about motives must be more about the shareholder value the merger creates, and less about opportunistic managerial benefits or overvaluation in share prices.

Table 26 and Table 27 show that bidder cumulative abnormal returns are significantly lower in equity-financed deals. The indicator for an all-equity deal proxies for latent motives to exploit information asymmetries by financing the deal using overvalued equity. This finding is in line with the Myers and Majluf (1986) pecking-order hypothesis that markets assess the firm as overvalued when equity is used to finance investment projects.

Both Heckman's lambda and all-equity indicator prove significant in all specifications. All-equity indicator proxies for previously unobservable motives to exploit information asymmetries whereas Heckman's lambda proxies for previously unobservable motives to generate bidder shareholder-value, to secure opportunistic benefits, and to exploit information asymmetries. The significance of both all-equity indicator and Heckman's lambda means that investors price the information about motives to exploit information asymmetries as well as to generate shareholder value and to secure opportunistic benefits. Consequently, we interpret the sign of Heckman's lambda as expressing previously unobservable motives to generate value for bidder shareholders and to secure opportunistic benefits over and above the motives to exploit information asymmetries that all-equity indicator represents.

The fifth specifications in Table 26 and Table 27 benchmark the results of a single-equation model by including all regressors except for Heckman's lambda. In
specification 4, the t-value tells us that excluding Heckman’s lambda would decrease the 
$R^2$. The $R^2$ in specification 5 is lower than that in specification 4. This finding supports 
the hypothesis that investor anticipations about bidder candidacy contribute to our 
understanding of market responses to merger announcements. A single-equation model 
isn’t as powerful in explaining market responses to merger announcements as the two-
stage model. However, the small adjustments in the size of other significant slope 
coefficients tell us that the information Heckman’s lambda captures is largely orthogonal 
to that imbedded in other regressors. Ignoring the endogeneity in investor anticipations 
and market responses lead to an omitted-variable bias rather than a simultaneous-
equations bias.

6.2.1.2 Controls for the confidential items of negotiation and merger fit

Specifications 2 through 4 in Table 26 and Table 27 introduce controls for the 
merger fit and confidential items of negotiation. The economic fit between the bidder and 
target determines how much total shareholder value the merger generates. Three 
indicators proxy for the economic fit: whether the merging firms operate in the same 
industry, whether they are located in the same state, and whether the bidder and target are 
public firms. Confidential items of negotiation when revealed show the relative 
bargaining power of bidders and targets. The relative bargaining power determines how 
the total value is shared between bidder and target shareholders. Three indicators proxy 
the relative bargaining power of bidders and targets: whether the target management 
initially resists the merger, whether the target is in bankruptcy proceedings, and whether 
the target has anti-takeover defenses in place.
6.2.1.2.1 Controls for the merger fit

Operating in the same line of business affects the extent to which the assets-in-place of the stand-alone enterprises complement and substitute each other [Campa & Kedia (2002); Villalonga (2004)]. The same-industry indicator controls for differences in market responses to focus-increasing and focus-decreasing (or diversifying) deals. Geographic proximity may also affect the economic fit in two ways: firms closely situated may have closer corporate cultures which in turn may increase or decrease the total shareholder value that the mergers generate [Chakrabarti et al. (2005)]; or local deals may work to the advantage bidder shareholders since geographic proximity may mean that bidder management has superior information about the target than further-away competitors [Kedia et al. (2005)]. The same-state indicator controls for differences in market responses to differences in the geographic proximity of merger partners. The ownership structure is another factor that may affect market responses to announcements since the ownership structure of the bidder and target affect the liquidity of shares and the access to capital markets. The target-public and bidder-public indicators controls for market responses to the differences in ownership structure.

The second specification in Table 26 and Table 27 introduce the three proxies for the economic fit. Heckman’s lambda continues to be both economically and statistically significant when we control for the economic fit. However, none of the proxies for merger fit prove statistically significant. Differences in industry, state or ownership structure don’t affect market responses to bidder announcements significantly.
6.2.1.2.2 Controls for the relative bargaining power of bidders and targets

Bidder management may sweeten the deal for target shareholders when faced with target managerial-resistance [Jennings and Mazzeo (1993)]. Unwelcoming-attitude indicator controls for differences in reception of the merger proposal. Anti-takeover defenses strengthen target management ability to resist takeovers and increase the bargaining power of target management [Ambrose and Megginson (1992)]. Anti-takeover-defenses indicator controls for market responses to the presence of anti-takeover defenses. Target bargaining power varies inversely with the need of target shareholders to sell the firm. Target-bankrupt indicator controls for the extreme case of the need to sell, target bankruptcy.

The third specifications in Table 26 and Table 27 introduce proxies for the relative bargaining power of bidders and targets. As expected, an unwelcoming target management significantly lowers bidder abnormal returns. Unwelcoming-attitude indicator proves both statistically and economically insignificant. The positive coefficient of target-bankrupt indicator implies that management of targets in bankruptcy proceedings with a desire to get something out of the wreckage (perhaps by transferring value from creditors) may be willing to settle for a worse deal for. However the effect is insignificant.

The fourth specification in Table 26 and Table 27 introduces proxies for both the merger fit and bargaining power of bidders and targets. The coefficients for the economic fit and relative bargaining power remain qualitatively unchanged. Only the unwelcoming-attitude proves statistically significant.
6.2.2 Regressions of target abnormal returns

We use the same regression strategy to analyze market responses to reception of bids that we use to analyze proposal of bids. Equation 20 explains whether and how investor anticipations affect market responses to announcements of bids that firm receive. The first four columns of Table 28 estimate different specifications of regression-equation 20. In all specifications, the endogenous variable is the 7-day bidder cumulative abnormal returns \((\text{CAR}_r)\). CARs are conditional on observing merger announcements \((M_T = 1)\). Equation 21 describes how we construct Heckman’s lambda using the estimates of target-candidacy models \((-Z_rY)\) that

\[
\text{CAR}_r | M_T = 1 = X_r \beta_T + \lambda_T X_r \beta_{T'} + \eta_r, \tag{20}
\]

\[
\lambda_T = \frac{\phi(-Z_rY_T)}{1 - \Phi(-Z_rY_T)}. \tag{21}
\]

In specification 1 of Table 28, the regressor \((X_T)\) is the indicator for an all-equity deal. The next three specifications introduces additional regressors that proxy for the economic fit and bargaining power of bidders and targets. The economic fit between bidder and target determines how much total shareholder value that the merger generates. The bargaining power of bidder management relative to target management determines how the total shareholder value that the merger generates is shared between bidder and target shareholders. Equation 22 describes a single-equation model of market responses. The fifth specification of Table 28 uses all regressors except Heckman’s lambda to estimate equation 22.
Table 29 investigates whether introducing industry and time fixed effects changes the results presented in Table 28. Table 29 follows the same strategy as Table 28 to estimate equations 20 with one exception; it introduces industry and year fixed-effects. Industry indicators for 2-digit SIC-codes and year indicators for announcement years are included but not reported.

6.2.2.1 Heckman’s lambda as a proxy for managerial motives

In all specifications of Table 28, coefficient of Heckman’s lambda proves positive and significant. However, when we control for industry and year fixed-effects in Table 29, coefficient of Heckman’s lambda remains positive but proves statistically insignificant. Introducing industry and year fixed-effects erodes the economic as well as statistical significance of Heckman’s lambda. For a standard deviation change in Heckman’s lambda, target returns change by 112 to 117 basis points in different specifications in Table 28, and by 62 to 64 basis points in Table 29.

In bidder regressions, a standard deviation change in lambda is of the same order of magnitude as a change in lambda from the 25th to the 75th percentile. However, in target regressions, a standard deviation change in lambda doesn’t correspond to a change in lambda from the 25th to the 75th percentile. A standard deviation change in lambda is 6.01 percent in specifications of Table 28 and 5.77 percent in Table 29 whereas a change

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24 A standard deviation change in lambda is 13.21 % and a change in lambda from 25th to 75th percentile is 13.29 % in specifications reported in Table 26 and Table 27.
in lambda from 25th to 75th percentile is 3.12 percent in Table 28 and 3.03 percent in Table 29.

For a standard deviation change in lambda or a 50 percent change in lambda from 25th to 75th percentile, bidder returns ranges from 48 to 51 basis points for specifications of Table 26 and Table 27. However, the range in target returns is halved for a 50 percent change in lambda from 25th to 75th percentile when compared to a standard deviation change in lambda. For a 50 percent change in lambda, target returns ranges from 57 to 59 basis points for specifications of Table 28 and from 31 to 32 basis points in Table 29.

The smaller variation in target lambda and the failure of candidacy models to estimate target candidacy as well as bidder candidacy suggests that investors can’t anticipate target candidates as well as they do bidder candidates. Because announcements convey more information about the target than they do about bidders, the abnormal returns to target shareholders prove greater in magnitude than abnormal returns to bidders.

A crucial assumption of event studies is that analysts learn event-related information in a short window of time. Investor ability to anticipate events means that some merger-related information is stale at the time of announcements. We find an asymmetry between the staleness of information concerning bidder and target candidates. The information that announcements reveal about targets is less stale. Without controlling for the differences in staleness, it is wrong to conclude that target shareholders enjoy the lion’s share of the value that mergers generate.
Our findings indicate that, at least to some extent, the asymmetry in investor anticipations about bidder and target candidacy drives the disparity in bidder and target abnormal returns. To investigate the disparity between bidder and target CARs, Panel A of Table 30 classifies bidders and targets into 10 categories according to the predicted probability of proposing and receiving bids, and compares CARs of equally anticipated bidders and targets. Panel B of Table 30 reports the average of differences in the 10 categories, and the difference in CARs across all deals. Panel B shows that when we control for investor anticipations the difference in CARs is reduced by 3 percent. The evidence supports our hypothesis that to some extent the asymmetry in investor anticipations causes the disparity in bidder and target returns.

As in bidder regressions, we introduce equity-only indicator and proxies for the fit and bargaining power of bidders and targets to control for the information that announcements convey. In all regression specifications, the equity-only indicators prove significant and negative. The finding supports the Myers and Majluf (1986) pecking-order hypothesis.

The fifth specification in Table 28 and Table 29 benchmarks the results of a single-equation model by including all regressors except for Heckman’s lambda. Excluding Heckman’s lambda decreases the $R^2$ less in target regressions than it does in bidder regressions. This finding supports the hypothesis investor anticipations about bidder candidacy matter more in analyzing CARs than anticipations about target candidacy. Again, the information Heckman’s lambda captures is largely orthogonal to that imbedded in other regressors. Ignoring the endogeneity in investor anticipations
about target candidacy and market responses leads to an omitted-variable bias rather than a simultaneous-equations bias.

6.2.2.2 Controls for the merger fit and relative bargaining power of bidders and targets

We follow the same regression strategy in analyzing target CARs as we do in analyzing bidder CARs. Specifications 2 through 4 in Table 28 and Table 29 introduce controls for the merger fit and relative bargaining power of bidders and targets. *Same-industry, same-state,* and *bidder-public* indicators proxy for the economic fit. *Unwelcoming-attitude, target-bankrupt* and *anti-takeover-defenses* indicators proxy for the relative bargaining power of bidders and targets.

6.2.2.2.1 Controls for the merger fit

The second specification in Table 28 and Table 29 introduces regressors that are proxies for the fit between the merger partners. Of the three proxies for the economic fit only same-state indicator proves significant in both tables. On the one hand, Table 28 and Table 29 shows that target returns are significantly lower when the target and bidder main operations are in the same state. On the other hand, Table 26 and Table 27 tell us that bidder returns are higher when the target and bidder main operations are in the same state.

Chakrabarti et al. (2005) interpret geographical proximity as proxying the similarity in corporate culture. Similar firms may have an easier time working together. If
this is the case, bidder shareholders seem to be reaping all the benefits from any synergies due to similar corporate culture whereas target shareholders are bearing all the costs. Another view on geographic proximity argues that bidders in close proximity may enjoy an edge in negotiations since they know the target better and can negotiate a better deal [Kedia et al. (2005)]. According to Kedia et al. (2005), in deals where the bidder and target are located close, the higher negotiation power of bidder management means that bidder shareholders enjoy higher returns, and target shareholders suffer from lower returns. The findings lend support to this hypothesis.

6.2.2.2 Controls for the relative bargaining power of bidders and targets

The third specification in Table 28 and Table 29 introduces regressors that proxy for the relative bargaining power of bidders and targets. Of the proxies for relative bargaining power of bidders and targets, only target-bankrupt indicator proves significant. CARs to targets in bankruptcy proceedings prove significantly lower. There is less target shareholder value generated in these mergers relative to deals in which the target is healthy. Judges and creditors are often the decision-makers in bankruptcy. Consequently, mergers may be generating value for other stakeholders such as creditors and employees.
7 Robustness Tests

The findings in Chapter 6 indicate that investor anticipations influence market responses to merger announcements. In a single-equation model of market responses that ignores investor anticipations, bidder CARs are biased downward by omitted-variable bias. Target CARs aren’t as much affected by omitted-variable bias as bidder CARs. This chapter investigates whether any respecification of the two-stage model, sampling experiment or relaxing of the market-efficiency assumption undermines the influence of investor anticipations on market responses.

We investigate four respecifications for candidacy models to analyze whether we can predict candidacy more successfully and whether the respecifications weaken the influence of investor anticipations on market responses. The first respecification expands the estimation window from a quarter to a year. The second respecification introduces proxies for the characteristics of monitoring and managerial compensation contract. The third respecification uses the full SDC-sample of merging firms by not requiring coverage on CRSP-COMPUSTAT to predict candidacy. The fourth respecification splits the sample into two subsamples to investigate time-series differences in coefficients of the candidacy models.

We investigate three respecifications for models of market responses to analyze whether the importance of investor anticipations weakens. First respecification uses different event windows. The second respecification includes bidders and targets that announce multiple mergers on the same day. The third respecification introduces new proxies for the merger fit and bargaining power of the bidder and target.
We assume that markets can efficiently construct models of candidacy and of cumulative abnormal returns. We relax the assumption of market efficiency to investigate to what extent the influence of surprises on cumulative abnormal returns is robust to the assumption about market efficiency.

Our principal contention is that, on average, unanticipated merger announcements more clearly evidence how mergers affect bidder shareholder wealth. The last section of this chapter explores the average market response by investigating cross-sectional differences in how investor anticipations affect bidder abnormal returns.

7.1 Alternative specifications of bidder and target-candidacy models

7.1.1 Predicting bidder and target candidates using a longer event-window

This section uses annual instead of quarterly data to estimate investor anticipations. When new information arrives, investors update their estimates of which firms are likely to propose and receive merger bids. This is why we prefer data that are recorded at frequent intervals to estimate models of candidacy. Running annual probit regressions means that the information used is staler than the information in quarterly regressions. However, because the predictive power of candidacy models increases, it is easier to predict bidder and target candidacy in an annual interval.

The subsample of merging firms remains the same. Our procedure for sampling nonmerging firms remains the same, except now annual CRSP-COMPUSTAT database generates the subsample of nonmerging firms. We require that CRSP-COMPUSTAT
cover the sample firms. As a result, our sample covers 5,921 bidder years, 3,370 target years, and 94,914 nonmerging years.

Table 31 and Table 32 report the marginal-probability estimates of bidder and target candidacy models. The models are run for 25 annual cross-sections that cover data from 1979 to 2003. The endogenous variable takes on the value one if the firm proposes a bid during the next year in Table 31 and if the firm receives a bid in Table 32. The predictors of candidacy are the same proxies for managerial motives used in Table 15 and Table 16.

The results remain qualitatively same. Whether we use annual or quarterly prediction windows, larger and more-profitable firms with greater cash reserves that engaged in mergers in the previous two years prove more likely to propose bids. More-profitable firms with smaller cash reserves, whose stock price declined in the prior two years, and that engaged in mergers in the prior two years prove more likely to receive bids. The last column of Table 31 and Table 32 report the t-statistic for the t-test of the null hypothesis that the mean of the distribution is equal to zero. The t-statistics show that only one coefficient flips signs, and is significant: that for the squared sales shock.

Table 33 and Table 34 investigate whether the predictive power of candidacy models improves using annual forecast-windows. Panel A reports the summary statistics for the distribution of probabilities of proposing and receiving bids. The fraction of firms that proposes a bid in the sample is 6.03 percent and the fraction that receives a bid is 3.35 percent. Models of candidacy accurately estimate the probability of proposing and receiving bids to be higher for bidder and target candidates than the fractions observed in
the sample. The predicted probability of proposing bids for bidders is 45.82 percent, and the predicted probability of receiving bids is 19.05 percent. Furthermore, the mean probability of proposing and receiving bids for bidder and target candidates is 26 percent and 14 percent higher in annual models than in quarterly models. As reported in Panel B of Table 33 and Table 34, the fit of the annual candidacy models is better both in terms of pseudo R² and the chi²-statistic of the likelihood-ratio test.

Table 35 reports regressions for bidder CARs in Panel A and for target CARs in Panel B. The first specification in both panels introduces Heckman's lambda and all-equity indicator as explanatory variables. Heckman's lambda remains positive and significant in bidder regressions. The results remain qualitatively the same as in bidder regressions shown in Table 26. However, Heckman's lambda remains positive but loses significance in target regressions. Expanding the prediction-window erodes the predictive power of target candidacy models.

The coefficient of all-equity indicator is negative and significant in all specifications. The second specification introduces explanatory variables that control for differences in the fit and relative bargaining power of bidders and targets. The results remain qualitatively same except for the target-public indicator in bidder regressions. The coefficient of bidder-public flips signs. However, the coefficient is statistically insignificant.

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25 Table 17 and Table 18 report summary statistics on predicted probabilities and goodness-of-fit diagnostics for the quarterly bidder and target-candidacy models.
7.1.2 Predicting candidacy using characteristics of managerial compensation contracts and the power of board monitoring

Managerial incentives affect all managerial decisions including the merger decision. Therefore, investors may rely on characteristics of management and the governance environment to predict bidder and target candidacy. Management characteristics that might determine how closely managerial incentives serve shareholder interests include: the proportion of a CEO's wealth that is dependent on firm performance; CEO tenure; and the power of the CEO over the decisions of the board. The effectiveness of board monitoring also affects managerial incentives to serve shareholder interests.

We introduce regressors to represent managerial incentives. These regressors are constructed from annual EXECOMP and IRRC data. Financial influencers are constructed from annual CRSP-COMPUSTAT data. We estimate annual, cross-sectional probit regressions. The observation unit is a firm year. IRRC data only cover the years 1990, 1993, 1995, 1998, 2000, 2002, and 2004. EXECOMP data cover the years from 1992 to 2004. The intersection of these datasets only covers the years 1993, 1995, 1998, 2000, and 2002.

Explanatory variables that we introduce in this section include: equity-based compensation, ownership stake, retirement years, and governance index. Equity-based compensation (fraction of CEO compensation from stock options) and CEO ownership-stake represent incremental and cumulative pay-performance sensitivity, respectively.
When managers are entrenched, they can determine corporate strategy with little fear of reprisal from the board of directors. CEO ownership stake can increase managerial entrenchment. The number of years of credited service that the CEO has under the company's pension plan (retirement years) can also proxy for managerial entrenchment.

The corporate governance index of Gompers, Iishi and Metrick (2003) measures the balance of power between shareholders and managers. The higher is the corporate-governance index and the number of years worked in the company, the more entrenched the manager is. The more entrenched the manager, the fewer penalties she faces should she choose to engage in value-destroying merger activity.

Table 36 and Table 37 investigate whether models of candidacy are robust to introducing proxies for management and board characteristics. In Table 36 and Table 37, the endogenous variable takes on the value one if the firm proposes and receives a bid during the next year, respectively. In each year, two specifications are run. First specification includes all the proxies for firm and industry characteristics – the same proxies used in Table 31 and Table 32– and new proxies for management and board characteristics. Second specification includes only the proxies for firm and industry characteristics. Panels A of Table 36 and Table 37 report marginal probability coefficients for bidder and target-candidacy models, and Panels B report goodness-of-fit diagnostics.

Panels A of Table 36 shows that none of the variables that proxy for management and board characteristics proves to be a significant predictor of bidder candidacy. Only

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26 Section 3.3.1.2.2 explains these explanatory variables.
the prior track record of mergers proves to be a predictor of bidder candidacy in all years and across all specifications. Significant firm-specific predictors: such as share turnover, size, and change in size in 1998; and, such as sales growth and merger intensity in 2000 become insignificant when we include proxies for management and board characteristics. When we include proxies for management and board characteristics, previously insignificant predictors: such as cash ratio in 1993; such as ROA and cash ratio in 1995; and, such as sales shock and price runup in 1998 become significant.

Panels A of Table 37 shows that none of the variables that proxy for management and board characteristics proves to be a significant predictor of target candidacy either. Only the prior track record of mergers proves to be a predictor of bidder and target candidacy in all years and across all specifications. Significant firm-specific predictors: such as resource-growth mismatch indicator, size and change in size in 1993; such as size and change in size in 1995; such as price runup and change in size in 1998; such as sales shock, merger intensity, size, and change in size in 2000; and, such as high-information-asymmetry indicator in 2002 become insignificant when we include proxies for management and board characteristics. When we include proxies for management and board characteristics, previously insignificant predictors: such as sales shock and share turnover in 1993; and such as ROA in 1995 become significant.

One interpretation of the findings is that proxies for managerial entrenchment, incremental and cumulative equity compensation don't determine bidder and target candidacy. Another interpretation is that the gaps in IRRC and EXECOMP data preclude us from drawing conclusions using these specifications.
Panels A and B of Table 38 seek to explain bidder and target cumulative abnormal returns, respectively. Heckman’s lambda is estimated using the coefficients of candidacy models that Table 36 and Table 37 report. The first specification in both panels includes Heckman’s lambda and all-equity indicator. Heckman’s lambda is no longer significant in either bidder or target regressions. The increased standard errors caused by data restrictions that EXECOMP and IRRC impose explain the insignificance of Heckman’s lambda. In Panels A and B of Table 38, the standard errors of Heckman’s lambda more than double when compared to the standard errors of comparable specifications in Table 26 and Table 28\textsuperscript{27}.

Heckman’s lambda flips signs and becomes negative in bidder regressions. The evidence in Section 4.2 shows that the distribution of CARs for bidders covered in EXECOMP and IRRC differ from the distribution of CARs for bidders that aren’t covered. Moeller et al. (2005) find that bidder returns to large deals prove significantly lower than small deals. The mean deal size for bidders covered by EXECOMP and IRRC is 1,437 million dollars whereas the mean deal size for bidders that aren’t covered is 387 million dollars. The difference is statistically as well as economically significant.

The difference in deal sizes in the two samples may explain the difference in the distribution of CARs and the flip in the sign of Heckman’s lambda. Table 39 investigates whether the difference in deal sizes explains the change in the sign of Heckman’s lambda.

\textsuperscript{27} The standard errors of Heckman’s lambda in the first two specifications in Panel A of Table 38 are 2.33% and 2.34%, and are 22.26% and 20.94% in Panel B of Table 38. The standard errors of Heckman’s lambda in comparable specifications – specifications 1 and 4 - are 1.16% in Table 26, and are 8.21% and 8.22% in Table 28.
lambda. The first specification introduces deal size to control for market responses to differences in deal size. Introducing deal size changes neither the magnitude nor significance of the regressors. Differences in deal sizes don’t account for the change in the sign of Heckman’s lambda. The second specification introduces controls for differences in slope coefficients for all the regressors in large deals. A large deal is a deal whose value exceeds the median deal value in the bidder subsample. The second specification shows that market responses to announcement surprises of large deals are more negative (but insignificant) than responses to surprises of small deals. The Wald test fails to reject the null hypothesis of 0 coefficients for all slope controls. The findings fail to support our hypothesis that the presence of larger deals explains the negative market responses to announcement surprises.

The candidacy models that generate Heckman’s lambda include proxies for managerial compensation contract and board monitoring. The negative sign of Heckman’s lambda may be explained by the controls for board monitoring in the candidacy models. We hypothesize that market responses to announcement surprises of poorly-governed bidders should be negative whereas market responses to surprises of well-governed bidders should be positive.

The governance index of Gompers, Iishi and Metrick (2003) measures the balance of power between shareholders and managers. The higher the index, the more power managers have relative to shareholders. Bidders are classified as poorly-governed if the governance index is higher than the median and as well-governed if it is lower. Table 40

28 The F-statistic is 1.42 and the associated p-value is 0.2266.
introduces an interaction term for announcement surprises of poorly-governed bidders to test our hypothesis. Market responses to announcement surprises about poorly-governed bidders prove significantly lower than market responses to surprises of well-governed bidders.

Although, Table 26 shows that the average market response to surprises is positive, subsets of deals might exist in which the response to surprises is positive. The evidence in Table 40 suggests that the subsample of bidders covered in IRRC and EXECOMP is one such sample where announcement surprises of bidders with weak-governance are met with negative market responses.

The second specifications in Panels A and B of Table 38 includes proxies that control for differences in the fit and relative bargaining power of bidder and target. In both panels, including the controls changes neither the magnitude nor the significance of Heckman's lambda.

7.1.3 Predicting bidder and target candidates using industry-fixed effects

Requiring CRSP-COMPUSTAT coverage restricts the merging-firms subsample. This section investigates whether relaxing the requirement of CRSP-COMPUSTAT coverage, and only using data provided by SDC to predict bidder and target candidacy significantly alters our results about market responses to announcement surprises.

SDC provides SIC codes for all merging firms, and CRSP-COMPUSTAT provides SIC codes for all nonmerging firms. This section uses 2-digit SIC codes to predict bidder and target candidacy. The sample covers all the merging firms reported in
SDC and takes nonmerging firms from the CRSP-COMPUSTAT that meet our sampling rules.

The sample covers 17,681 bidder-quarters, 18,065 target-quarters, and 436,463 nonmerging-quarters. The sample covers data from the third quarter of 1977 to the fourth quarter of 2004. We pool the first 12 quarters from third quarter of 1977 to second quarter of 1980 into three annual cross-sections since the number of bidders or targets is fewer than 10 in these quarters. We also pool the third and fourth quarters of 2004 into a single cross-section since there are fewer than 10 bidders and targets in the fourth quarter of 2004. This results in 100 periods. Except for the first three and the last period, all periods are quarters.

The exogenous variables in the candidacy models are indicators for 2-digit SIC codes. We merge SDC and CRSP-COMPUSTAT to compile 2-digit SIC codes. The 2-digit SIC codes produce 58 industry indicators. SDC and CRSP-COMPUSTAT cover some of the same merging firms. For these firms, we have both SDC and CRSP-COMPUSTAT SDC-codes. 20.88 percent of the time, the 2-digit SIC codes that SDC and CRSP-COMPUSTAT provide don’t coincide.

We run 100 probit regressions of bidder candidacy. The endogenous variable takes on the value one if the firm proposes a bid in the next quarter. Table 41 reports pseudo $R^2$ and the chi-squared statistic for the likelihood-ratio test from the 100 cross-sectional probit regressions. The bidder-candidacy models that only use industry indicators prove a poorer fit than models that use proxies for firm and industry characteristics. In Table 41,

29 If there are fewer than 5 firms in an industry, we use the single-digit industry SIC code in that quarter.
the mean $R^2$ decreases by 32 percent and the mean $\chi^2$-statistic by 226 when compared to the same goodness-of-fit diagnostics reported in Table 17 for models that include proxies for firm-specific characteristics.

To estimate parallel models of target candidacy, we follow the same regression-strategy as we do in estimating models of bidder candidacy. The endogenous variable takes on the value one if the firm receives a bid in the next quarter. Table 42 reports pseudo $R^2$ and the chi$^2$-statistic for the likelihood-ratio test from the 100 cross-sectional probit regressions. Excluding firm-specific regressors decreases the goodness of fit of target models as well as bidder models. In Table 42, the mean $R^2$ decreases by 23 percent and the mean $\chi^2$-statistic by 41 when compared to the same goodness-of-fit diagnostics reported in Table 18.

When we exclude firm-specific regressors, bidder models no longer outperform target models. Table 41 and Table 42 report that the average pseudo-$R^2$ is 3.92 percent in bidder models and 4.43 percent in target models, respectively. The findings indicate that firm-specific regressors are important predictors of bidder candidacy, but not of target candidacy.

The importance of industry-specific regressors in predicting target candidacy may also explain why the significance of Heckman's lambda in target CAR regressions disappears when we control for industry fixed-effects. Table 29 reports target regressions which include Heckman’s lambda (estimated using only firm-specific predictors) and industry indicators. Table 42 shows that industry-indicators are important predictors of target candidacy and belong in the candidacy models. This is why, when industry
indicators are included in the CAR regressions and not the target-candidacy models, the significance of market responses to surprises about target candidacy disappears.

Panels A and B of Table 43 report regressions of bidder and target CARs on Heckman's lambda - estimated using coefficients reported in Table 41 and Table 42 -, all-equity indicator, and proxies for the fit and relative bargaining power of bidders and targets. By excluding firm-specific regressors, we estimate Heckman's lambda for larger subsamples of bidders and targets. The sample of bidders in Panel A of Table 43 doubles to 14,206 from 7,171 bidders in Table 26. The sample of targets in Panel B of Table 43 more than doubles to 9,625 from 3,331 targets in Table 28.

Panel A of Table 43 shows that Heckman's lambda in bidder regressions remains positive but loses significance. Models of bidder candidacy that rely only on industry indicators prove less powerful in distinguishing between bidder candidates and nonmerging firms than models that rely on firm-specific characteristics. The failure to distinguish between bidder candidates and nonmerging firms means that there's little variation in the surprise about bidder candidates. The lack of variation may explain why the proxy for the surprise, Heckman's lambda, loses significance.

Panel B of Table 43 shows that Heckman's lambda in target regressions remains positive and significant. Industry indicators predict target candidacy more successfully than bidder candidacy. Because there is variation in surprise about target candidacy, Heckman's lambda proves significant.
7.1.4 Time-series differences in the coefficients estimated by candidacy models

Holmstrom and Kaplan (2001) refer to the '80s as a decade of leveraged hostile takeovers whereas friendly mergers characterize the '90s. The authors study differences in corporate governance across the two decades and how these differences affect merger activity. Holmstrom and Kaplan (2001) stress that merger motives change through time. We split our sample into two equal subsamples. This section investigates the stationarity of the model parameters in the two subperiods.

The first subsample covers data from the third quarter of 1979 to the second quarter of 1992. The second subsample covers data from the third quarter of 1992 to the fourth quarter of 2004. The observations in third quarter of 1979 to the fourth quarter of 1980, and the observations in the third and fourth quarters of 2004, are pooled into two cross-sections since the number of bidders or targets in these quarters is small (fewer than 10). The remaining periods are quarters.

Table 15 and Table 16 report the estimates of bidder and target-candidacy models that use quarterly data. Panels A and B in Table 44 and Table 45 compare the distribution of coefficient estimates in the two subperiods. Panel C tests the hypothesis that the distributions of coefficients in the two subperiods come from a common population. Mann-Whitney, Kolmogorov-Smirnov, and Kruskall-Wallis tests reject the null hypothesis for share turnover, cash ratio and previous mergers both in the bidder and target subsamples. The three tests also reject the null hypothesis for the high information-asymmetry indicator in the bidder regressions and for merger intensity in the target
regressions. The evidence indicates that the influence of some firm-specific and industry-
specific predictors differ in the two subperiods.

Equation 23 presents pooled time-series, cross-section probit regressions of
candidacy that investigate parameter stationarity across the two time periods. $M_B$ and $M_T$
are indicators that take on the value 1 if firm proposes and receives a bid in the next
quarter, respectively. Post92 indicator takes on the value one if the observation is in the
second subperiod and 0 otherwise. The interaction terms between post92 indicator and
the variables control for differences in the two time periods.

$$M_j = \text{post92 indicator} \times \gamma_{j}^{\text{post92 indicator}} + \text{ROA}, \gamma_{j}^{\text{ROA}} +$$
$$\text{ROA} \times \text{post92 indicator} \times \gamma_{j}^{\text{ROA, post92}} + \text{sales growth} \times \gamma_{j}^{\text{sales growth}} +$$
$$\text{sales growth} \times \text{post92 indicator} \times \gamma_{j}^{\text{sales growth, post92}} +$$
$$\text{resource-growth-mismatch indicator} \times \gamma_{j}^{\text{resource-growth mismatch indicator}} +$$
$$\text{sales - shock squared} \times \gamma_{j}^{\text{sales - shock squared}} +$$
$$\text{sales - shock squared} \times \text{post92 indicator} \times \gamma_{j}^{\text{sales - shock squared, post92}} +$$
$$\text{concentration ratio} \times \gamma_{j}^{\text{concentration ratio}} +$$
$$\text{concentration ratio} \times \text{post92 indicator} \times \gamma_{j}^{\text{concentration ratio, post92}} +$$
$$\text{cash ratio} \times \gamma_{j}^{\text{cash ratio}} + \text{cash ratio} \times \text{post92 indicator} \times \gamma_{j}^{\text{cash ratio, post92}} +$$
$$\text{size} \times \gamma_{j}^{\text{size}} + \text{size} \times \text{post92 indicator} \times \gamma_{j}^{\text{size, post92}} +$$
resource-growth-mismatch indicator \textsubscript{j} * post92 indicator * \gamma^R \text{resource-growth-mismatch indicator,post92} \\
+ sales shock \textsubscript{j} * \gamma^S \text{sales shock} + sales shock \textsubscript{j} * post92 indicator * \gamma^S \text{sales shock,post92} \\
+ price runup \textsubscript{j} * \gamma^P \text{price runup} + price runup \textsubscript{j} * post92 indicator * \gamma^P \text{price runup,post92} + \\
share turnover \textsubscript{j} * \gamma^T \text{share turnover} + share turnover \textsubscript{j} * post92 indicator * \gamma^T \text{share turnover,post92} + \\
high-information-asymmetry indicator \textsubscript{j} * \gamma^H \text{high-information-asymmetry indicator} + \\
high-information-asymmetry indicator \textsubscript{j} * post92 indicator * \gamma^H \text{high-information-asymmetry indicator,post92} \\
+ merger intensity \textsubscript{j} * \gamma^M \text{merger intensity} + merger intensity \textsubscript{j} * post92 indicator * \gamma^M \text{merger intensity,post92} \\
+ change in size \textsubscript{j} * \gamma^C \text{change in size} + change in size \textsubscript{j} * post92 indicator * \gamma^C \text{change in size,post92} + \\
previous mergers \textsubscript{j} * \gamma \text{previous mergers} + \\
previous mergers \textsubscript{j} * post92 indicator * \gamma \text{previous mergers,post92} + \epsilon \textsubscript{j}; \text{ where } j = \text{bidder, target.}

The first columns in Panels A of Table 46 and Table 47 report the coefficient estimates for bidder and target candidacy models, respectively. The second columns in Panel A report p-values for Wald test of the null hypothesis that the individual coefficients are zero. We reject the null hypothesis for ROA, price runup, cash ratio, size, and previous mergers in bidder-candidacy model, and for merger intensity and previous mergers in target-candidacy model. The influence of ROA, price runup, cash ratio, size, and previous mergers in predicting bidder candidates decreases in the subsample covering the 90's. In the second subsample, the influence of merger intensity in predicting target candidacy increases but the influence of previous mergers decreases.

The evidence in Panel A of Table 46 and Table 47 indicate that the influences of the predictors for candidacy change in the two subperiods. Panels B of Table 46 and Table 47 report the p-value for the Wald test of the null hypothesis that the coefficients of
all the interaction variables are equal to 0. The null hypothesis of parameter stationarity is rejected in both the bidder and target-candidacy models. Panels B of Table 46 and Table 47 also report pseudo $R^2$ and $\chi^2$-statistic for the Wald test of the null hypothesis that all of the coefficients are equal to 0.

7.2 Alternative specifications of CAR regressions

7.2.1 Using alternative event-windows to cumulate abnormal returns

Evidence examined in Chapter 4 indicates that SDC may incorrectly record announcement dates. One way to remedy this problem is to expand the event window used to cumulate bidder and target abnormal returns. This section investigates how robust the results about market responses to announcement surprises are to using different event windows.

Table 48 reports regressions of bidder abnormal returns that are cumulated using 3, 7, 15, and 29-day event windows. Market responses to announcement surprises about bidder candidacy, as measured in the coefficient of Heckman’s lambda, proves positive and significant in all windows. For a standard deviation change in Heckman’s lambda, bidder abnormal returns change by 33 to 116 basis points in different windows. Heckman’s lambda proves economically as well as statistically significant.

In Table 48, as the event window expands from 3 to 29 days, the statistical and economic significance of the two significant regressors, Heckman’s lambda and all-equity indicator, increase. The economic and statistical significance of the only other
significant regressor, unwelcoming-attitude indicator, decreases as the event window expands.

In larger event windows, market responses to information about previously unobservable motives (as measured by the coefficients of Heckman's lambda) are significantly more pronounced. The Chow test rejects the null hypothesis that the coefficients of Heckman's lambda are equal in different windows. The Chow test fails to reject the null hypothesis that the coefficients of all-equity are equal in the shorter event windows. Any inaccuracy in announcement dates means that longer windows measure market responses to events more accurately than shorter windows. Hence, the effect of unanticipated managerial motives may be more apparent in longer windows. Another explanation is that investors need some time to evaluate and price the information revealed in announcements.

Table 48 also includes controls for the merger fit and relative bargaining power of bidders and targets. That the coefficients of target-public, anti-takeover-defenses, target bankrupt indicators change signs in different windows supports the hypothesis that they aren't reliable predictors. These indicators prove insignificant in all windows.

Table 49 compares regressions of target abnormal returns cumulated over 3, 7, 15, and 29-day event windows. Market responses to announcement surprises about target candidacy prove positive and significant except in the 29-day window. For a standard-deviation change in Heckman's lambda, target abnormal returns change by roughly the same amount (99 to 118 basis points) in different windows.
Announcement surprises about bidder candidacy show more variation than do surprises about target candidacy. The standard deviation in bidder lambdas is 13.21 percent whereas the standard deviation in target lambdas is 6.01 percent. Markets can more successfully distinguish between bidder candidates and nonmerging firms than they can between target candidates and nonmerging firms. Since markets anticipate bidders better, bidder share prices incorporate the anticipated effect of mergers prior to announcements more than do target share prices.

Table 49 also includes controls for confidential items of negotiation and the merger fit. Target CARs to all-equity financed deals prove significantly lower. As a proxy for motives to exploit mispricing in share prices, an all-equity financing suggests that shareholders would have realized greater returns had they received cash in return for their shares. The results for the proxies for confidential items of negotiation and merger fit remain qualitatively the same (as discussed in Section 6.2.2.2) except that then insignificant coefficients of same-industry and unwelcoming-attitude change signs.

Table 30 shows that the asymmetry in investors’ ability to identify bidder and target candidates accounts for 3% of the disparity in bidder and target 7-day CARs. Table 50, Table 51, and Table 52 replicate the analysis of Table 30 in the 3-day, 15-day, and 29-day event windows, respectively. In the 3-day and 15-day windows, when we control investor anticipations of candidacy, the disparity between bidder and target returns decrease by 2.85 and 2.22 percent, respectively. However, in the 29-day window, the disparity widens by 75 basis points.
7.2.2 Including bidders and targets that announce multiple mergers on the same day

We exclude bidders and targets that announce multiple mergers on the same day because we can't separate the individual market responses. This section investigates whether our findings are robust to including bidder and targets that announce multiple mergers on the same day.

Assuming that markets anticipate multiple and single announcements equally, we expect more information to be revealed in multiple-announcement days than single-announcement days. Consequently, we hypothesize that CARs to bidders that propose multiple bids are larger in magnitude than returns to bidders that propose a single bid. Target management which receives more than one bid on the same day need to sort out the bids to decide which bid to accept. Jennings and Mazzeo (1993) investigate the structure of takeover bids and the frequency of observing competing bids. Competing bidders bid up the price at which target shareholders can sell the firm. Hence, we hypothesize that CARs to targets that receive multiple bids are larger in magnitude than returns to bidders that propose a single bid.

Panel A of Table 53 reports mean probabilities predicted by bidder-candidacy models and 7-day CARs to single and multiple announcements. On average, markets anticipate multiple announcements of bidders more than they anticipate single announcements. The null hypothesis of equal anticipation of single and multiple announcements is rejected. Furthermore, bidder CARs to multiple announcements prove
significantly higher than to single bids. The evidence supports the hypothesis that multiple bids reveal more information than single bids.

Panel B of Table 53 reports mean probabilities predicted by target-candidacy models and 7-day CARs for single and multiple announcements. As in proposals of bids, markets anticipate reception of multiple bids more than they anticipate reception of single bids. The null hypothesis of equal anticipation of single and multiple bids is rejected. Target CARs for multiple announcements prove insignificantly higher than CARs for single bids.

Panel A and B of Table 54 report bidder and target regressions of CARs to single bids and all bids—including multiple bids. Qualitatively, including multiple bids hardly changes the coefficients.

7.2.3 Introducing additional exogenous variables to the bidder and target regressions

Asquith et al. (1983) suggest that the larger the value of the deal relative to the size of the bidder and the target, the greater the magnitude of bidder and target cumulative returns should be. Moeller et al. (2005) find that sample deals whose value exceeds 1 billion dollars erode bidder shareholder value by 7.38$ per 100$ invested in the period from 1991 to 2001.

We use two variables, deal value and relative value, to represent the absolute and relative size of proposed deals. We define deal value to be the value of the deal in billion dollars. We define relative size as the ratio of the value of the deal (in millions) to the
Table 55 reports the effect of introducing these variables into the bidder and target regressions.

Market responses to announcement surprises about bidder and target candidacy remain positive and significant when relative value and deal value are introduced. With the introduction of deal value and relative value, the change in bidder CARs for a standard deviation change in Heckman’s lambda decreases only from 48 to 45 basis points, and the change in target CARs decreases only from 112 to 100 basis points. Findings about investor anticipations are robust to including these variables in the regressions. We couldn’t include these variables in our original specifications, since SDC doesn’t compile dollar value of deals for all deals.

Relative value proves positive and significant in both bidder and target regressions. The larger the deal relative to bidder and target shareholder-contributed capital, the greater is the positive impact of the announcement. As in Moeller et al. (2005), the larger the deal, the greater is the erosion in bidder shareholder value. We find no such erosion in target shareholder value.

Except for same-industry and anti-takeover-defense indicators, the influence of the control variables remains qualitatively same when we introduce relative value and deal size. The insignificant coefficients of same-industry and anti-takeover-defense indicators change and remain insignificant.

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30 SDC compiles value of deal in 1,000,000 dollars. We divide deal value by 1,000, and report it in 1,000,000,000 dollars. CRSP-COMPSTAT compiles number of shares outstanding (in millions) and the closing price of common stock in that quarter. We define market value of common stock as the product of common shares outstanding and closing price of common stock. In constructing relative size, for comparability, both market value and deal value are in million dollars.
7.3 Testing our strategy for identifying the equations in the two-stage model

Econometrically, one can use the same set of variables linearly in the equations modeling candidacy and in the equations modeling cumulative abnormal returns and both equations would be identified. However, a solid rationale for isolating variables that drive candidacy without affecting market responses to announcements (and vice versa) provides a stronger basis for identifying the model.

To identify the two-stage model, we use pre-announcement information in estimating candidacy models and post-announcement information in estimating regressions of cumulative abnormal returns. In an efficient market, share prices should reflect publicly information quickly. This is our rationale for excluding variables that use pre-announcement information in the regressions of cumulative abnormal returns.

This section relaxes the assumption of market efficiency and investigates the robustness of the influence of announcement surprises to our identification strategy. We introduce proxies that rely on pre-announcement information in the CAR regressions. By introducing pre-announcement information in CAR regressions, we allow for the possibility that markets fail to incorporate information in share prices rationally and instantaneously.

Table 56 reports regressions for bidder CARs that alternatively include and exclude the four powerful predictors of candidacy: previous mergers, size, cash ratio, and merger intensity. In the second and third specifications of Table 56 that include previous mergers and size, market responses to surprises about bidder candidacy remain positive but lose significance. In the fourth and fifth specifications of Table 56 that include cash
ratio and merger intensity, market responses to surprises about bidder candidacy remain positive and significant.

Heckman's lambda constrains the way in which the variables enter the equations that model cumulative abnormal returns. Heckman's lambda loses significance because previous mergers and size may show no further effect beyond that of predicting bidder candidacy. It is also possible that previous mergers and size may be correlated with new information that announcements reveal.

The evidence in Section 7.2.3 indicates that larger deals decrease the value that accrues to bidder shareholders. Large firms may find it easier to undertake big mergers. Hence, the size of the firm may be proxying for deal size in the bidder regressions. The sixth specification of Table 56 includes previous mergers, size, deal value, and relative value. In this specification, market responses to surprises about bidder candidacy prove positive and significant. The robustness tests indicate that the influence of surprises on bidder CARs is robust to relaxing the market-efficiency assumption and introducing pre-announcement information in the bidder regressions.

Table 57 reports regressions for target CARs that include the four powerful predictors of target candidacy: previous mergers, size, cash ratio, and merger intensity. In the second specification that includes previous mergers, market responses to surprises about target candidacy remain positive but lose significance. In the third through fifth specifications of Table 57 that include size, cash ratio and merger intensity, market responses to surprises about target candidacy remain positive and significant.
The sixth specification of Table 57 includes previous mergers, size, deal value, and relative value. In this specification, market responses to surprises about bidder candidacy prove positive but insignificant. The robustness tests indicate that the influence of surprises on bidder CARs isn't robust to relaxing the market-efficiency assumption and introducing pre-announcement information (in the form of previous mergers) in the target regressions.

7.4 Investigating cross-sectional differences in market responses to announcement surprises

Our principal contention is that, on average, unanticipated merger announcements more clearly evidence how mergers affect bidder shareholder wealth. This section explores the average market response by investigating cross-sectional differences in how investor anticipations affect bidder abnormal returns.

Empirical studies consistently find that bidder and target shareholder value decreases when bidder management compensates target shareholders using equity [Jensen and Ruback (1983); Brickley et al. (1988); Andrade et al. (2001)]. Table 58 investigates whether the difference between CARs for all-equity financed deals and deals that aren't financed solely with equity changes with investor anticipations about bidder candidacy. A bid is classified as anticipated if the predicted probability of bidding is larger than the median probability and as unanticipated otherwise. A bid is classified as all-equity financed if target shareholders are paid using bidder shares only and as not all-equity otherwise.
The four-way split of bidder cumulative abnormal returns isolates the influence of the two sources of surprise in announcements: namely surprise about the identity of the bidder and surprise about the method of financing used. Table 58 shows that both surprises influence bidder CARs. Holding the method of financing used constant, the magnitude of returns to unanticipated bidders prove larger than returns to anticipated bidders. Similarly, when we fix the level of anticipation, returns to all-equity deals prove significantly lower than returns to not-all-equity deals.

Moeller et al. (2005) find that the largest deals in their sample significantly destroy shareholder value. Table 59 investigates whether market response to big and small deals, changes with investor anticipations about bidder candidacy. Large deals are deals that exceed the median value of all deals in our sample and are small deals otherwise. As in Moeller and, et.al. (2005), bidder cumulative abnormal returns to big deals prove significant and negative, and bidder cumulative abnormal returns to small deals prove significant and positive.

Table 59 shows that both surprises influence bidder CARs. When we hold the deal size constant, the magnitude of returns to unanticipated bidders proves larger than returns to anticipated bidders in small deals and smaller in large deals. In large deals, the surprise about deal size is unwelcome news whereas the surprise about bidder identity is welcome. Hence surprise about the bidder identity pulls returns closer to zero. When we hold the level of anticipation constant, returns to big deals prove significantly lower than returns to small deals.
8 Conclusions

8.1 Summary of findings

This study investigates market responses to information that merger announcements convey. We address two research questions. How much merger announcements surprise the market? What do market responses to announcement surprises reveal about managerial motives that drive mergers?

8.1.1 Findings about the extent of announcement surprises

That investors can anticipate merger activity is evidenced by the predictive power of our candidacy models compared to the null hypothesis. In our sample, the fraction of firms that propose at least one bid in any quarter is 1.78 percent. If investors could not anticipate bidders, the average probability for any firm to bid should be 1.78 percent. Candidacy models indicate that the average probability of bidding is 19.78 percent for bidders and 1.35 percent for nonbidders.

The fraction of firms receiving a merger bid in any quarter is 0.85 percent. The null hypothesis of no investor anticipations about target candidacy implies that the average probability for any firm to receive bids should be 0.85 percent. Our models estimate that the average probability to receive bids is 6.87 percent for targets and 0.76 percent for nontargets. Investors are predicting that targets are more likely to receive bids than nontargets.

We also find that models of bidder candidacy predict better than models of target candidacy do. Both pseudo-$R^2$s and chi$^2$-statistics for likelihood-ratio tests are higher for
models of bidder candidacy than for target candidacy. The average pseudo-$R^2$ in bidder
models is 10 percent higher than the average in target models.

8.1.2 Findings about how the extent of announcement surprises influences market
responses

Univariate and multivariate analysis of bidder CARs show that surprises about
bidder and target candidacy affect market responses to announcements. The magnitude of
bidder returns to less-anticipated deals proves significantly higher than returns to more-
anticipated deals. Furthermore, the market response to announcement surprises proves
positive. The greater the surprise, the more information announcements reveal about
unobservable motives.

Investors must guess how much managers intend to generate value for bidder
shareholders as against securing opportunistic benefits for themselves. The positive
market response to announcement surprises indicates that, on average, unanticipated
mergers serve bidder shareholder interests. Even though, we can’t distinguish the
information about different motives, the positive market response implies that investors
judge the net effect to be welcome news for bidder shareholders.

Investor anticipations don’t influence target CARs as much as bidder CARs. The
failure of candidacy models to predict target candidacy means that selection bias doesn’t
affect inferences from single-equation models of target CARs very much.

Including the proxy for announcement surprises, Heckman’s lambda, changes
neither the significance nor the magnitude of other regressors in bidder regressions. This
finding indicates that Heckman’s lambda and the other regressors are orthogonal. A single-equation model of market responses suffers from an omitted variable bias. By modeling investor anticipations and market responses together, we show that announcement surprises significantly affect how we measure market responses to merger announcements.

8.2 Implications of our findings and directions for future research

8.2.1 Measuring the impact of mergers on shareholder value

Event studies assume that markets learn about event-related information in a short window of time. Investor anticipations about bidder candidacy invalidate this assumption. To the extent that investors anticipate bidder candidacy, bidder abnormal returns around announcements don’t measure market’s full assessment of the deal. Within the event window, bidder abnormal returns measure market responses only to the unanticipated information that announcements convey.

To measure market assessments of the value of a deal to bidder shareholders in a single-equation context, researchers need to focus on a universe of “shocker” bidders. Shocker bidders are bidders whose candidacy markets did not anticipate at all. We find no evidence that shocker bidders exist in our sample. Investor anticipations about bidder candidacy imply that it is a mistake to measure market assessments of deal value solely by analyzing bidder cumulative abnormal returns around announcements.
Ideally, researchers would track changes in candidacy probabilities through time. This would let them cumulate market responses to all the pieces of information that is revealed prior to the formal date of announcement.

8.2.2 Implications for disparity in deal values for bidders and targets found in single-equation studies

We find that CARs observed in announcement windows convey more incremental information about the value of mergers to targets than bidders. The incremental information that announcements reveal about targets is greater because investors are less able to anticipate target candidacy. Before concluding that target shareholders enjoy the lion's share in merger deals, abnormal returns must be adjusted for selection bias.

To investigate the distribution of shareholder value that mergers divide between bidder and target shareholders, we need to adjust returns to equalize the role of anticipations in bidder and target selection. Only if markets anticipate bidder and target candidates equally, would bidder and target abnormal returns reflect the true distribution of value between bidder and target shareholders. Once we match bidders and targets according to the probability to propose and receive bids, the difference between bidder and target CARs reduce by 3 percent from 20.54 to 17.46 percent.

Our models of candidacy can only partially estimate investor anticipations. It is too costly if not infeasible for us to proxy for the universe of information publicly available prior to announcements that investors may use to predict candidacy. The failure to proxy for the universe of relevant information means that we're underestimating investor anticipations. To the extent we underestimate investor anticipations, our findings
about the decline in the disparity between bidder and target CARs is only a lower bound for the true difference.

8.2.3 Managerial merger motives

We find that a complex mix of managerial motives drive mergers. Managers seek both to generate shareholder value and to secure opportunistic benefits. Concentrating on a single firm or industry characteristic such as previous mergers of the firm or time elapsed until the last merger in the industry would underestimate investor anticipations about candidacy. To portray investor anticipations about mergers in an unbiased fashion, researchers must proxy the full range of managerial merger motives.
References


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Figure 1 - Distribution of 3-day cumulative abnormal returns to anticipated and unanticipated bidders

Figure plots the distribution of 3-day cumulative abnormal returns to anticipated and unanticipated bidders. A bidder is classified as anticipated if the predicted probability of bidding is greater than the 75th percentile and is identified as unanticipated if the predicted probability is less than the 25th percentile.

![3-day window graph]

Figure 2 - Distribution of 7-day cumulative abnormal returns to anticipated and unanticipated bidders

Figure plots the distribution of 7-day cumulative abnormal returns to anticipated and unanticipated bidders. A bidder is classified as anticipated if the predicted probability of bidding is greater than the 75th percentile and is identified as unanticipated if the predicted probability is less than the 25th percentile.

![7-day window graph]
Figure 3 - Distribution of 15-day cumulative abnormal returns to anticipated and unanticipated bidders

Figure plots the distribution of 15-day cumulative abnormal returns to anticipated and unanticipated bidders. A bidder is classified as anticipated if the predicted probability of bidding is greater than the 75th percentile and is identified as unanticipated if the predicted probability is less than the 25th percentile.

Figure 4 - Distribution of 29-day cumulative abnormal returns to anticipated and unanticipated bidders

Figure plots the distribution of 29-day cumulative abnormal returns to anticipated and unanticipated bidders. A bidder is classified as anticipated if the predicted probability of bidding is greater than the 75th percentile and is identified as unanticipated if the predicted probability is less than the 25th percentile.
Figure 5 - Distribution of 3-day cumulative abnormal returns to anticipated and unanticipated targets

Figure plots the distribution of 3-day cumulative abnormal returns to anticipated and unanticipated targets. A target is classified as anticipated if the predicted probability of receiving a bid is greater than the 75th percentile and is identified as unanticipated if the predicted probability is less than the 25th percentile.

Figure 6 - Distribution of 7-day cumulative abnormal returns to anticipated and unanticipated targets

Figure plots the distribution of 7-day cumulative abnormal returns to anticipated and unanticipated targets. A target is classified as anticipated if the predicted probability of receiving a bid is greater than the 75th percentile and is identified as unanticipated if the predicted probability is less than the 25th percentile.
Figure 7 - Distribution of 15-day cumulative abnormal returns to anticipated and unanticipated targets

Figure plots the distribution of 15-day cumulative abnormal returns to anticipated and unanticipated targets. A target is classified as anticipated if the predicted probability of receiving a bid is greater than the 75th percentile and is identified as unanticipated if the predicted probability is less than the 25th percentile.

![15-day window graph](image)

Figure 8 - Distribution of 29-day cumulative abnormal returns to anticipated and unanticipated targets

Figure plots the distribution of 29-day cumulative abnormal returns to anticipated and unanticipated targets. A target is classified as anticipated if the predicted probability of receiving a bid is greater than the 75th percentile and is identified as unanticipated if the predicted probability is less than the 25th percentile.

![29-day window graph](image)
Table 1 - Studies that use a firm or industry characteristic to measure investor anticipations

Sampling frame refers to how the authors compiled the sample used in the different studies. Abnormal returns describe how abnormal returns are calculated. Findings summarize the main results of the different studies.

<table>
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<td>Schipper and Thompson, 1983</td>
<td>Scan financial press to identify NYSE listed firms that announced merger programs between 1952 and 1968</td>
<td>A market model, with the CRSP equally-weighted index benchmarks monthly abnormal returns</td>
<td>Abnormal returns in the merger program announcement month prove positive and differ significantly from zero. Positive abnormal returns begin to accumulate about thirty months before an announcement.</td>
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<td>Malatesta and Thompson, 1985</td>
<td>Scan financial press to identify NYSE listed firms that announced merger programs between 1952 and 1968</td>
<td>Time-series market model regressions for each firm estimate intercept and beta coefficients, which are then used to test hypotheses.</td>
<td>Find supporting evidence that the economic impact of mergers and expected announcement effect are positive, and that acquisitions are partially anticipated.</td>
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<td><strong>Panel B – Studies focusing on frequent bidders</strong></td>
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<td>Asquith, Bruner and Mullins, 1983</td>
<td>Sample the 1979 Fortune 1000 firms, which made at least one bid between 1955 and 1963.</td>
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<td>Loderer and Martin, 1990</td>
<td>Compile firms using reports of Mergers and Acquisitions (which are covered on CRSP) that make at least one bid</td>
<td>A market model estimates daily abnormal returns.</td>
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<td>Fuller, et al. 2004</td>
<td>Sample firms making five or more successful bids within three years between 1990 and 2000.</td>
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<td>Ismail, 2005</td>
<td>Use SDC merger database to identify US, public, nonfinancial firms covered on CRSP which make bids between 1985 and 2004.</td>
<td>A market model with the CRSP value-weighted index benchmarks daily abnormal returns.</td>
<td>Five-day abnormal returns (starting two days prior to and ending two days after the announcement date) to bids of acquirers, which only make one bid in the sample period, are statistically and economically smaller in magnitude than returns to bids of acquirers which make more than one bid.</td>
</tr>
</tbody>
</table>

**Panel C - Studies focusing on the time elapsed between subsequent bids in the industry**

<table>
<thead>
<tr>
<th>Study</th>
<th>Sample Firms</th>
<th>Abnormal Returns</th>
<th>Five-Day Abnormal Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Song and Walkling, 2000</td>
<td>Compile acquisition bids using Mergerstat Review for the period from 1982 to 1991.</td>
<td>A market model estimates daily abnormal returns.</td>
<td>Rival firms of targets earn significant and positive two-day abnormal returns (one day prior to the end of the announcement day) at the time of unanticipated announcements.</td>
</tr>
</tbody>
</table>
Table 2 - Definitions of proxies used in related studies

Table defines the proxies used in related studies that investigate merger activity.

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Variable definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting return on equity</td>
<td>The ratio of net income before extraordinary items and discontinued operations to the common and preferred equity of a firm in the previous year.</td>
</tr>
<tr>
<td>Acquisition activity in the state</td>
<td>The number of mergers occurring in the state in which the bank is headquarter in the prior two years.</td>
</tr>
<tr>
<td>Additional bonus dummy</td>
<td>Indicator variable taking on the value one if the CEO received additional bonuses and merger related compensation at the time of the merger.</td>
</tr>
<tr>
<td>Average excess return</td>
<td>The difference between observed returns and expected returns in the four years prior to announcements. Expected return estimated by a market model, and expressed as daily returns.</td>
</tr>
<tr>
<td>Augmentation of parachute dummy</td>
<td>Indicator variable taking on the value one if the CEOs golden parachute is augmented at the time of the merger</td>
</tr>
<tr>
<td>Bonus</td>
<td>Is the annual bonus awarded to the CEO in the year of the acquisition</td>
</tr>
<tr>
<td>Capital-to-asset ratio</td>
<td>The ratio of total equity capital to total assets.</td>
</tr>
<tr>
<td>Cash flow</td>
<td>According to Lang <em>et al.</em>(1991) is the ratio of operating income before depreciation minus interest expense, taxes, preferred dividends, and common dividends to assets. According to Maksimovic and Phillips (2001) is sales minus materials cost of goods sold less capital expenditures divided by sales</td>
</tr>
<tr>
<td>CEO power index</td>
<td>According to Grinstein and Hribar (2003) is the sum of three dichotomous indicator variables, and ranges from 0 to 3. 3 is for the most powerful and 0 for the least powerful CEOs. The three variables included in the index are: whether the CEO is the chairman of the board; whether the CEO is on the nominating committee; and whether the board size is lower than the median board size in the sample.</td>
</tr>
<tr>
<td>Change in concentration ratio</td>
<td>The annual change in concentration ratio</td>
</tr>
<tr>
<td>Change in institutional holdings</td>
<td>The net change in institutional shareholdings of the firm during the prior quarter.</td>
</tr>
<tr>
<td><strong>Change in institutional holdings</strong></td>
<td>The net change in institutional shareholdings of the firm during the prior quarter.</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Change in labor productivity</strong></td>
<td>The ratio of annual change in output to the annual change in input.</td>
</tr>
<tr>
<td><strong>Change in number of firms</strong></td>
<td>Annual change in the number of firms in the industry</td>
</tr>
<tr>
<td><strong>Change in size</strong></td>
<td>Annual change in book value of assets</td>
</tr>
<tr>
<td><strong>Commercial loan concentration</strong></td>
<td>Ratio of commercial and industrial loans to total assets.</td>
</tr>
<tr>
<td><strong>Concentration ratio</strong></td>
<td>According to Gort (1969) is the proportion of industry output contributed by the four largest producers in the industry. According to Eckbo et al. (1990) is the proportion of industry sales contributed by the four industry-sales leaders.</td>
</tr>
<tr>
<td><strong>Consumer loan concentration</strong></td>
<td>Ratio of consumer loans to total assets.</td>
</tr>
<tr>
<td><strong>Core deposit ratio</strong></td>
<td>Ratio of non-interest bearing demand, time, and, saving deposits to total assets in the prior year.</td>
</tr>
<tr>
<td><strong>Detrended industrial production</strong></td>
<td>Actual less predicted industrial production. Predicted industrial production estimated from a regression of industrial production on a yearly time trend.</td>
</tr>
<tr>
<td><strong>Downstream demand indicator</strong></td>
<td>Four-digit sic code industry measure of downstream economic activity of Bailey, et. al (1998).</td>
</tr>
<tr>
<td><strong>Employee shock</strong></td>
<td>The difference between industry employee growth and average employee growth for all industries. Employee growth the log of the ratio of employees in 1977 to employees in 1981.</td>
</tr>
<tr>
<td><strong>Equity-based compensation</strong></td>
<td>Is the Black-Scholes value of new options granted to the top five executives in the year preceding the acquisition divided by their total compensation (excluding value realized by exercising previous options) in the same year.</td>
</tr>
<tr>
<td><strong>Fraction of insider directors</strong></td>
<td>According to Moeller (2005) is the fraction of board members classified as insiders.</td>
</tr>
<tr>
<td><strong>Free cash flow</strong></td>
<td>According to Lang, et al. (1991) is operating income before depreciation minus interest expense, taxes, preferred dividends, and common dividends.</td>
</tr>
<tr>
<td><strong>Governance index</strong></td>
<td>Index constructed by Gompers, Ishii and Metrick (2003) to measure the balance of power between shareholders and managers. Consists of twenty-four unique corporate-governance variables based on charter and bylaw provisions, firm-level provisions, and state laws. The variables can be classified into five categories: tactics for delaying hostile bidders, voting rights, director protection, other takeover defenses and state laws. The governance index is composed of variables (variables concerning delaying hostile bidders and takeover defenses) that can allow managers to deter unwanted merger attempts.</td>
</tr>
<tr>
<td><strong>Growth</strong></td>
<td>According to Gort (1969) is an index of physical production. According to Palepu (1986), and Ambrose and Megginson (1992) is the annual rate of change in net sales, averaged over the three years prior to announcement. According to Mitchell and Mulherin (1996) is the log of the ratio of employees/sales in 1977 to employees/sales in 1981. According to Akhigbe, <em>et al.</em> (2004) is the growth rate in assets in the prior year.</td>
</tr>
<tr>
<td><strong>Growth-resources-mismatch dummy</strong></td>
<td>An indicator taking on the value one if firm growth is smaller than the COMPUSTAT average, firm liquidity is greater than the COMPUSTAT average, and firm leverage is smaller than the COMPUSTAT average, or if firm growth is greater than the COMPUSTAT average, firm liquidity is smaller than the COMPUSTAT average, and firm leverage is greater than the COMPUSTAT average.</td>
</tr>
<tr>
<td><strong>Leverage</strong></td>
<td>The ratio of long-term debt to preferred and common equity, averaged over the prior three years.</td>
</tr>
<tr>
<td><strong>Liquidity</strong></td>
<td>The ratio of cash and marketable assets to total assets, averaged over the prior three years.</td>
</tr>
<tr>
<td><strong>Industry dummy</strong></td>
<td>According to Palepu (1986) an indicator variable taking on the value one if at least one acquisition occurred in a firm’s four-digit SIC industry in the prior year. According to Andrade <em>et al.</em> (2001), identifier for top five industries based on average annual merger activity.</td>
</tr>
<tr>
<td><strong>Market-to-book</strong></td>
<td>According to Palepu (1986) and Ambrose and Megginson (1992) is the ratio of market value of common equity to its book value at year-end prior to the announcement.</td>
</tr>
<tr>
<td><strong>Market-to-book dummy</strong></td>
<td>Indicator taking on the value one if market-to-book ratio is greater than one.</td>
</tr>
<tr>
<td><strong>Number of segments</strong></td>
<td>The number of different three-digit sic codes in which the plants of the firm operate</td>
</tr>
<tr>
<td><strong>Number of nonmerging firms</strong></td>
<td>According to Eckbo <em>et al.</em> (1990) is the number of nonmerging firms in the four-digit SIC coded industry of the target.</td>
</tr>
<tr>
<td>Ownership stake</td>
<td>According to Datta <em>et al.</em> (2001) is the log of one plus the sum of all the common and restricted stock owned by top five executives over total shares outstanding. According to Hartzell, <em>et al.</em> (2004) is the ratio of shares owned by the CEO to total shares outstanding. According to Moeller (2005) is an indicator variable that takes on the value one if target CEO controls at least 5% of target shares outstanding.</td>
</tr>
<tr>
<td>Outside block holdings</td>
<td>According to Moeller (2005) is indicator variable that takes on the value one if outside block holdings (holder’s of at least 5% of the firm’s shares) do not exceed 10%.</td>
</tr>
<tr>
<td>Price-earnings ratio</td>
<td>The ratio of stock price to its earnings per share at year-end prior to the announcement.</td>
</tr>
<tr>
<td>Percent of institutional shareholdings</td>
<td>The percent of the firm’s shares owned by institutional managers.</td>
</tr>
<tr>
<td>Percent of officer and director shareholdings</td>
<td>The shares held by the firm’s officers and directors.</td>
</tr>
<tr>
<td>Poison pill, anti-takeover charter amendments, blank-check preferred-stock authorizations, classified boards, fair-price requirements, supermajority requirements, voting rights, and dual-class recapitalizations</td>
<td>Indicator variables taking on the value on if the said anti-takeover defense is in place at the time of announcement.</td>
</tr>
<tr>
<td>Quality of loan portfolio</td>
<td>The ratio of non-performing loans to total assets.</td>
</tr>
<tr>
<td><strong>Real estate loan concentration</strong></td>
<td>Ratio of real estate loans to total assets.</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td><strong>Riegle-Neal act dummy</strong></td>
<td>Indicator taking on the value one if the acquisition occurred after 1994.</td>
</tr>
<tr>
<td><strong>Runup</strong></td>
<td>The percentage change in the stock price in the prior year.</td>
</tr>
<tr>
<td><strong>Sales shock</strong></td>
<td>The difference between industry sales growth and average sales growth for all industries. Sales growth the log of the ratio of sales in 1977 to sales in 1981.</td>
</tr>
<tr>
<td><strong>Takeover index</strong></td>
<td>According to Eckbo et al. (1990) is the weighted average of the number of acquisitions in the target’s two-digit SIC code industry in the prior three years.</td>
</tr>
<tr>
<td><strong>Tangible assets-to-total assets</strong></td>
<td>The ratio of property, plant, and equipment to the net book value of assets at year-end prior to the announcement.</td>
</tr>
<tr>
<td><strong>Technical personnel ratio</strong></td>
<td>Number of engineers, chemists, surveyors per 10,000 employees</td>
</tr>
<tr>
<td><strong>Tobin’s Q</strong></td>
<td>The ratio of the firm’s market value to the replacement cost of its assets.</td>
</tr>
<tr>
<td><strong>Total factor productivity (TFP)</strong></td>
<td>Actual amount of output produced for a given amount of inputs minus predicted output. Assumes a translog production function and estimates the production function for each industry. Predicted output is what the plant should have produced given the amount of inputs it used (based on the industry production function).</td>
</tr>
<tr>
<td><strong>Value added per worker</strong></td>
<td>Ratio of sales minus materials to number of workers</td>
</tr>
<tr>
<td><strong>Value ratio</strong></td>
<td>According to Maksimovic et al. (1990) is the log of the ratio of book value of assets plus market value of equity of the bidder to the target.</td>
</tr>
<tr>
<td><strong>Years to retirement</strong></td>
<td>According to Hartzell et al. (2004), the maximum of 0 or 65 minus the age of CEO.</td>
</tr>
</tbody>
</table>
Table 3 - Studies that use predictive models to forecast target candidates

Sampling frame refers to how the authors compile the sample used in the different studies. Variables describe the variables used to predict target candidates. Sign reports the sign of the estimated coefficients. * means coefficient is significant at least 5%. Predictive power summarizes the predictive power of the models.

<table>
<thead>
<tr>
<th>Sampling Frame</th>
<th>Variables</th>
<th>Sign</th>
<th>Predictive power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palepu (1986)</td>
<td>Average excess return</td>
<td>-*</td>
<td>The model explains only</td>
</tr>
<tr>
<td></td>
<td>Accounting return on equity</td>
<td>+</td>
<td>12.45% of the variation in acquisition</td>
</tr>
<tr>
<td></td>
<td>Growth-resources mismatch dummy</td>
<td>+*</td>
<td>probability.</td>
</tr>
<tr>
<td></td>
<td>Growth</td>
<td>-*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Liquidity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leverage</td>
<td>-*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Industry dummy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Size</td>
<td>-*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Market-to-book value</td>
<td>-/+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Price-earnings ratio</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sample 163 firms that were acquired during the period</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1971 to 1979, and randomly sample 256 firms that were</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>not acquired as of 1979.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambrose and Megginson,</td>
<td>Average excess return</td>
<td>-</td>
<td>Greater predictive power than the</td>
</tr>
<tr>
<td></td>
<td>Growth</td>
<td>-</td>
<td>However, predictive power is still low.</td>
</tr>
<tr>
<td></td>
<td>Liquidity</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Market-to-book value</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Price-earnings ratio</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Size</td>
<td>-*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tangible assets-to-total assets</td>
<td>+*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Percent of institutional investor shareholdings</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Percent of officer and director shareholdings</td>
<td>-*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Poison pill</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Antitakeover charter amendments</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Classified boards</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fair-price requirements</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Akhigbe, et al. 2004</th>
<th>Sample all bank acquisitions occurring between 1987 and 2001 using SDC mergers database. Nontarget banks are all banks that did not receive bids between 1987 and 2001, and which are covered in CRSP.</th>
<th>Voting rights</th>
<th>Supermajority requirements</th>
<th>Blank-check preferred-stock authorizations</th>
<th>Dual-class recapitalizations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Size</td>
<td>Growth</td>
<td>Return on assets</td>
<td>Capital-to-asset ratio</td>
<td>Quality of loan portfolio</td>
</tr>
<tr>
<td></td>
<td>+*</td>
<td>+</td>
<td>-*</td>
<td>+*</td>
<td>+*</td>
</tr>
</tbody>
</table>

Predictive power high; classifies 81.1% of the banks correctly.
Table 4 - Tabulation of theoretical studies according to their focus on managerial merger motives and market frictions

Table tabulates theoretical studies according to their implications about managerial merger motives (shareholder value generation versus opportunistic benefits generation), and which market frictions the authors assume exist (such as the presence of discrepancies in valuations, incentive conflicts, and/or information asymmetries).

<table>
<thead>
<tr>
<th>Market frictions</th>
<th>Managerial merger motives</th>
<th>Generation of shareholder value</th>
<th>Generation of opportunistic benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>No frictions</td>
<td></td>
<td>Modigliani &amp; Miller, 1958; Holmes &amp; Schmitz, 1995; Fluck &amp; Lynch, 1999; Gort (1969)</td>
<td></td>
</tr>
<tr>
<td>Incentive conflicts</td>
<td></td>
<td>Myers and Majluf, 1984; Hansen, 1987; Rhodes-Kropf and Viswanathan, 2004;</td>
<td></td>
</tr>
<tr>
<td>Information asymmetries</td>
<td></td>
<td>Hansen, 1987; Rhodes-Kropf and Viswanathan, 2004;</td>
<td>Jensen, 2005;</td>
</tr>
<tr>
<td>Information asymmetries and incentive conflicts</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5 – Tabulation of theoretical merger models, their empirical implications, the empirical studies that test these implications, and the proxies used in the studies

Table tabulates empirical implications of theoretical merger models, the empirical models that test these implications, and the proxies that are used to test these implications.

<table>
<thead>
<tr>
<th>Theoretical studies</th>
<th>Empirical implications</th>
<th>Empirical studies</th>
<th>Proxies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A: Theoretical models that assume information asymmetries and incentive conflicts away</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gort (1969)</td>
<td>Demand growth predicts bidder and target candidacy.</td>
<td>Gort (1969); Ambrose and Megginson, 1992; Mitchell and Mulherin (1996); Maksimovic and Phillips (2001); Palepu (1986); Akhigbe, et al.2004;</td>
<td>Growth; Growth; Growth Detrended aggregate production; downstream demand indicator Growth Growth</td>
</tr>
<tr>
<td>Gort (1969)</td>
<td>Barriers to entry predict bidder and target candidacy.</td>
<td>Gort (1969); Eckbo &amp; et al., 1990</td>
<td>Concentration ratio; Concentration ratio</td>
</tr>
<tr>
<td>Gort (1969)</td>
<td>Change in average size of firms predict bidder and target</td>
<td>Gort (1969); Palepu (1986); Ambrose and Megginson,</td>
<td>Change in size; Size; Size;</td>
</tr>
<tr>
<td>Gort (1969)</td>
<td>Number of new entrants predict bidder and target candidacy.</td>
<td>Gort (1969); Eckbo, <em>et al.</em> 1990;</td>
<td>Change in number of firms; Number of nonmerging firms;</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Holmes &amp; Schmitz, 1995; Fluck &amp; Lynch, 1999</td>
<td>Changes in the share of leading industry producers predict bidder and target candidacy.</td>
<td>Gort (1969);</td>
<td>Changes in concentration ratio;</td>
</tr>
<tr>
<td>Holmes &amp; Schmitz, 1995; Fluck &amp; Lynch, 1999</td>
<td>The match quality between management and the business predicts bidder and target candidacy.</td>
<td>Lang, <em>et al.</em> 1989;</td>
<td>Tobin’s Q</td>
</tr>
<tr>
<td>Holmes &amp; Schmitz, 1995; Fluck &amp; Lynch, 1999</td>
<td>Business quality (according to Holmes and Schmitz) or profitability as a proxy for business quality (according to Fluck and Lynch) predicts bidder and target candidacy.</td>
<td>Palepu (1986); Ambrose and Megginson, 1992; Akhigbe, <em>et al.</em> 2004.</td>
<td>Average excess return, accounting return on equity; Average excess return;</td>
</tr>
<tr>
<td>Holmes &amp; Schmitz, 1995</td>
<td>Prior merger activity predicts target candidacy.</td>
<td>Schipper and Thompson 1983; Asquith <em>et al.</em>, 1983; Malatesta and Thompson,</td>
<td>Return on assets, capital-to-asset ratio, quality of loan portfolio, core-deposit ratio, real estate loan concentration, commercial loan concentration, and consumer loan concentration; Total factor productivity; value added per worker; cash flow;</td>
</tr>
<tr>
<td>Panel B: Theoretical studies that assume incentive conflicts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluck &amp; Lynch, 1999</td>
<td>Mismatch in capital resources and growth opportunities predict bidder and target candidacy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Palepu (1986); Ambrose and Megginson, 1992.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Growth-resources mismatch dummy, liquidity, leverage; Growth-resources mismatch dummy, liquidity.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ambrose and Megginson, 1992; Datta et al., 2001; Grinstein and Hribar (2003); Hartzell et al.2004</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tangible assets-to-total asset</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Equity-based compensation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bonus</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Augmentation of parachute dummy, additional bonus dummy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jensen and Meckling, 1976</td>
<td>Monitoring, better compensation contracts predict bidder and target candidacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ambrose and Megginson, 1992; Datta, et al., 2001 Grinstein and Hribar (2003); Hartzell et al.2004; Moeller, 2005</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Percent of institutional investor shareholdings, percent of officer and director shareholdings, poison pill, antitakeover charter amendments, classified boards, fair-price requirements, voting rights, supermajority requirements, blank-check preferred-stock authorizations, dual-class recapitalizations; Ownership stake, equity-based compensation CEO power index</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Years to retirement, ownership stake Ownership stake, fraction of inside directors, outside block holders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reference</td>
<td>Free cash flow predicts bidder and target candidacy.</td>
<td>Reference</td>
<td>Free cash flow predicts bidder and target candidacy.</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------------------</td>
<td>-----------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Jensen, 1986</td>
<td>Lang et al., 1991</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel C: Theoretical studies that assume information asymmetries

<table>
<thead>
<tr>
<th>Reference</th>
<th>Overvalued equity predicts bidder and target candidacy.</th>
<th>Palepu (1986); Ambrose and Megginson, 1992; Akhigbe, et al., 2004</th>
<th>Market-to-book value, price-earnings ratio; Market-to-book value, price-earnings ratio; Runup, market-to-book dummy;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Industry dummy, acquisition activity in the state</td>
</tr>
</tbody>
</table>

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Table 6 - Description of the variables we use to represent managerial motives, and the predicted signs for these variables

Table describes the variables we use to represent managerial motives, and lists the predicted signs for these variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Predicted sign in bidder-candidacy models</th>
<th>Predicted sign in target-candidacy models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash ratio</td>
<td>Ratio of cash and marketable securities to total assets.</td>
<td>+</td>
<td>+/-</td>
</tr>
<tr>
<td>Change in size</td>
<td>The log of the ratio of the change in book value of assets of the firm in the 2 years prior to the announcement to assets 1 quarter prior to the announcement.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Concentration ratio</td>
<td>The ratio of sales of the largest four firms (in terms of sales) to total industry sales.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Equity-based compensation</td>
<td>Ratio of the Black-Scholes value of options granted to the CEO to total compensation in the year prior to the announcement.</td>
<td>+/-</td>
<td>+/-</td>
</tr>
<tr>
<td>Governance index</td>
<td>Index constructed by Gompers, Iishi and Metrick (2003) to measure the balance of power between shareholders and managers. Consists of twenty-four unique corporate-governance variables based on charter and bylaw provisions, firm-level provisions, and state laws. The variables can be classified into five categories: tactics for delaying hostile bidders, voting rights, director protection, other takeover defenses and state laws. The governance index is composed of variables (variables concerning delaying hostile bidders and takeover defenses) that can allow managers to deter unwanted merger attempts.</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>High information-</td>
<td>Takes on the value one if the share is overvalued (higher book-to-market than the industry median) and opaque (lower share turnover relative to the industry median).</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>asymmetry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Merger</td>
<td>The ratio of the number of firms in the industry, which made or received bids</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Variable</td>
<td>Description</td>
<td>Sign</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>intensity</td>
<td>in the last two years, to the number of firms in the industry.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ownership stake</td>
<td>Ratio of shares owned by the CEO to total number of shares outstanding in the year prior to the announcement.</td>
<td>+/-</td>
<td></td>
</tr>
<tr>
<td>Previous mergers</td>
<td>Counts the number of times a firm received or solicited bids in the 8 quarters prior to the announcement.</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Price run-up</td>
<td>Changes in share prices in the two years prior to the announcement.</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Return on assets (ROA)</td>
<td>The ratio of book value of net income before extraordinary (or nonrecurring) items to total assets one quarter prior to the announcement.</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Retirement years</td>
<td>Number of years the CEO has under the company’s pension plan.</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Sales growth</td>
<td>The ratio of net sales 9 quarters prior minus 1 quarter prior to net sales 9 quarters prior to the announcement.</td>
<td>+/-</td>
<td></td>
</tr>
<tr>
<td>Sales shock</td>
<td>The absolute value of the difference between the industry 2-year sales growth and the median sales growth for all firms.</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Share turnover</td>
<td>Ratio of the number of shares traded to number of shares outstanding.</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>The log of total assets in the quarter before the announcement.</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Square of sales shock</td>
<td>Square of sales shock</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>
Table 7 - Description of the endogenous variables we use in bidder and target announcement-returns regressions, and the predicted signs for these variables

Table describes the endogenous variables we use in announcement returns regressions and lists the predicted signs for these variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Predicted sign in bidder models</th>
<th>Predicted sign in target models</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A – Proxies to represent bidder and target fit</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Same industry</td>
<td>Indicator that takes on the value one if the merging firms are in the same industry</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Same state</td>
<td>Indicator that takes on the value one if main operations of bidder and target are in the same state</td>
<td>+/-</td>
<td>+/-</td>
</tr>
<tr>
<td>Bidder (target) public</td>
<td>Indicator that takes on the value one if the bidder (target) is public.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Deal value</td>
<td>The value of deal in million dollars.</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Relative value</td>
<td>The ratio of the value of the deal to the market value of common stock.</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td><strong>Panel B – Proxies to represent merger terms and negotiation environment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All-equity indicator</td>
<td>Indicator that takes on the value one if target shareholders paid using only bidder shares of stock.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Unwelcoming attitude</td>
<td>Indicator that takes on the value one if management’s initial recommendation is negative or management did not solicit the bid.</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Anti-takeover defense</td>
<td>Indicator that takes on the value one if the target has anti-takeover defenses</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Target</td>
<td>Indicator that takes on the value one if the target is in bankruptcy proceedings</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>bankrupt</td>
<td>at the time of the merger announcement</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 8 - Comparison of SDC announcement dates with Lexis Nexis announcements

Table tabulates the announcements dates that SDC reports, and the announcement dates found in LexisNexis and Factiva searches, for 74 deals that were randomly picked.

<table>
<thead>
<tr>
<th>Random number</th>
<th>Bidder name</th>
<th>Target name</th>
<th>SDC date</th>
<th>LexisNexis date</th>
<th>Factiva</th>
<th>Reason for discrepancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1063</td>
<td>Tracor Inc</td>
<td>Houston Atlas Inc</td>
<td>1/7/1983</td>
<td>1/7/1983</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company</td>
<td>Date</td>
<td>Date</td>
<td>Date</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------</td>
<td>----------</td>
<td>------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemonetics Corp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Video Systems Inc</td>
<td>7/25/1983</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On 5/9/1983: Haemonetics Corp said that it has had discussions with several suitors regarding the possible sale of the company. On 6/2/1983: American Hospital Supply Corp and Haemonetics Corp jointly announced that they have reached agreement in principle for the acquisition of Haemonetics by American Hospital Supply Corp.
<table>
<thead>
<tr>
<th>#</th>
<th>Company Name</th>
<th>Subsidiary Name</th>
<th>Date Acquired 1</th>
<th>Date Acquired 2</th>
<th>Date Acquired 3</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3811</td>
<td>Safeguard Sciences Inc</td>
<td>CompuCom Systems (Safeguard)</td>
<td>11/16/1987</td>
<td>N/A</td>
<td>11/16/1987</td>
<td></td>
</tr>
<tr>
<td>4517</td>
<td>Hoya Corp USA (Hoya Corp)</td>
<td>Micro Mask Inc</td>
<td>7/17/1989</td>
<td>7/17/1989</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
LexisNexis: Pennsylvania Enterprises, Inc., Wilkes-Barre, Pa., a water and gas utility, said it was terminating its letter of intent to be acquired by Carey Energy Corp., because Carey had not met a July 21 deadline for obtaining financing.

FACTIVA: Carey Energy Corp's affiliate Utilities Investment Inc said it remains committed to resolving problems.

surrounding its acquisition of Pennsylvania Enterprises Inc, after Pennsylvania terminated its letter of intent to be acquired by Utilities Investment.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4885</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
On 4/4/1990: Tele-Optics Inc. announced that Corvus Corp. has exercised its previously disclosed option to acquire an approximately 44 percent equity interest in Tele-Optics. On 6/25/1990: James E. Davis, the 44 percent stockholder, announced that Corvus Corp., its 44 percent stockholder, recently filed for protection under Chapter 11 of the U.S. Bankruptcy Code.
<table>
<thead>
<tr>
<th>Code</th>
<th>Company 1</th>
<th>Company 2</th>
<th>Date 1</th>
<th>Date 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>4969</td>
<td>Gold Coin Mining</td>
<td>PPC Industrial Coating</td>
<td>7/26/1990</td>
<td>N/A</td>
</tr>
<tr>
<td>6415</td>
<td>Tomen America Inc (Tomen Corp)</td>
<td>Goldtex Inc</td>
<td>2/8/1993</td>
<td>2/8/1993</td>
</tr>
<tr>
<td>6779</td>
<td>Physician Corp of America</td>
<td>Family Health Systems Inc</td>
<td>8/9/1993</td>
<td>8/9/1993</td>
</tr>
<tr>
<td>6863</td>
<td>United Water Resources Inc</td>
<td>GWC Corp</td>
<td>9/16/1993</td>
<td>9/16/1993</td>
</tr>
<tr>
<td>#</td>
<td>Company Name</td>
<td>Subsidiary Name</td>
<td>Date</td>
<td>Date</td>
</tr>
<tr>
<td>----</td>
<td>------------------------------------</td>
<td>--------------------------</td>
<td>---------</td>
<td>--------</td>
</tr>
<tr>
<td>7502</td>
<td>Digital Solutions Inc</td>
<td>CBL Medical Inc</td>
<td>6/14/94</td>
<td>6/14/94</td>
</tr>
<tr>
<td>7543</td>
<td>US Wireless Data Inc</td>
<td>Direct Data Inc</td>
<td>6/30/94</td>
<td>6/30/94</td>
</tr>
<tr>
<td>7636</td>
<td>General Cellular Corp</td>
<td>Pacific Northwest Cellular</td>
<td>7/29/94</td>
<td>N/A</td>
</tr>
<tr>
<td>7766</td>
<td>CFI ProServices Inc</td>
<td>Genesys Solutions Group Inc</td>
<td>9/19/94</td>
<td>9/19/94</td>
</tr>
<tr>
<td>7945</td>
<td>Worldwide Golf Resources Inc</td>
<td>American Turf Manufacturing</td>
<td>12/1/94</td>
<td>12/1/94</td>
</tr>
<tr>
<td>8067</td>
<td>Effective Management Sys Inc</td>
<td>Intercim Corp</td>
<td>1/23/95</td>
<td>1/23/95</td>
</tr>
<tr>
<td>8261</td>
<td>Pacific Physician Services Inc</td>
<td>Team Health Grp(Pacific Pys)</td>
<td>4/3/95</td>
<td>4/3/95</td>
</tr>
<tr>
<td>8491</td>
<td>Adobe Systems Inc</td>
<td>Frame Technology Corp</td>
<td>6/22/95</td>
<td>6/22/95</td>
</tr>
<tr>
<td>8889</td>
<td>Envoy Corp</td>
<td>National Electronic Info Corp</td>
<td>10/31/95</td>
<td>10/31/95</td>
</tr>
<tr>
<td>Code</td>
<td>Company A</td>
<td>Company B</td>
<td>Date A</td>
<td>Date B</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>--------------</td>
<td>--------------</td>
</tr>
<tr>
<td>9994</td>
<td>Alliance Pharmaceutical Corp</td>
<td>MDV Technologies Inc</td>
<td>10/7/1996</td>
<td>10/7/1996</td>
</tr>
<tr>
<td>10204</td>
<td>Fidelity Holdings</td>
<td>KB&amp;R Holdings</td>
<td>12/12/1996</td>
<td>12/12/1996</td>
</tr>
<tr>
<td>10235</td>
<td>InaCom Corp</td>
<td>Networks Inc</td>
<td>12/20/1996</td>
<td>12/23/1996</td>
</tr>
<tr>
<td>10391</td>
<td>Industrial Holdings Inc</td>
<td>LSS-Lone Star Houston Inc</td>
<td>2/6/1997</td>
<td>2/10/1997</td>
</tr>
<tr>
<td>Company Name</td>
<td>Description</td>
<td>Date</td>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------</td>
<td>------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>Wind River Systems Inc</td>
<td>RouterWare Inc</td>
<td>7/1/1999</td>
<td>7/1/1999</td>
<td></td>
</tr>
<tr>
<td>Black Box Corp</td>
<td>DataComLink,T&amp;E Electric</td>
<td>11/12/1999</td>
<td>11/12/1999</td>
<td></td>
</tr>
<tr>
<td>Tangible Asset Galleries Inc</td>
<td>Gehringer &amp; Kellar Inc</td>
<td>12/30/1999</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Macromedia Inc</td>
<td>Allaire Corp</td>
<td>1/16/2001</td>
<td>1/16/2001</td>
<td></td>
</tr>
<tr>
<td>Ariba Inc</td>
<td>Agile Software Corp</td>
<td>1/29/2001</td>
<td>1/29/2001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vertical Computer Systems Inc</td>
<td>EnFacet Inc</td>
<td>9/5/2001</td>
<td>N/A</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------</td>
<td>-------------</td>
<td>----------</td>
<td>-----</td>
</tr>
<tr>
<td>16038</td>
<td>Divine Inc</td>
<td>Data Return Corp</td>
<td>11/2/2001</td>
<td>11/2/2001</td>
</tr>
<tr>
<td>16163</td>
<td>US Unwired Inc</td>
<td>IWO Holdings Inc</td>
<td>12/20/2001</td>
<td>12/20/2001</td>
</tr>
<tr>
<td>16564</td>
<td>Imaging Technologies Corp</td>
<td>Greenland Corp</td>
<td>8/13/2002</td>
<td>8/13/2002</td>
</tr>
<tr>
<td>16675</td>
<td>Genaissance Pharmaceuticals</td>
<td>DNA Sciences</td>
<td>4/1/2003</td>
<td>4/1/2003</td>
</tr>
<tr>
<td></td>
<td>Company Name</td>
<td>Company Name</td>
<td>Date</td>
<td>Date</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------</td>
<td>-----------------------------------------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td>18086</td>
<td>Natural Gas Services Group Inc</td>
<td>Screw Compression Systems Inc</td>
<td>10/19/2004</td>
<td>10/19/2004</td>
</tr>
</tbody>
</table>
Table 9 - Distribution of bidder and target CARs according to CRSP-COMPUSTAT coverage

Table partitions nonmerging firms according to CRSP-COMPUSTAT coverage. Panel A and B report mean, standard deviation, and number of observations for 3-day, 7-day, 15-day, and 29-day bidder and target CARs of bids that CRSP-COMPUSTAT, respectively, covers and doesn’t cover. Panel C reports the t-statistic for the t-tests of the null hypothesis that the mean CARs in the two subsamples are equal. Means and standard deviations in %.

<table>
<thead>
<tr>
<th></th>
<th>Panel A - Bids that CRSP-COMPUSTAT covers</th>
<th></th>
<th>Panel B - Bids that CRSP-COMPUSTAT doesn’t cover</th>
<th></th>
<th>Panel C - T-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>Observations</td>
<td>Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>3-day bidder CAR</td>
<td>0.92</td>
<td>10.67</td>
<td>7,193</td>
<td>2.42</td>
<td>12.82</td>
</tr>
<tr>
<td>7-day bidder CAR</td>
<td>1.09</td>
<td>13.00</td>
<td>7,193</td>
<td>2.46</td>
<td>16.94</td>
</tr>
<tr>
<td>15-day bidder CAR</td>
<td>0.73</td>
<td>16.82</td>
<td>7,194</td>
<td>3.75</td>
<td>23.65</td>
</tr>
<tr>
<td>29-day bidder CAR</td>
<td>0.00</td>
<td>22.39</td>
<td>7,194</td>
<td>2.50</td>
<td>30.38</td>
</tr>
<tr>
<td>3-day target CAR</td>
<td>19.92</td>
<td>27.22</td>
<td>3,344</td>
<td>20.09</td>
<td>23.09</td>
</tr>
<tr>
<td>7-day target CAR</td>
<td>21.68</td>
<td>28.63</td>
<td>3,346</td>
<td>22.89</td>
<td>25.11</td>
</tr>
<tr>
<td>15-day target CAR</td>
<td>23.57</td>
<td>30.77</td>
<td>3,346</td>
<td>25.63</td>
<td>27.24</td>
</tr>
<tr>
<td>29-day target CAR</td>
<td>25.57</td>
<td>34.87</td>
<td>3,346</td>
<td>25.39</td>
<td>31.79</td>
</tr>
</tbody>
</table>
Table 10 - Tests for a common population for bids that CRSP-COMPUSTAT covers and that it doesn't cover

Table investigates whether the distribution of CAR for bids that CRSP-COMPUSTAT covers and doesn't cover come from a common population. Panel A and B report the z-statistic for the Mann-Whitney, the p-value for the Kolmogorov-Smirnov, and the $\chi^2$-statistic for the Kruskal-Wallis tests in the bidder and target samples, respectively.

<table>
<thead>
<tr>
<th></th>
<th>Panel A - Bidder subsample</th>
<th></th>
<th>Panel B - Target subsample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mann-Whitney test</td>
<td>Kolmogorov-Smirnov test</td>
<td>Kruskal-Wallis test Chi$^2$-statistic</td>
</tr>
<tr>
<td></td>
<td>z-statistic</td>
<td>p-value</td>
<td></td>
</tr>
<tr>
<td>3-day CAR</td>
<td>-1.94</td>
<td>0.01</td>
<td>3.74</td>
</tr>
<tr>
<td>7-day CAR</td>
<td>-1.43</td>
<td>0.07</td>
<td>2.05</td>
</tr>
<tr>
<td>15-day CAR</td>
<td>-1.55</td>
<td>0.01</td>
<td>2.42</td>
</tr>
<tr>
<td>29-day CAR</td>
<td>-1.00</td>
<td>0.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Table 11 - Distribution of bidder and target CARs according to EXECOMP coverage

Table partitions nonmerging firms according to EXECOMP coverage. Panel A and B report mean, standard deviation, and number of observations for 3-day, 7-day, 15-day, and 29-day bidder and target CARs of bids that EXECOMP, respectively, covers and doesn't cover. Panel C reports the t-statistic for the t-tests of the null hypothesis that the mean CARs in the two subsamples are equal. Means and standard deviations in %.

<table>
<thead>
<tr>
<th></th>
<th>Panel A - Bids that EXECOMP covers</th>
<th>Panel B - Bids that EXECOMP doesn't cover</th>
<th>Panel C - T-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>Observations</td>
</tr>
<tr>
<td>3-day bidder CAR</td>
<td>-0.59</td>
<td>6.60</td>
<td>1363</td>
</tr>
<tr>
<td>7-day bidder CAR</td>
<td>-0.50</td>
<td>8.56</td>
<td>1363</td>
</tr>
<tr>
<td>15-day bidder CAR</td>
<td>-0.84</td>
<td>11.24</td>
<td>1363</td>
</tr>
<tr>
<td>29-day bidder CAR</td>
<td>-1.16</td>
<td>15.14</td>
<td>1363</td>
</tr>
<tr>
<td>3-day target CAR</td>
<td>18.59</td>
<td>21.73</td>
<td>353</td>
</tr>
<tr>
<td>7-day target CAR</td>
<td>19.99</td>
<td>23.16</td>
<td>353</td>
</tr>
<tr>
<td>15-day target CAR</td>
<td>21.37</td>
<td>23.80</td>
<td>353</td>
</tr>
<tr>
<td>29-day target CAR</td>
<td>21.96</td>
<td>31.34</td>
<td>353</td>
</tr>
</tbody>
</table>
Table 12 - Tests for a common population for bids that EXECOMP covers and that it doesn't cover

Table investigates whether the distribution of CAR for bids that EXECOMP covers and doesn't cover come from a common population. Panel A and B report the z-statistic for the Mann-Whitney, the p-value for the Kolmogorov-Smirnov, and the $\chi^2$-statistic for the Kruskal-Wallis tests in the bidder and target samples, respectively.

<table>
<thead>
<tr>
<th></th>
<th>Panel A - Bidder subsample</th>
<th>Panel B - Target subsample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mann-Whitney test</td>
<td>Kolmogorov-Smirnov test</td>
</tr>
<tr>
<td></td>
<td>z-statistic</td>
<td>p-value</td>
</tr>
<tr>
<td>3-day CAR</td>
<td>-5.26</td>
<td>0.00</td>
</tr>
<tr>
<td>7-day CAR</td>
<td>-4.29</td>
<td>0.00</td>
</tr>
<tr>
<td>15-day CAR</td>
<td>-3.85</td>
<td>0.00</td>
</tr>
<tr>
<td>29-day CAR</td>
<td>-2.84</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Table 13 - Distribution of bidder and target CARs according to IRRC coverage

Table partitions nonmerging firms according to IRRC coverage. Panel A and B report mean, standard deviation, and number of observations for 3-day, 7-day, 15-day, and 29-day bidder and target CARs of bids that IRRC, respectively, covers and doesn't cover. Panel C reports the t-statistic for the t-tests of the null hypothesis that the mean CARs in the two subsamples are equal. Means and standard deviations in %.

<table>
<thead>
<tr>
<th></th>
<th>Panel A - Bids that IRRC covers</th>
<th>Panel B - Bids that IRRC doesn't cover</th>
<th>Panel C - T-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>Observations</td>
</tr>
<tr>
<td>3-day bidder CAR</td>
<td>-0.65</td>
<td>6.50</td>
<td>703</td>
</tr>
<tr>
<td>7-day bidder CAR</td>
<td>-0.80</td>
<td>8.34</td>
<td>703</td>
</tr>
<tr>
<td>15-day bidder CAR</td>
<td>-1.48</td>
<td>10.58</td>
<td>703</td>
</tr>
<tr>
<td>29-day bidder CAR</td>
<td>-1.79</td>
<td>14.51</td>
<td>703</td>
</tr>
<tr>
<td>3-day target CAR</td>
<td>18.58</td>
<td>21.32</td>
<td>191</td>
</tr>
<tr>
<td>7-day target CAR</td>
<td>19.47</td>
<td>23.88</td>
<td>191</td>
</tr>
<tr>
<td>15-day target CAR</td>
<td>21.07</td>
<td>24.70</td>
<td>191</td>
</tr>
<tr>
<td>29-day target CAR</td>
<td>20.34</td>
<td>37.16</td>
<td>191</td>
</tr>
</tbody>
</table>
Table 14 - Tests for a common population for bids that IRRC covers and that it doesn't cover

Table investigates whether the distribution of CAR for bids that IRRC covers and doesn't cover come from a common population. Panel A and B report the $z$-statistic for the Mann-Whitney, the p-value for the Kolmogorov-Smirnov, and the $\chi^2$-statistic for the Kruskal-Wallis tests in the bidder and target samples, respectively.

<table>
<thead>
<tr>
<th></th>
<th>Panel A - Bidder subsample</th>
<th>Panel B - Target subsample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mann-Whitney test</td>
<td>Kolmogorov-Smirnov test</td>
</tr>
<tr>
<td></td>
<td>z-statistic</td>
<td>p-value</td>
</tr>
<tr>
<td>3-day CAR</td>
<td>-3.99</td>
<td>0.00</td>
</tr>
<tr>
<td>7-day CAR</td>
<td>-3.72</td>
<td>0.00</td>
</tr>
<tr>
<td>15-day CAR</td>
<td>-4.51</td>
<td>0.00</td>
</tr>
<tr>
<td>29-day CAR</td>
<td>-3.68</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Table 15 - Bidder-candidacy models

Panel A reports the mean, standard deviation, 25th, 50th, 75th percentile values of the marginal coefficient estimates. Ninety-seven cross-sectional probit regressions of bidder dummies - indicator that is 1 if the firm proposes a bid in the next quarter, and 0 otherwise - on predictors, which proxy for managerial motives, generate the marginal-coefficient estimates. Marginal probabilities are estimated at the median values for the continuous variables and at zero for the high information-asymmetry and resource-growth mismatch indicator variables. Last column in Panel A reports the t-statistic for the t-test of the null hypothesis that the mean of the coefficient is equal to 0. Panel B reports pseudo R². Marginal probability estimates and pseudo R² are in %.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>25th percentile</th>
<th>50th percentile</th>
<th>75th percentile</th>
<th>T-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A - Summary statistics for marginal-probability estimates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>1.31</td>
<td>2.21</td>
<td>0.13</td>
<td>0.57</td>
<td>1.34</td>
<td>5.84</td>
</tr>
<tr>
<td>Resource-growth mismatch</td>
<td>0.01</td>
<td>0.14</td>
<td>-0.06</td>
<td>0.00</td>
<td>0.08</td>
<td>1.00</td>
</tr>
<tr>
<td>Sales shock</td>
<td>0.63</td>
<td>2.15</td>
<td>-0.53</td>
<td>0.27</td>
<td>1.29</td>
<td>2.88</td>
</tr>
<tr>
<td>Sales shock squared</td>
<td>-2.94</td>
<td>7.35</td>
<td>-4.26</td>
<td>-0.71</td>
<td>0.85</td>
<td>-3.95</td>
</tr>
<tr>
<td>Sales growth</td>
<td>-0.01</td>
<td>0.03</td>
<td>-0.01</td>
<td>0.00</td>
<td>0.00</td>
<td>-3.47</td>
</tr>
<tr>
<td>Price runup</td>
<td>0.01</td>
<td>0.03</td>
<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>2.48</td>
</tr>
<tr>
<td>Share turnover</td>
<td>-0.10</td>
<td>0.38</td>
<td>-0.14</td>
<td>0.00</td>
<td>0.06</td>
<td>-2.54</td>
</tr>
<tr>
<td>High information-</td>
<td>0.05</td>
<td>0.15</td>
<td>-0.04</td>
<td>0.03</td>
<td>0.13</td>
<td>3.33</td>
</tr>
<tr>
<td>asymmetry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Merger intensity</td>
<td>0.11</td>
<td>0.85</td>
<td>-0.35</td>
<td>0.13</td>
<td>0.49</td>
<td>1.32</td>
</tr>
<tr>
<td>Cash ratio</td>
<td>0.36</td>
<td>0.47</td>
<td>0.15</td>
<td>0.32</td>
<td>0.52</td>
<td>7.58</td>
</tr>
<tr>
<td>Size</td>
<td>0.00</td>
<td>0.04</td>
<td>-0.02</td>
<td>0.00</td>
<td>0.03</td>
<td>0.84</td>
</tr>
<tr>
<td>Change in size</td>
<td>-0.02</td>
<td>0.06</td>
<td>-0.03</td>
<td>0.00</td>
<td>0.01</td>
<td>-3.76</td>
</tr>
<tr>
<td>Concentration ratio</td>
<td>-0.01</td>
<td>0.22</td>
<td>-0.12</td>
<td>0.01</td>
<td>0.10</td>
<td>-0.45</td>
</tr>
<tr>
<td>Previous mergers</td>
<td>0.91</td>
<td>0.49</td>
<td>0.54</td>
<td>0.84</td>
<td>1.24</td>
<td>18.69</td>
</tr>
</tbody>
</table>

|                         |      |                    |                  |                  |                 |             |
| **Panel B - Goodness-of-fit diagnostics** |      |                    |                  |                  |                 |             |
| Pseudo R²               | 37.43| 7.79               | 33               | 37               | 40              |             |
Table 16 - Target-candidacy models

Panel A reports the mean, standard deviation, 25th, 50th, 75th percentile values of marginal probability estimates. Ninety-seven cross-sectional probit regressions of target dummies - indicator that is 1 if the firm receives a bid in the next quarter, and 0 otherwise – on predictors, which proxy for managerial motives, generate the marginal-coefficient estimates. Marginal probabilities are estimated at the median values for the continuous variables and at zero for the high information-asymmetry and resource-growth mismatch indicator variables. Last column in Panel A reports the t-statistic for the t-test of the null hypothesis that the mean of the coefficient is equal to 0. Panel B reports pseudo $R^2$. The marginal probability estimates and pseudo $R^2$ are in %.

<table>
<thead>
<tr>
<th>Panel A – Summary statistics for marginal coefficient estimates</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>25th percentile</th>
<th>50th percentile</th>
<th>75th percentile</th>
<th>T-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>0.58</td>
<td>0.92</td>
<td>0.02</td>
<td>0.22</td>
<td>0.84</td>
<td>6.18</td>
</tr>
<tr>
<td>Resource-growth mismatch</td>
<td>0.02</td>
<td>0.13</td>
<td>-0.05</td>
<td>0.03</td>
<td>0.10</td>
<td>1.65</td>
</tr>
<tr>
<td>Sales shock</td>
<td>0.99</td>
<td>3.16</td>
<td>-0.77</td>
<td>0.15</td>
<td>1.80</td>
<td>3.08</td>
</tr>
<tr>
<td>Sales shock squared</td>
<td>-4.73</td>
<td>13.74</td>
<td>-3.58</td>
<td>-0.58</td>
<td>0.97</td>
<td>-3.39</td>
</tr>
<tr>
<td>Sales growth</td>
<td>-0.03</td>
<td>0.04</td>
<td>-0.04</td>
<td>-0.01</td>
<td>0.00</td>
<td>-6.49</td>
</tr>
<tr>
<td>Price runup</td>
<td>-0.03</td>
<td>0.06</td>
<td>-0.05</td>
<td>-0.01</td>
<td>0.00</td>
<td>-4.83</td>
</tr>
<tr>
<td>Share turnover</td>
<td>0.00</td>
<td>0.28</td>
<td>-0.10</td>
<td>0.00</td>
<td>0.08</td>
<td>-0.1</td>
</tr>
<tr>
<td>High information-asymmetry</td>
<td>-0.09</td>
<td>0.16</td>
<td>-0.16</td>
<td>-0.06</td>
<td>0.00</td>
<td>-5.13</td>
</tr>
<tr>
<td>Merger intensity</td>
<td>0.25</td>
<td>1.24</td>
<td>-0.32</td>
<td>0.19</td>
<td>0.73</td>
<td>1.99</td>
</tr>
<tr>
<td>Cash ratio</td>
<td>-0.23</td>
<td>0.64</td>
<td>-0.43</td>
<td>-0.04</td>
<td>0.15</td>
<td>-3.54</td>
</tr>
<tr>
<td>Size</td>
<td>-0.06</td>
<td>0.06</td>
<td>-0.09</td>
<td>-0.05</td>
<td>-0.02</td>
<td>-11.38</td>
</tr>
<tr>
<td>Change in size</td>
<td>-0.13</td>
<td>0.14</td>
<td>-0.18</td>
<td>-0.09</td>
<td>-0.03</td>
<td>-9.06</td>
</tr>
<tr>
<td>Concentration ratio</td>
<td>-0.05</td>
<td>0.26</td>
<td>-0.09</td>
<td>-0.01</td>
<td>0.07</td>
<td>-1.89</td>
</tr>
<tr>
<td>Previous mergers</td>
<td>0.61</td>
<td>0.36</td>
<td>0.33</td>
<td>0.56</td>
<td>0.87</td>
<td>16.48</td>
</tr>
</tbody>
</table>

Panel B – Goodness-of-fit diagnostics

<table>
<thead>
<tr>
<th>Pseudo $R^2$</th>
<th>27.80</th>
<th>9.41</th>
<th>21</th>
<th>26</th>
<th>33</th>
</tr>
</thead>
</table>
Table 17 – Goodness-of-fit diagnostics for bidder-candidacy models

Panel A reports the mean, standard deviation, 25th, 50th, 75th percentile values of the probability of bidding for bidders and nonbidders as estimated by the bidder-candidacy models. Nonbidder subsample covers targets and nonmerging firms. Panel B reports the mean, standard deviation, 25th, 50th, 75th percentile values for the X² statistic of the likelihood-ratio test and pseudo R². Predicted probabilities and Pseudo R² are in %.

<table>
<thead>
<tr>
<th>Panel A – Distribution of probability of bidding by bidders and nonbidders</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>25th percentile</th>
<th>50th percentile</th>
<th>75th percentile</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonbidder firms</td>
<td>1.35</td>
<td>5.17</td>
<td>0.16</td>
<td>0.36</td>
<td>0.68</td>
<td>423,975</td>
</tr>
<tr>
<td>Bidders</td>
<td>19.78</td>
<td>24.03</td>
<td>4.82</td>
<td>7.92</td>
<td>25.77</td>
<td>7,559</td>
</tr>
</tbody>
</table>

Panel B – Goodness-of fit diagnostics

<table>
<thead>
<tr>
<th>Panel B – Goodness-of fit diagnostics</th>
<th>Pseudo R²</th>
<th>X² statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudo R²</td>
<td>37.43</td>
<td>276.47</td>
</tr>
<tr>
<td>X² statistic</td>
<td>9.41</td>
<td>110.12</td>
</tr>
<tr>
<td></td>
<td>7.99</td>
<td>110.12</td>
</tr>
</tbody>
</table>

Table 18 – Goodness-of fit-diagnostics for target-candidacy models

Panel A reports the mean, standard deviation, 25th, 50th, 75th percentile values of the probability to receive bids for targets and nontargets as estimated by the target-candidacy models. Nontarget subsample covers bidders and nonmerging firms. Panel B reports the mean, standard deviation, 25th, 50th, 75th percentile values for the X² statistic of the likelihood-ratio test and pseudo R². Predicted probabilities and Pseudo R² are in %.

<table>
<thead>
<tr>
<th>Panel A – Distribution of probability to receive bids by targets and nontargets</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>25th percentile</th>
<th>50th percentile</th>
<th>75th percentile</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nontarget firms</td>
<td>0.76</td>
<td>3.03</td>
<td>0.07</td>
<td>0.22</td>
<td>0.57</td>
<td>426,622</td>
</tr>
<tr>
<td>Targets</td>
<td>6.87</td>
<td>10.18</td>
<td>2.14</td>
<td>3.68</td>
<td>6.93</td>
<td>3,564</td>
</tr>
</tbody>
</table>

Panel B – Goodness of fit diagnostics

<table>
<thead>
<tr>
<th>Panel B – Goodness of fit diagnostics</th>
<th>Pseudo R²</th>
<th>X² statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudo R²</td>
<td>27.80</td>
<td>107.00</td>
</tr>
<tr>
<td>X² statistic</td>
<td>9.41</td>
<td>37.61</td>
</tr>
</tbody>
</table>
Table 19 - Distribution of bidder and target cumulative abnormal returns

Table reports the mean, standard deviation, 25th, 50th, 75th percentile values for the distribution of 3-day, 7-day, 15-day, and 29-day cumulative abnormal returns for bidders in Panel A and for targets in Panel B. CARs are in %.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Standard Deviation</th>
<th>25th percentile</th>
<th>50th percentile</th>
<th>75th percentile</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A - Bidder subsample</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-day window</td>
<td>0.92</td>
<td>10.67</td>
<td>-3.13</td>
<td>0.20</td>
<td>3.87</td>
<td>7,193</td>
</tr>
<tr>
<td>7-day window</td>
<td>1.09</td>
<td>13.00</td>
<td>-4.59</td>
<td>0.33</td>
<td>5.50</td>
<td>7,193</td>
</tr>
<tr>
<td>15-day window</td>
<td>0.73</td>
<td>16.82</td>
<td>-6.64</td>
<td>0.14</td>
<td>7.04</td>
<td>7,194</td>
</tr>
<tr>
<td>29-day window</td>
<td>0.00</td>
<td>22.39</td>
<td>-9.64</td>
<td>-0.24</td>
<td>9.14</td>
<td>7,194</td>
</tr>
<tr>
<td><strong>Panel B - Target subsample</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-day window</td>
<td>19.92</td>
<td>27.22</td>
<td>3.80</td>
<td>15.16</td>
<td>29.81</td>
<td>3,344</td>
</tr>
<tr>
<td>7-day window</td>
<td>21.68</td>
<td>28.63</td>
<td>4.46</td>
<td>17.07</td>
<td>32.89</td>
<td>3,346</td>
</tr>
<tr>
<td>15-day window</td>
<td>23.57</td>
<td>30.77</td>
<td>5.17</td>
<td>19.37</td>
<td>36.05</td>
<td>3,346</td>
</tr>
<tr>
<td>29-day window</td>
<td>25.57</td>
<td>34.87</td>
<td>5.27</td>
<td>22.51</td>
<td>41.68</td>
<td>3,346</td>
</tr>
</tbody>
</table>
Table 20 - Cumulative abnormal returns to anticipated and unanticipated bidders

Table reports the mean, standard deviation, and the number of observations for 3-day, 7-day, 15-day, and 29-day cumulative abnormal returns to unanticipated bidders in Panel A and to anticipated bidders in Panel B. A bidder is classified as anticipated if the predicted probability of bidding is greater than the 75th percentile probability and is identified as unanticipated if the predicted probability is less than the 25th percentile. The first column in Panel C reports the t-statistic for the t-test of the null hypothesis that the means of absolute values of CARs are equal in the two subsamples. The last two columns in Panel C report the t-statistic and p-value for the t-test and variance ratio test of the null hypotheses that the mean and variance of CARs are equal in the two subsamples, respectively. The means and standard deviations are in %.

<table>
<thead>
<tr>
<th>CAR windows</th>
<th>Panel A - Unanticipated bidders</th>
<th>Panel B - Anticipated bidders</th>
<th>Panel C - Tests for equality of means and variances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>N</td>
</tr>
<tr>
<td>3-day</td>
<td>1.48</td>
<td>12.48</td>
<td>1776</td>
</tr>
<tr>
<td>7-day</td>
<td>1.69</td>
<td>14.72</td>
<td>1776</td>
</tr>
<tr>
<td>15-day</td>
<td>1.17</td>
<td>17.50</td>
<td>1777</td>
</tr>
<tr>
<td>29-day</td>
<td>0.61</td>
<td>22.59</td>
<td>1777</td>
</tr>
</tbody>
</table>

Table 21 - Testing for differences in the distributions of cumulative abnormal returns in anticipated and unanticipated bidder subsamples

Table reports the z-statistic, p-value, and chi²-statistic for Mann-Whitney, Kolmogorov-Smirnov, and Kruskall-Wallis tests of the null hypotheses that the distribution of cumulative abnormal returns to anticipated and unanticipated bidders come from a common population. A bidder is classified as anticipated if the predicted probability of bidding is greater than the 75th percentile and is identified as unanticipated if the predicted probability is less than the 25th percentile.

<table>
<thead>
<tr>
<th>CAR windows</th>
<th>Mann-Whitney test</th>
<th>Kolmogorov-Smirnov test</th>
<th>Kruskall-Wallis test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>z-statistic</td>
<td>p-value</td>
<td>Chi²-statistic</td>
</tr>
<tr>
<td>3-day</td>
<td>2.12</td>
<td>0.00</td>
<td>4.50</td>
</tr>
<tr>
<td>7-day</td>
<td>1.57</td>
<td>0.00</td>
<td>2.45</td>
</tr>
<tr>
<td>15-day</td>
<td>2.56</td>
<td>0.00</td>
<td>6.53</td>
</tr>
<tr>
<td>29-day</td>
<td>2.72</td>
<td>0.00</td>
<td>7.37</td>
</tr>
</tbody>
</table>
Table 22 - Cumulative abnormal returns to anticipated and unanticipated bidders, alternative specification

Table reports the mean, standard deviation, and the number of observations for 3-day, 7-day, 15-day, and 29-day cumulative abnormal returns to unanticipated bidders in Panel A and to anticipated bidders in Panel B. A bidder is classified as anticipated if the predicted probability of bidding is greater than the median probability and is unanticipated if the predicted probability is less than the median. The first column in Panel C reports the t-statistic for the t-test of the null hypothesis that the means of absolute values of CARs are equal in the two subsamples. The last two columns in Panel C report the t-statistic and p-value for the t-test and variance ratio test of the null hypotheses that, respectively, the mean and variance of CARs are equal in the two subsamples. The means and standard deviations are in %.

<table>
<thead>
<tr>
<th>Car window</th>
<th>Panel A – Unanticipated bidders</th>
<th>Panel B – Anticipated bidders</th>
<th>Panel C - Tests for equality of means and variances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>N</td>
</tr>
<tr>
<td>3-day</td>
<td>1.16</td>
<td>11.09</td>
<td>3561</td>
</tr>
<tr>
<td>7-day</td>
<td>1.39</td>
<td>13.52</td>
<td>3561</td>
</tr>
<tr>
<td>15-day</td>
<td>1.07</td>
<td>16.39</td>
<td>3562</td>
</tr>
<tr>
<td>29-day</td>
<td>0.88</td>
<td>22.67</td>
<td>3562</td>
</tr>
</tbody>
</table>
Table 23 - Cumulative abnormal returns to anticipated and unanticipated targets

Table reports the mean, standard deviation, and the number of observations for 3-day, 7-day, 15-day, and 29-day cumulative abnormal returns to unanticipated targets in Panel A and to anticipated targets in Panel B. A target is classified as anticipated if the predicted probability of receiving a bid is greater than the 75th percentile probability and is identified as unanticipated if the predicted probability is less than the 25th percentile. The first column in Panel C reports the t-statistic for the t-test of the null hypothesis that the means of absolute values of CARs are equal in the two subsamples. The last two columns in Panel C report the t-statistic and p-value for the t-test and variance ratio test of the null hypotheses that the mean and variance of CARs are equal in the two subsamples, respectively. The means and standard deviations are in %.

<table>
<thead>
<tr>
<th>Car window</th>
<th>Panel A – Unanticipated targets</th>
<th>Panel B – Anticipated targets</th>
<th>Panel C - Tests for equality of means and variances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>N</td>
</tr>
<tr>
<td>3-day</td>
<td>18.23</td>
<td>24.06</td>
<td>831</td>
</tr>
<tr>
<td>7-day</td>
<td>20.14</td>
<td>25.58</td>
<td>832</td>
</tr>
<tr>
<td>15-day</td>
<td>22.64</td>
<td>27.92</td>
<td>832</td>
</tr>
<tr>
<td>29-day</td>
<td>23.66</td>
<td>33.71</td>
<td>832</td>
</tr>
</tbody>
</table>

Table 24 - Testing for differences in the distributions of cumulative abnormal returns in anticipated and unanticipated target subsamples

Table reports the z-statistic, p-value, and chi²-statistic for Mann-Whitney, Kolmogorov-Smirnov, and Kruskall-Wallis tests of the null hypotheses that the distribution of cumulative abnormal returns to anticipated and unanticipated targets come from a common population. A bidder is classified as anticipated if the predicted probability of bidding is greater than the 75th percentile and is identified as unanticipated if the predicted probability is less than the 25th percentile.

<table>
<thead>
<tr>
<th>Car window</th>
<th>Mann-Whitney test</th>
<th>Kolmogorov-Smirnov test</th>
<th>Kruskall-Wallis test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>z-statistic</td>
<td>p-value</td>
<td>Chi²-statistic</td>
</tr>
<tr>
<td>3-day</td>
<td>-0.97</td>
<td>-0.59</td>
<td>0.00</td>
</tr>
<tr>
<td>7-day</td>
<td>-1.05</td>
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<td>0.01</td>
</tr>
<tr>
<td>15-day</td>
<td>-1.41</td>
<td>-0.72</td>
<td>0.00</td>
</tr>
<tr>
<td>29-day</td>
<td>-1.35</td>
<td>-0.74</td>
<td>0.01</td>
</tr>
</tbody>
</table>
Table 25 - Cumulative abnormal returns to anticipated and unanticipated targets, alternative specification

Table reports the mean, standard deviation, and the number of observations for 3-day, 7-day, 15-day, and 29-day cumulative abnormal returns to unanticipated targets in Panel A and to anticipated targets in Panel B. A target is classified as anticipated if the predicted probability to solicit a bid is greater than the median probability in the sample and is identified as unanticipated if the predicted probability is less than the median. The first column in Panel C reports the t-statistic for the t-test of the null hypothesis that the means of absolute values of CARs are equal in the two subsamples. The last two columns in Panel C report the t-statistic and p-value for the t-test and variance ratio test of the null hypotheses that the mean and variance of CARs are equal in the two subsamples, respectively. The means and standard deviations are in %.

<table>
<thead>
<tr>
<th>Car window</th>
<th>Panel A - Unanticipated targets</th>
<th>Panel B - Anticipated targets</th>
<th>Panel C - Tests for equality of means and variances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>N</td>
</tr>
<tr>
<td>3-day</td>
<td>19.61</td>
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<tr>
<td>7-day</td>
<td>21.25</td>
<td>27.50</td>
<td>1668</td>
</tr>
<tr>
<td>15-day</td>
<td>23.14</td>
<td>29.33</td>
<td>1668</td>
</tr>
<tr>
<td>29-day</td>
<td>25.00</td>
<td>33.54</td>
<td>1668</td>
</tr>
</tbody>
</table>
Table 26 - Regressions of bidder CARs

The endogenous variable is the 7-day bidder cumulative abnormal returns. Absolute values of t-statistics are reported in the second rows. * denotes significant at 10%, ** significant at 5%, *** significant at 1%. Coefficient estimates and R² are in %.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>Heckman's lambda</td>
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<td>3.60</td>
<td>3.64</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[3.20]***</td>
<td>[3.23]***</td>
<td>[3.10]***</td>
<td>[3.13]***</td>
<td></td>
</tr>
<tr>
<td>All equity indicator</td>
<td>-0.87</td>
<td>-0.88</td>
<td>-0.90</td>
<td>-0.91</td>
<td>-0.96</td>
</tr>
<tr>
<td></td>
<td>[2.48]**</td>
<td>[2.50]**</td>
<td>[2.57]**</td>
<td>[2.58]***</td>
<td>[2.73]***</td>
</tr>
<tr>
<td>Same industry</td>
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<td></td>
<td>-0.39</td>
<td></td>
<td>-0.36</td>
</tr>
<tr>
<td></td>
<td>[1.17]</td>
<td></td>
<td>[1.18]</td>
<td></td>
<td>[1.09]</td>
</tr>
<tr>
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<td>0.30</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>[0.81]</td>
<td>[0.75]</td>
<td>[0.84]</td>
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<td></td>
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<tr>
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<td>[0.93]</td>
<td>[0.90]</td>
<td>[0.81]</td>
<td></td>
<td></td>
</tr>
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<td>Anti-takeover defense</td>
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<td>0.16</td>
<td>-0.16</td>
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<tr>
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<td>[0.08]</td>
<td>[0.08]</td>
<td>[0.08]</td>
<td></td>
</tr>
<tr>
<td>Unwelcoming attitude</td>
<td>-2.24</td>
<td>-2.21</td>
<td>-2.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[2.19]**</td>
<td>[2.15]**</td>
<td>[2.17]**</td>
<td></td>
</tr>
<tr>
<td>Target Bankrupt</td>
<td>2.78</td>
<td>2.82</td>
<td>2.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[1.57]</td>
<td>[1.59]</td>
<td>[1.62]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-1.22</td>
<td>-3.95</td>
<td>-1.10</td>
<td>-3.74</td>
<td>-1.02</td>
</tr>
<tr>
<td></td>
<td>[1.51]</td>
<td>[1.27]</td>
<td>[1.35]</td>
<td>[1.21]</td>
<td>[0.34]</td>
</tr>
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<td>7,171</td>
<td>7,171</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.24</td>
<td>0.28</td>
<td>0.35</td>
<td>0.39</td>
<td>0.25</td>
</tr>
</tbody>
</table>


Table 27 - Regressions of bidder CARs with controls for industry and year fixed-effects

The endogenous variable is the 7-day bidder cumulative abnormal returns. Year and 2-digit SIC industry indicators are included in all regression specifications. Absolute values of t-statistics are reported in the second rows. * denotes significant at 10%, ** significant at 5%, *** significant at 1%. Coefficient estimates and R² are in %.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Heckman's lambda</td>
<td>3.78</td>
<td>3.83</td>
<td>3.66</td>
<td>3.70</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[3.16]***</td>
<td>[3.19]***</td>
<td>[3.05]***</td>
<td>[3.08]***</td>
<td></td>
</tr>
<tr>
<td>All equity indicator</td>
<td>-0.87</td>
<td>-0.88</td>
<td>-0.90</td>
<td>-0.91</td>
<td>-0.96</td>
</tr>
<tr>
<td></td>
<td>[2.31]**</td>
<td>[2.32]**</td>
<td>[2.38]**</td>
<td>[2.39]**</td>
<td>[2.54]**</td>
</tr>
<tr>
<td>Same industry</td>
<td>-0.51</td>
<td>-0.51</td>
<td>-0.51</td>
<td>-0.49</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[1.49]</td>
<td>[1.47]</td>
<td>[1.42]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Same state</td>
<td>0.28</td>
<td>0.26</td>
<td>0.26</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.77]</td>
<td>[0.74]</td>
<td>[0.81]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bidder public</td>
<td>3.66</td>
<td>3.62</td>
<td>3.62</td>
<td>3.36</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[1.22]</td>
<td>[1.21]</td>
<td>[1.12]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-takeover defense</td>
<td></td>
<td>-0.06</td>
<td>-0.10</td>
<td>-0.46</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.03]</td>
<td>[0.05]</td>
<td>[0.22]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unwelcoming attitude</td>
<td></td>
<td>-2.09</td>
<td>-2.04</td>
<td>-2.10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[2.00]**</td>
<td>[1.96]*</td>
<td>[2.01]**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target Bankrupt</td>
<td>2.31</td>
<td>2.32</td>
<td>2.32</td>
<td>2.32</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[1.29]</td>
<td>[1.30]</td>
<td>[1.30]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.70</td>
<td>-2.97</td>
<td>0.76</td>
<td>-2.86</td>
<td>-0.44</td>
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<td>[0.76]</td>
<td>[0.30]</td>
<td>[0.73]</td>
<td>[0.11]</td>
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<td>7,154</td>
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</tr>
<tr>
<td>R-squared</td>
<td>1.94</td>
<td>2.00</td>
<td>2.03</td>
<td>2.09</td>
<td>1.95</td>
</tr>
</tbody>
</table>
Table 28 - Regressions of target CARs

The endogenous variable is the 7-day target cumulative abnormal returns. Absolute values of t-statistics are reported in the second rows. * denotes significant at 10%, ** significant at 5%, *** significant at 1%. Coefficient estimates and R² are in %.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Heckman's lambda</td>
<td>19.35</td>
<td>18.64</td>
<td>19.41</td>
<td>18.71</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[2.36]**</td>
<td>[2.27]**</td>
<td>[2.36]**</td>
<td>[2.27]**</td>
<td></td>
</tr>
<tr>
<td>All equity indicator</td>
<td>-4.27</td>
<td>-4.15</td>
<td>-4.31</td>
<td>-4.22</td>
<td>-4.04</td>
</tr>
<tr>
<td>Same industry</td>
<td>-0.62</td>
<td>-0.55</td>
<td>-0.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.60]</td>
<td>[0.54]</td>
<td>[0.58]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Same state</td>
<td>-3.36</td>
<td>-3.17</td>
<td>-3.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[2.88]**</td>
<td>[2.71]**</td>
<td>[2.78]**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target public</td>
<td>4.83</td>
<td>5.03</td>
<td>5.11</td>
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<tr>
<td></td>
<td>[1.75]**</td>
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<td></td>
<td>[1.83]**</td>
<td>[1.86]**</td>
</tr>
<tr>
<td>Anti-takeover defense</td>
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<td>3.65</td>
<td>3.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[1.13]</td>
<td>[1.02]</td>
<td>[1.02]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unwelcoming attitude</td>
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<td>0.17</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>[0.26]</td>
<td>[0.27]</td>
<td>[0.09]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target Bankrupt</td>
<td>-18.63</td>
<td>-18.29</td>
<td>-18.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[3.40]**</td>
<td>[3.33]**</td>
<td>[3.38]**</td>
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<td></td>
</tr>
<tr>
<td>Constant</td>
<td>8.23</td>
<td>5.07</td>
<td>8.20</td>
<td>4.78</td>
<td>18.83</td>
</tr>
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<td></td>
<td>[1.33]</td>
<td>[0.76]</td>
<td>[0.71]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
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<td>3,331</td>
<td>3,331</td>
<td>3,331</td>
<td>3,331</td>
</tr>
<tr>
<td>R²</td>
<td>0.58</td>
<td>0.94</td>
<td>0.99</td>
<td>1.33</td>
<td>1.17</td>
</tr>
</tbody>
</table>

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Table 29 - Regressions of target CARs with controls for industry and year fixed-effects

The endogenous variable is the 7-day target cumulative abnormal returns. Year and 2-digit SIC industry indicators are included in all regression specifications. Absolute values of t-statistics are reported in the second rows. * denotes significant at 10%, ** significant at 5%, *** significant at 1%. Coefficient estimates and $R^2$ are in %.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Heckman's lambda</td>
<td>10.63</td>
<td>10.33</td>
<td>10.66</td>
<td>10.40</td>
<td></td>
</tr>
<tr>
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<td>[1.18]</td>
<td>[1.14]</td>
<td>[1.18]</td>
<td>[1.15]</td>
<td></td>
</tr>
<tr>
<td>All equity indicator</td>
<td>-7.02</td>
<td>-6.77</td>
<td>-6.94</td>
<td>-6.72</td>
<td>-6.66</td>
</tr>
<tr>
<td></td>
<td>[6.05]***</td>
<td>[5.82]***</td>
<td>[5.94]***</td>
<td>[5.73]***</td>
<td>[5.68]***</td>
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<tr>
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<td>0.68</td>
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<td>0.63</td>
</tr>
<tr>
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<td>[0.61]</td>
<td>[0.63]</td>
<td>[0.58]</td>
<td></td>
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<td>[2.41]**</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>0.69</td>
<td>0.55</td>
<td>0.55</td>
</tr>
<tr>
<td></td>
<td>[0.12]</td>
<td>[0.23]</td>
<td>[0.18]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-takeover defense</td>
<td></td>
<td>4.70</td>
<td>4.47</td>
<td>4.51</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1.29]</td>
<td>[1.23]</td>
<td>[1.24]</td>
<td></td>
</tr>
<tr>
<td>Unwelcoming attitude</td>
<td>1.13</td>
<td>1.07</td>
<td>0.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.60]</td>
<td>[0.57]</td>
<td>[0.50]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target Bankrupt</td>
<td>-14.52</td>
<td>-14.27</td>
<td>-14.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[2.64]***</td>
<td>[2.60]***</td>
<td>[2.62]***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>7.04</td>
<td>8.16</td>
<td>6.83</td>
<td>7.62</td>
<td>14.50</td>
</tr>
<tr>
<td></td>
<td>[0.58]</td>
<td>[0.65]</td>
<td>[0.56]</td>
<td>[0.61]</td>
<td>[1.33]</td>
</tr>
<tr>
<td>$R^2$</td>
<td>6.76%</td>
<td>6.95%</td>
<td>7.06%</td>
<td>7.24%</td>
<td>7.20%</td>
</tr>
</tbody>
</table>
Table 30 - The difference in CARs for equally anticipated bidders and targets

Table classifies bidders and targets into 10 categories according to the predicted probability of proposing and receiving bids. Panel A reports differences in 7-day CARs, the p-value for the t-test of the null hypothesis that the mean of bidder and target CARs are equal, the number of bidders and targets in each category. Panel B reports the average difference in CARs. The first row in Panel B reports the average of differences in the 10 categories, and the number of bidders and targets. The second row in Panel B reports the difference in CARs across all deals, and the number of bidders and targets.

### Panel A – Comparison of CARs to equally-anticipated bidders and targets

<table>
<thead>
<tr>
<th>Predicted probability (in %)</th>
<th>Difference in CARs (in %)</th>
<th>P-value</th>
<th>Number of bidders</th>
<th>Number of targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10%</td>
<td>20.89</td>
<td>0.00</td>
<td>4,007</td>
<td>2,765</td>
</tr>
<tr>
<td>10-20%</td>
<td>16.88</td>
<td>0.00</td>
<td>868</td>
<td>339</td>
</tr>
<tr>
<td>20-30%</td>
<td>19.20</td>
<td>0.00</td>
<td>687</td>
<td>91</td>
</tr>
<tr>
<td>30-40%</td>
<td>17.06</td>
<td>0.00</td>
<td>440</td>
<td>50</td>
</tr>
<tr>
<td>40-50%</td>
<td>12.19</td>
<td>0.00</td>
<td>244</td>
<td>31</td>
</tr>
<tr>
<td>50-60%</td>
<td>15.86</td>
<td>0.00</td>
<td>193</td>
<td>25</td>
</tr>
<tr>
<td>60-70%</td>
<td>28.77</td>
<td>0.01</td>
<td>174</td>
<td>17</td>
</tr>
<tr>
<td>70-80%</td>
<td>21.24</td>
<td>0.04</td>
<td>138</td>
<td>3</td>
</tr>
<tr>
<td>80-90%</td>
<td>10.94</td>
<td>0.08</td>
<td>145</td>
<td>5</td>
</tr>
<tr>
<td>90-100%</td>
<td>11.56</td>
<td>0.04</td>
<td>275</td>
<td>5</td>
</tr>
</tbody>
</table>

### Panel B – Difference in bidder and target CARs averaged across all categories and all deals

<table>
<thead>
<tr>
<th></th>
<th>Difference in CARs (in %)</th>
<th>Number of bidders</th>
<th>Number of targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of 10 categories</td>
<td>17.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All deals</td>
<td>20.54</td>
<td>7,171</td>
<td>3,331</td>
</tr>
</tbody>
</table>
Table 31 - Bidder-candidacy models that use an annual event-window

Table reports summary statistics for the marginal coefficient estimates of 25 annual cross-sectional probit regressions. The endogenous variable takes on the value 1 if the firm proposes a bid in the next year, and 0 otherwise. Marginal probabilities are estimated at the median values for the continuous variables and at zero for the high information-asymmetry and resource-growth mismatch indicator variables. The t-statistic is for the t-test for the null hypothesis that the mean of the distribution is equal to 0. Marginal coefficient estimates in %.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>25th percentile</th>
<th>50th percentile</th>
<th>75th percentile</th>
<th>T-statistic</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>0.30</td>
<td>0.47</td>
<td>0.02</td>
<td>0.16</td>
<td>0.40</td>
<td>3.17</td>
<td>25</td>
</tr>
<tr>
<td>Resource-growth mismatch</td>
<td>0.05</td>
<td>0.10</td>
<td>-0.02</td>
<td>0.04</td>
<td>0.12</td>
<td>2.59</td>
<td>25</td>
</tr>
<tr>
<td>Sales shock</td>
<td>0.15</td>
<td>1.69</td>
<td>-0.84</td>
<td>0.10</td>
<td>1.24</td>
<td>0.45</td>
<td>25</td>
</tr>
<tr>
<td>Sales shock squared</td>
<td>-1.07</td>
<td>5.79</td>
<td>-3.18</td>
<td>-0.31</td>
<td>1.46</td>
<td>-0.93</td>
<td>25</td>
</tr>
<tr>
<td>Sales growth</td>
<td>-0.01</td>
<td>0.02</td>
<td>-0.01</td>
<td>0.00</td>
<td>0.00</td>
<td>-2.32</td>
<td>25</td>
</tr>
<tr>
<td>Price runup</td>
<td>0.01</td>
<td>0.02</td>
<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>1.41</td>
<td>25</td>
</tr>
<tr>
<td>Share turnover</td>
<td>-0.03</td>
<td>0.08</td>
<td>-0.05</td>
<td>-0.01</td>
<td>0.00</td>
<td>-2.03</td>
<td>25</td>
</tr>
<tr>
<td>High information-asymmetry</td>
<td>0.11</td>
<td>0.11</td>
<td>0.03</td>
<td>0.11</td>
<td>0.20</td>
<td>4.81</td>
<td>25</td>
</tr>
<tr>
<td>Merger intensity</td>
<td>-0.13</td>
<td>0.64</td>
<td>-0.36</td>
<td>-0.08</td>
<td>0.21</td>
<td>-0.98</td>
<td>25</td>
</tr>
<tr>
<td>Cash ratio</td>
<td>0.32</td>
<td>0.28</td>
<td>0.14</td>
<td>0.21</td>
<td>0.47</td>
<td>5.80</td>
<td>25</td>
</tr>
<tr>
<td>Size</td>
<td>0.03</td>
<td>0.03</td>
<td>0.01</td>
<td>0.03</td>
<td>0.05</td>
<td>5.81</td>
<td>25</td>
</tr>
<tr>
<td>Change in size</td>
<td>-0.01</td>
<td>0.04</td>
<td>-0.01</td>
<td>0.00</td>
<td>0.01</td>
<td>-1.06</td>
<td>25</td>
</tr>
<tr>
<td>Concentration ratio</td>
<td>-0.05</td>
<td>0.26</td>
<td>-0.21</td>
<td>-0.02</td>
<td>0.09</td>
<td>-0.95</td>
<td>25</td>
</tr>
<tr>
<td>Previous mergers</td>
<td>0.80</td>
<td>0.46</td>
<td>0.47</td>
<td>0.78</td>
<td>0.99</td>
<td>8.69</td>
<td>25</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>55.76</td>
<td>5.91</td>
<td>52</td>
<td>55</td>
<td>59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 32 - Target-candidacy models that use an annual event window

Table reports summary statistics for the marginal coefficient estimates of 25 annual cross-sectional probit regressions. The endogenous variable takes on the value 1 if the firm receives a bid in the next year, and 0 otherwise. Marginal probabilities are estimated at the median values for the continuous variables and at zero for the high information-asymmetry and resource-growth mismatch indicator variables. The t-statistic is for the t-test for the null hypothesis that the mean of the distribution is equal to 0. Marginal coefficient estimates in %.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>25&lt;sup&gt;th&lt;/sup&gt; percentile</th>
<th>50&lt;sup&gt;th&lt;/sup&gt; percentile</th>
<th>75&lt;sup&gt;th&lt;/sup&gt; percentile</th>
<th>T-statistic</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>0.40</td>
<td>0.47</td>
<td>0.09</td>
<td>0.30</td>
<td>0.51</td>
<td>4.26</td>
<td>25</td>
</tr>
<tr>
<td>Resource-growth mismatch</td>
<td>0.08</td>
<td>0.19</td>
<td>-0.08</td>
<td>0.02</td>
<td>0.25</td>
<td>2.02</td>
<td>25</td>
</tr>
<tr>
<td>Sales shock</td>
<td>-0.74</td>
<td>3.14</td>
<td>-1.63</td>
<td>-0.57</td>
<td>1.28</td>
<td>-1.18</td>
<td>25</td>
</tr>
<tr>
<td>Sales shock squared</td>
<td>3.22</td>
<td>8.74</td>
<td>-2.13</td>
<td>1.93</td>
<td>5.50</td>
<td>1.84</td>
<td>25</td>
</tr>
<tr>
<td>Sales growth</td>
<td>-0.01</td>
<td>0.03</td>
<td>-0.01</td>
<td>0.00</td>
<td>0.00</td>
<td>-2.52</td>
<td>25</td>
</tr>
<tr>
<td>Price runup</td>
<td>-0.11</td>
<td>0.14</td>
<td>-0.20</td>
<td>-0.07</td>
<td>0.00</td>
<td>-3.84</td>
<td>25</td>
</tr>
<tr>
<td>Share turnover</td>
<td>0.01</td>
<td>0.15</td>
<td>-0.05</td>
<td>0.00</td>
<td>0.07</td>
<td>0.34</td>
<td>25</td>
</tr>
<tr>
<td>High information-asymmetry</td>
<td>-0.26</td>
<td>0.23</td>
<td>-0.39</td>
<td>-0.22</td>
<td>-0.11</td>
<td>-5.62</td>
<td>25</td>
</tr>
<tr>
<td>Merger intensity</td>
<td>1.81</td>
<td>2.28</td>
<td>0.01</td>
<td>1.89</td>
<td>3.07</td>
<td>3.98</td>
<td>25</td>
</tr>
<tr>
<td>Cash ratio</td>
<td>-0.36</td>
<td>0.87</td>
<td>-0.75</td>
<td>-0.19</td>
<td>0.31</td>
<td>-2.07</td>
<td>25</td>
</tr>
<tr>
<td>Size</td>
<td>-0.19</td>
<td>0.10</td>
<td>-0.28</td>
<td>-0.19</td>
<td>-0.13</td>
<td>-9.48</td>
<td>25</td>
</tr>
<tr>
<td>Change in size</td>
<td>-0.16</td>
<td>0.16</td>
<td>-0.24</td>
<td>-0.13</td>
<td>-0.02</td>
<td>-5.23</td>
<td>25</td>
</tr>
<tr>
<td>Concentration ratio</td>
<td>-0.01</td>
<td>0.57</td>
<td>-0.25</td>
<td>0.00</td>
<td>0.28</td>
<td>-0.08</td>
<td>25</td>
</tr>
<tr>
<td>Previous mergers</td>
<td>1.12</td>
<td>0.54</td>
<td>0.81</td>
<td>1.03</td>
<td>1.25</td>
<td>10.42</td>
<td>25</td>
</tr>
<tr>
<td>Pseudo R&lt;sup&gt;2&lt;/sup&gt;</td>
<td>36</td>
<td>12</td>
<td>28</td>
<td>33</td>
<td>43</td>
<td></td>
<td>25</td>
</tr>
</tbody>
</table>
Table 33 – Goodness of fit diagnostics for bidder-candidacy models that use an annual event window
Panel A reports distribution of probability of bidding for bidders and nonbidder firms as estimated in bidder-candidacy models. Nonbidder firm subsample covers targets and nonmerging firms. Panel B reports pseudo $R^2$ and $X^2$ statistic for the likelihood-ratio test. Predicted probabilities are in %.

<table>
<thead>
<tr>
<th>Panel A – Distribution of probability of bidding by bidders and nonbidder firms</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>25th percentile</th>
<th>50th percentile</th>
<th>75th percentile</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonbidder firms</td>
<td>2.97</td>
<td>9.90</td>
<td>0.17</td>
<td>0.35</td>
<td>0.64</td>
<td>98,090</td>
</tr>
<tr>
<td>Bidders</td>
<td>45.82</td>
<td>29.88</td>
<td>23.30</td>
<td>31.19</td>
<td>76.69</td>
<td>5,921</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B – Goodness of fit diagnostics</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudo $R^2$</td>
<td>55.76</td>
<td>5.91</td>
<td>52.00</td>
<td>55.00</td>
<td>59.00</td>
<td>25</td>
</tr>
<tr>
<td>$Chi^2$ statistic</td>
<td>974.499</td>
<td>350.439</td>
<td>750.97</td>
<td>1000.75</td>
<td>1246.26</td>
<td>25</td>
</tr>
</tbody>
</table>

Table 34 – Goodness of fit diagnostics for target-candidacy models that use an annual event window
Panel A reports distribution of probability to receive a bid for targets and nontarget firms as estimated in target-candidacy models. Nontarget firm subsample covers bidders and nonmerging firms. Panel B reports pseudo $R^2$ and $X^2$ statistic for the likelihood-ratio test. Predicted probabilities are in %.

<table>
<thead>
<tr>
<th>Panel A – Distribution of probability of bidding by bidders and nontarget firms</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>25th percentile</th>
<th>50th percentile</th>
<th>75th percentile</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nontarget firms</td>
<td>2.50</td>
<td>7.25</td>
<td>0.25</td>
<td>0.66</td>
<td>1.58</td>
<td>100,641</td>
</tr>
<tr>
<td>Targets</td>
<td>19.05</td>
<td>16.52</td>
<td>9.27</td>
<td>13.42</td>
<td>21.55</td>
<td>3,370</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B – Goodness of fit diagnostics</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudo $R^2$</td>
<td>36.16</td>
<td>12.40</td>
<td>28.00</td>
<td>33.00</td>
<td>43.00</td>
<td>25</td>
</tr>
<tr>
<td>$Chi^2$ statistic</td>
<td>390.834</td>
<td>117.234</td>
<td>300.81</td>
<td>385</td>
<td>477.26</td>
<td>25</td>
</tr>
</tbody>
</table>
Table 35 - Regressions of cumulative abnormal returns, which use Heckman's lambda estimated by candidacy models that use annual estimation windows

The endogenous variable is the 7-day bidder cumulative abnormal returns. Heckman's lambda is estimated using bidder-candidacy models which use annual prediction window. Absolute values of t-statistics are reported in the second rows. * denotes significant at 10%, ** significant at 5%, *** significant at 1%. The regression coefficients and $R^2$ are in %.

<table>
<thead>
<tr>
<th></th>
<th>Panel A – Bidder subsample</th>
<th></th>
<th>Panel B – Target subsample</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Specification 1</td>
<td>Specification 2</td>
<td>Specification 1</td>
<td>Specification 2</td>
</tr>
<tr>
<td>Heckman’s lambda</td>
<td>2.64</td>
<td>2.57</td>
<td>0.43</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>[2.79]***</td>
<td>[2.71]***</td>
<td>[0.08]</td>
<td>[0.03]</td>
</tr>
<tr>
<td>All equity indicator</td>
<td>-1.18</td>
<td>-1.21</td>
<td>-3.11</td>
<td>-3.15</td>
</tr>
<tr>
<td></td>
<td>[3.45]***</td>
<td>[3.51]***</td>
<td>[2.61]***</td>
<td>[2.60]***</td>
</tr>
<tr>
<td>Same industry</td>
<td>-0.33</td>
<td>[1.04]</td>
<td>-2.00</td>
<td></td>
</tr>
<tr>
<td>Same state</td>
<td>0.58</td>
<td>[1.68]*</td>
<td>-2.14</td>
<td>[1.75]*</td>
</tr>
<tr>
<td>Bidder/Target public</td>
<td>-3.14</td>
<td>[0.99]</td>
<td>6.30</td>
<td></td>
</tr>
<tr>
<td>Anti-takeover defense</td>
<td>0.20</td>
<td>[0.11]</td>
<td>3.23</td>
<td>[0.83]</td>
</tr>
<tr>
<td>Unwelcoming attitude</td>
<td>-1.38</td>
<td>[1.47]</td>
<td>0.11</td>
<td>[0.06]</td>
</tr>
<tr>
<td>Target Bankrupt</td>
<td>2.74</td>
<td>[1.63]</td>
<td>-10.56</td>
<td>[1.95]*</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.27</td>
<td>2.90</td>
<td>20.25</td>
<td>15.57</td>
</tr>
<tr>
<td></td>
<td>[0.52]</td>
<td>[0.90]</td>
<td>[5.22]***</td>
<td>[3.30]***</td>
</tr>
<tr>
<td>Observations</td>
<td>5,153</td>
<td>5,153</td>
<td>2,486</td>
<td>2,486</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.39</td>
<td>0.58</td>
<td>0.28</td>
<td>0.95</td>
</tr>
</tbody>
</table>
Table 36 - Bidder-candidacy models with regressors that represent characteristics of managerial compensation contracts and board monitoring

Table reports the marginal coefficient estimates in Panel A and goodness-of-fit diagnostics in Panel B. The endogenous variable takes on the value 1 if the firm proposes a bid in the next year, and 0 otherwise. Marginal probabilities are estimated at the median values for the continuous variables and at zero for the high information-asymmetry and resource-growth mismatch indicators. The coefficients in bold face are significant at 5%.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel A - Marginal probability coefficients (in %)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>0.30</td>
<td>0.16</td>
<td>4.47</td>
<td>0.62</td>
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Table 37 - Target-candidacy models with regressors that represent characteristics of managerial compensation contracts and board monitoring

Table reports the marginal coefficient estimates in Panel A and goodness-of-fit diagnostics in Panel B. The endogenous variable takes on the value 1 if the firm receives a bid in the next year, and 0 otherwise. Marginal probabilities are estimated at the median values for the continuous variables and at zero for the high information-asymmetry and resource-growth mismatch indicators. The coefficients in bold face are significant at 5%.

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Table 38 - Regressions of bidder and target CARs, which use Heckman's lambda estimated by bidder-candidacy models that include proxies for management and board characteristics

Panels A and B report regressions of bidder and target 7-day CARs on Heckman's lambda and proxies for the fit and relative bargaining power of bidder and target. Heckman's lambda is estimated using coefficients of candidacy models that include proxies for management and board characteristics. All specifications exclude bidder-public and target-public indicators since the variables show no variation in the subsample. The second rows report absolute values of t-statistics. * denotes significant at 10%, ** significant at 5%, *** significant at 1%. The regression coefficients and R² are in %.

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Table 39 - Regressions of bidder CARs that investigates market responses to large deals

Specification 1 reports regressions of 7-day bidder CARs on Heckman’s lambda, all-equity indicator and deal value. Specification 2 introduces controls for the differences in market responses to large deals. Heckman’s lambda is estimated using coefficients of bidder and target-candidacy models that control for characteristics of the managerial compensation contract and board monitoring. The second rows report absolute values of t-statistics. * denotes significant at 10%, ** significant at 5%, *** significant at 1%. The regression coefficients and R² are in %.

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Table 40 - Regressions of CARs that investigates market responses to announcements of poorly-governed bidders

Specification 1 reports regressions of 7-day bidder CARs on Heckman’s lambda and all-equity indicator. Specification 2 introduces an interaction term for Heckman’s lambda and poorly-governed indicator. Poorly-governed indicator takes on the value one if governance index [Gompers, Ishii and Metrick (2003)] is higher than the median. Heckman’s lambda is estimated using coefficients of bidder and target-candidacy models that control for characteristics of the managerial compensation contract and board monitoring. The second rows report absolute values of t-statistics. * denotes significant at 10%, ** significant at 5%, *** significant at 1%. The regression coefficients and $R^2$ are in %.

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<td>Heckman's lambda and poor governance interaction term</td>
<td>-3.08</td>
<td>[1.99]**</td>
</tr>
<tr>
<td></td>
<td>[1.99]**</td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.94</td>
<td>0.69</td>
</tr>
<tr>
<td></td>
<td>[0.79]</td>
<td>[0.53]</td>
</tr>
<tr>
<td>Observations</td>
<td>531</td>
<td>451</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.65</td>
<td>1.49</td>
</tr>
</tbody>
</table>
Table 41 – Goodness-of-fit statistics for bidder-candidacy models that use 2-digit SIC codes

Table reports pseudo $R^2$ and the chi$^2$- statistic for the likelihood-ratio test from the 100 cross-sectional probit regressions. The endogenous variable takes on the value 1 if the firm proposes a bid in the next year, and 0 otherwise. The regressors are indicators for 2-digit SIC codes. Not all indicators are included in every cross-section, since in some periods there may be no variation in a particular indicator.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>25$^{th}$ percentile</th>
<th>50$^{th}$ percentile</th>
<th>75$^{th}$ percentile</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudo $R^2$ (in %)</td>
<td>3.92</td>
<td>1.19</td>
<td>3.00</td>
<td>4.00</td>
<td>5.00</td>
<td>100</td>
</tr>
<tr>
<td>Chi$^2$ statistic</td>
<td>54.96</td>
<td>23.53</td>
<td>36.95</td>
<td>50.78</td>
<td>71.47</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 42 - Goodness of fit statistics for target-candidacy models that use 2-digit SIC codes

Table reports pseudo $R^2$ and the chi$^2$- statistic for the likelihood-ratio test from the 100 cross-sectional probit regressions. The endogenous variable takes on the value 1 if the firm receives a bid in the next year, and 0 otherwise. The regressors are indicators for 2-digit SIC codes. Not all indicators are included in every cross-section, since in some periods there may be no variation in a particular indicator.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>25$^{th}$ percentile</th>
<th>50$^{th}$ percentile</th>
<th>75$^{th}$ percentile</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudo $R^2$ (in %)</td>
<td>4.43</td>
<td>1.19</td>
<td>4.00</td>
<td>4.00</td>
<td>5.00</td>
<td>100</td>
</tr>
<tr>
<td>Chi$^2$ statistic</td>
<td>65.80</td>
<td>33.42</td>
<td>39.02</td>
<td>58.39</td>
<td>84.50</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 43 - Regressions of CARs which use Heckman's lambda estimated by candidacy models that use indicators for 2-digit SIC codes

Panels A and B report regressions of 7-day bidder and target CARs on Heckman’s lambda, all-equity indicator, and proxies for fit and relative bargaining power of bidders and targets. Heckman’s lambda is estimated using candidacy models which use indicators for 2-digit SIC codes. Absolute values of t-statistics are reported in the second rows. * denotes significant at 10%, ** significant at 5%, *** significant at 1%. The regression coefficients and R² are in %.

<table>
<thead>
<tr>
<th></th>
<th>Panel A – Bidder subsample</th>
<th>Panel B – Target subsample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Specification 1</td>
<td>Specification 2</td>
</tr>
<tr>
<td><strong>Heckman’s lambda</strong></td>
<td>7.16</td>
<td>7.22</td>
</tr>
<tr>
<td></td>
<td>[1.24]</td>
<td>[1.25]</td>
</tr>
<tr>
<td><strong>All equity indicator</strong></td>
<td>-0.43</td>
<td>-0.46</td>
</tr>
<tr>
<td></td>
<td>[1.70]*</td>
<td>[1.80]*</td>
</tr>
<tr>
<td><strong>Same industry</strong></td>
<td>-0.07</td>
<td>-0.07</td>
</tr>
<tr>
<td></td>
<td>[0.31]</td>
<td>[0.31]</td>
</tr>
<tr>
<td><strong>Same state</strong></td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td></td>
<td>[0.60]</td>
<td>[0.60]</td>
</tr>
<tr>
<td><strong>Bidder/target public</strong></td>
<td>0.16</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>[0.35]</td>
<td>[0.35]</td>
</tr>
<tr>
<td><strong>Anti-taking defense</strong></td>
<td>2.63</td>
<td>2.63</td>
</tr>
<tr>
<td></td>
<td>[1.68]*</td>
<td>[1.68]*</td>
</tr>
<tr>
<td><strong>Unwelcoming attitude</strong></td>
<td>-1.56</td>
<td>-1.56</td>
</tr>
<tr>
<td></td>
<td>[2.09]**</td>
<td>[2.09]**</td>
</tr>
<tr>
<td><strong>Target Bankrupt</strong></td>
<td>0.53</td>
<td>0.53</td>
</tr>
<tr>
<td></td>
<td>[0.48]</td>
<td>[0.48]</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>-4.15</td>
<td>-4.34</td>
</tr>
<tr>
<td></td>
<td>[0.94]</td>
<td>[0.97]</td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>14,206</td>
<td>14,206</td>
</tr>
<tr>
<td><strong>R²</strong></td>
<td>0.03</td>
<td>0.07</td>
</tr>
</tbody>
</table>
Table 44 – Marginal probability coefficients of bidder-candidacy models in the pre- and post-'92 periods

Table reports summary statistics for the marginal coefficient estimates of bidder-candidacy models. Panel A reports summary statistics for the first subsample which covers data from the third quarter of 1979 to the second quarter of 1992, and Panel B reports summary statistics for the second subsample which covers data from the third quarter of 1992 to the fourth quarter of 2004. The endogenous variable takes on the value 1 if the firm proposes a bid in the next quarter, and 0 otherwise. Marginal probabilities are estimated at the median values for the continuous variables and at zero for the high information-asymmetry and resource-growth mismatch indicator variables. Panel C reports z-statistic for Mann-Whitney test, p-value for Kolmogorov-Smirnov test, and chi² statistic for Kruskall-Wallis test for the null hypothesis that the distributions of the variables in two subsamples come from a common population. Coefficient estimates are in %.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Panel A - Sample covers the periods from third quarter of 1977 to second quarter of 1992</th>
<th>Panel B - Sample covers the periods from third quarter of 1992 to fourth quarter of 2004</th>
<th>Panel C - Tests of a common population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25th</td>
<td>50th</td>
<td>75th</td>
</tr>
<tr>
<td>ROA</td>
<td>0.21</td>
<td>0.80</td>
<td>2.07</td>
</tr>
<tr>
<td>Resource-growth mismatch</td>
<td>-0.04</td>
<td>0.00</td>
<td>0.08</td>
</tr>
<tr>
<td>Sales shock</td>
<td>-0.61</td>
<td>0.09</td>
<td>1.27</td>
</tr>
<tr>
<td>Sales shock squared</td>
<td>-4.01</td>
<td>-0.44</td>
<td>1.08</td>
</tr>
<tr>
<td>Sales growth</td>
<td>-0.01</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Price runup</td>
<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>Share turnover</td>
<td>-0.23</td>
<td>-0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>High information-asymmetry</td>
<td>-0.05</td>
<td>-0.01</td>
<td>0.06</td>
</tr>
<tr>
<td>Merger intensity</td>
<td>-0.35</td>
<td>0.08</td>
<td>0.40</td>
</tr>
<tr>
<td>Cash ratio</td>
<td>0.09</td>
<td>0.25</td>
<td>0.39</td>
</tr>
<tr>
<td>Size</td>
<td>-0.02</td>
<td>0.00</td>
<td>0.03</td>
</tr>
<tr>
<td>Change in size</td>
<td>-0.03</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>Concentration ratio</td>
<td>-0.09</td>
<td>0.00</td>
<td>0.05</td>
</tr>
<tr>
<td>Previous mergers</td>
<td>0.32</td>
<td>0.60</td>
<td>1.15</td>
</tr>
</tbody>
</table>
Table 45 – Marginal probability coefficients of target-candidacy models in the pre- and post-'92 periods

Table reports summary statistics for the marginal coefficient estimates of target-candidacy models. Panel A reports summary statistics for the first subsample which covers data from the third quarter of 1979 to the second quarter of 1992, and Panel B reports summary statistics for the second subsample which covers data from the third quarter of 1992 to the fourth quarter of 2004. The endogenous variable takes on the value 1 if the firm receives a bid in the next quarter, and 0 otherwise. Marginal probabilities are estimated at the median values for the continuous variables and at zero for the high information-asymmetry and resource-growth mismatch indicator variables. Panel C reports: z-statistic for Mann-Whitney test, p-value for Kolmogorov-Smirnov test, and chi² statistic for Kruskall-Wallis test for the null hypothesis that the distributions of the variables in two subsamples come from a common population. Coefficient estimates are in %.

<table>
<thead>
<tr>
<th></th>
<th>Panel A - Sample covers the periods from 3rd quarter of 1977 to 2nd quarter of 1992</th>
<th>Panel B - Sample covers periods the from 3rd quarter of 1992 to 4th quarter of 2004</th>
<th>Panel C - Test of a common population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25th percentile</td>
<td>50th percentile</td>
<td>75th percentile</td>
</tr>
<tr>
<td>ROA</td>
<td>0.01</td>
<td>0.29</td>
<td>1.09</td>
</tr>
<tr>
<td>Resource-growth mismatch</td>
<td>-0.03</td>
<td>0.03</td>
<td>0.11</td>
</tr>
<tr>
<td>Sales shock</td>
<td>-0.48</td>
<td>0.17</td>
<td>2.79</td>
</tr>
<tr>
<td>Sales shock squared</td>
<td>-7.87</td>
<td>-0.42</td>
<td>0.77</td>
</tr>
<tr>
<td>Sales growth</td>
<td>-0.02</td>
<td>-0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Price runup</td>
<td>-0.04</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Share turnover</td>
<td>0.00</td>
<td>0.01</td>
<td>0.20</td>
</tr>
<tr>
<td>High information-asymmetry</td>
<td>-0.10</td>
<td>-0.05</td>
<td>0.00</td>
</tr>
<tr>
<td>Merger intensity</td>
<td>-0.96</td>
<td>-0.08</td>
<td>0.32</td>
</tr>
<tr>
<td>Cash ratio</td>
<td>-0.49</td>
<td>-0.14</td>
<td>0.03</td>
</tr>
<tr>
<td>Size</td>
<td>-0.09</td>
<td>-0.04</td>
<td>-0.01</td>
</tr>
<tr>
<td>Change in size</td>
<td>-0.17</td>
<td>-0.08</td>
<td>-0.03</td>
</tr>
<tr>
<td>Concentration ratio</td>
<td>-0.07</td>
<td>-0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Previous mergers</td>
<td>0.32</td>
<td>0.47</td>
<td>0.66</td>
</tr>
</tbody>
</table>
Table 46 - Pooled model of bidder candidacy

The first column of Panel A reports coefficient estimates for a pooled probit regression that introduces proxies for the fit and relative bargaining power of bidders and targets, as well as controls for differences in the slope coefficients of the proxies in the subperiods. The endogenous variable takes on the value one if the firm proposes a merger bid in the next quarter and zero otherwise. The first subsample covers data from 3rd quarter of 1979 to 2nd quarter of 1992. The second subsample covers data from third quarter of 1992 to fourth quarter of 2004. Second column reports p-values for the test of the null hypotheses that the reported coefficients are equal to zero. Panel B reports pseudo R² and chi²-statistic for the likelihood-ratio test.

<table>
<thead>
<tr>
<th>Panel A - Estimates of pooled model of bidder candidacy</th>
<th>Coefficient estimates</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>0.71</td>
<td>0.00</td>
</tr>
<tr>
<td>Resource-growth mismatch</td>
<td>0.02</td>
<td>0.42</td>
</tr>
<tr>
<td>Sales shock</td>
<td>0.08</td>
<td>0.73</td>
</tr>
<tr>
<td>Sales shock squared</td>
<td>-0.30</td>
<td>0.46</td>
</tr>
<tr>
<td>Sales growth</td>
<td>0.00</td>
<td>0.46</td>
</tr>
<tr>
<td>Price runup</td>
<td>0.14%</td>
<td>0.01</td>
</tr>
<tr>
<td>Share turnover</td>
<td>0.00</td>
<td>0.57</td>
</tr>
<tr>
<td>High information-asymmetry</td>
<td>0.03</td>
<td>0.27</td>
</tr>
<tr>
<td>Merger intensity</td>
<td>-0.09</td>
<td>0.41</td>
</tr>
<tr>
<td>Cash ratio</td>
<td>0.56</td>
<td>0.00</td>
</tr>
<tr>
<td>Size</td>
<td>0.02</td>
<td>0.00</td>
</tr>
<tr>
<td>Change in size</td>
<td>0.00</td>
<td>0.78</td>
</tr>
<tr>
<td>Concentration ratio</td>
<td>-0.02</td>
<td>0.28</td>
</tr>
<tr>
<td>Previous mergers</td>
<td>1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>ROA, post '92</td>
<td>-0.69</td>
<td>0.00</td>
</tr>
<tr>
<td>Resource-growth mismatch, post '92</td>
<td>0.01</td>
<td>0.56</td>
</tr>
<tr>
<td>Sales shock, post '92</td>
<td>-0.06</td>
<td>0.81</td>
</tr>
<tr>
<td>Sales shock squared, post '92</td>
<td>0.28</td>
<td>0.50</td>
</tr>
<tr>
<td>Sales growth, post '92</td>
<td>0.00</td>
<td>0.44</td>
</tr>
<tr>
<td>Price runup, post '92</td>
<td>-0.14%</td>
<td>0.01</td>
</tr>
<tr>
<td>Share turnover, post '92</td>
<td>0.00</td>
<td>0.54</td>
</tr>
<tr>
<td>High information-asymmetry, post '92</td>
<td>0.05</td>
<td>0.08</td>
</tr>
<tr>
<td>Merger intensity, post '92</td>
<td>0.12</td>
<td>0.37</td>
</tr>
<tr>
<td>Cash ratio, post '92</td>
<td>-0.47</td>
<td>0.00</td>
</tr>
<tr>
<td>Size, post '92</td>
<td>-0.02</td>
<td>0.00</td>
</tr>
<tr>
<td>Change in size, post '92</td>
<td>0.00</td>
<td>0.92</td>
</tr>
<tr>
<td>Concentration ratio, post '92</td>
<td>0.01</td>
<td>0.85</td>
</tr>
<tr>
<td>Previous mergers, post '92</td>
<td>-0.14</td>
<td>0.00</td>
</tr>
<tr>
<td>Model Component</td>
<td>Coefficient</td>
<td>Standard Error</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Post '92 indicator</td>
<td>0.29</td>
<td>0.00</td>
</tr>
<tr>
<td>Intercept</td>
<td>-2.87</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**Panel B - Goodness-of-fit diagnostics**

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi$^2$-statistic, $H_0$: all coefficients equal to 0</td>
<td>5145</td>
</tr>
<tr>
<td>Pseudo $R^2$</td>
<td>33%</td>
</tr>
<tr>
<td>Chi$^2$-statistic, $H_0$: coefficients of interaction variables equal to 0</td>
<td>95</td>
</tr>
</tbody>
</table>
Table 47 - Pooled model of target candidacy

The first column of Panel A reports coefficient estimates for a pooled probit regression that introduces proxies for the fit and relative bargaining power of bidders and targets, as well as controls for differences in the slope coefficients of the proxies in the subperiods. The endogenous variable takes on the value one if the firm receives a merger bid in the next quarter and zero otherwise. The first subsample covers data from 3rd quarter of 1979 to 2nd quarter of 1992. The second subsample covers data from third quarter of 1992 to fourth quarter of 2004. Second column reports p-values for the test of the null hypotheses that the reported coefficients are equal to zero. Panel B reports pseudo $R^2$ and chi$^2$-statistic for the likelihood-ratio test.

<table>
<thead>
<tr>
<th>Panel A - Estimates of pooled model of bidder candidacy</th>
<th>Coefficient estimates</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>0.06</td>
<td>0.47</td>
</tr>
<tr>
<td>Resource-growth mismatch</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>Sales shock</td>
<td>-0.03</td>
<td>0.91</td>
</tr>
<tr>
<td>Sales shock squared</td>
<td>0.23</td>
<td>0.58</td>
</tr>
<tr>
<td>Sales growth</td>
<td>0.00</td>
<td>0.44</td>
</tr>
<tr>
<td>Price runup</td>
<td>-0.01</td>
<td>0.33</td>
</tr>
<tr>
<td>Share turnover</td>
<td>0.00</td>
<td>0.09</td>
</tr>
<tr>
<td>High information-asymmetry</td>
<td>-0.16</td>
<td>0.00</td>
</tr>
<tr>
<td>Merger intensity</td>
<td>-0.81</td>
<td>0.00</td>
</tr>
<tr>
<td>Cash ratio</td>
<td>-0.15</td>
<td>0.09</td>
</tr>
<tr>
<td>Size</td>
<td>-0.07</td>
<td>0.00</td>
</tr>
<tr>
<td>Change in size</td>
<td>-0.06</td>
<td>0.15</td>
</tr>
<tr>
<td>Concentration ratio</td>
<td>-0.03</td>
<td>0.43</td>
</tr>
<tr>
<td>Previous mergers</td>
<td>0.82</td>
<td>0.00</td>
</tr>
<tr>
<td>ROA, post '92</td>
<td>-0.05</td>
<td>0.56</td>
</tr>
<tr>
<td>Resource-growth mismatch, post '92</td>
<td>-0.04</td>
<td>0.18</td>
</tr>
<tr>
<td>Sales shock, post '92</td>
<td>0.02</td>
<td>0.96</td>
</tr>
<tr>
<td>Sales shock squared, post '92</td>
<td>-0.05</td>
<td>0.92</td>
</tr>
<tr>
<td>Sales growth, post '92</td>
<td>0.00</td>
<td>0.25</td>
</tr>
<tr>
<td>Price runup, post '92</td>
<td>0.00</td>
<td>0.94</td>
</tr>
<tr>
<td>Share turnover, post '92</td>
<td>-0.03</td>
<td>0.22</td>
</tr>
<tr>
<td>High information-asymmetry, post '92</td>
<td>0.06</td>
<td>0.19</td>
</tr>
<tr>
<td>Merger intensity, post '92</td>
<td>1.60</td>
<td>0.00</td>
</tr>
<tr>
<td>Cash ratio, post '92</td>
<td>0.17</td>
<td>0.06</td>
</tr>
<tr>
<td>Size, post '92</td>
<td>0.00</td>
<td>0.84</td>
</tr>
<tr>
<td>Change in size, post '92</td>
<td>-0.03</td>
<td>0.50</td>
</tr>
<tr>
<td>Concentration ratio, post '92</td>
<td>0.00</td>
<td>0.96</td>
</tr>
<tr>
<td>Previous mergers, post '92</td>
<td>-0.22</td>
<td>0.00</td>
</tr>
</tbody>
</table>

229
<table>
<thead>
<tr>
<th>Post '92 indicator</th>
<th>0.09</th>
<th>0.20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-2.39</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**Panel B - Goodness-of-fit diagnostics**

<table>
<thead>
<tr>
<th>Chi$^2$-statistic, $H_0$: all coefficients equal to 0</th>
<th>1685</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudo $R^2$</td>
<td>21%</td>
</tr>
<tr>
<td>Chi$^2$-statistic, $H_0$: coefficients of interaction variables equal to 0</td>
<td>1015</td>
</tr>
</tbody>
</table>
Table 48- Regressions of 3, 7, 15, and 29-day bidder cumulative-abnormal-returns

Table reports regressions of bidder abnormal returns cumulated using 3-day (-1,1), 7-day (-3,3), 15-day (-7,7) and 29-day (-14,14) windows on proxies for Heckman's lambda, bidder and target fit and bargaining power. Absolute values of t-statistics are reported in the second rows. * denotes significant at 10%, ** significant at 5%, *** significant at 1%. The regression coefficients, R², the change in returns are in %.

<table>
<thead>
<tr>
<th></th>
<th>CAR (-1, 1)</th>
<th>CAR (-3,3)</th>
<th>CAR (-7,7)</th>
<th>CAR (-14,14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heckman's lambda</td>
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<td>3.64</td>
<td>5.46</td>
<td>8.76</td>
</tr>
<tr>
<td>All equity indicator</td>
<td>-0.72</td>
<td>-0.91</td>
<td>-1.28</td>
<td>-2.12</td>
</tr>
<tr>
<td></td>
<td>[2.50]**</td>
<td>[2.58]***</td>
<td>[2.80]***</td>
<td>[3.50]***</td>
</tr>
<tr>
<td>Same industry</td>
<td>-0.26</td>
<td>-0.39</td>
<td>-0.52</td>
<td>-0.23</td>
</tr>
<tr>
<td></td>
<td>[0.97]</td>
<td>[1.18]</td>
<td>[1.22]</td>
<td>[0.41]</td>
</tr>
<tr>
<td>Same state</td>
<td>0.31</td>
<td>0.27</td>
<td>0.27</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>[1.08]</td>
<td>[0.75]</td>
<td>[0.58]</td>
<td>[0.23]</td>
</tr>
<tr>
<td>Bidder public</td>
<td>-2.09</td>
<td>2.68</td>
<td>1.60</td>
<td>-2.24</td>
</tr>
<tr>
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<td>[0.86]</td>
<td>[0.90]</td>
<td>[0.42]</td>
<td>[0.44]</td>
</tr>
<tr>
<td>Anti-takeover defense</td>
<td>0.25</td>
<td>0.16</td>
<td>-1.73</td>
<td>-3.22</td>
</tr>
<tr>
<td></td>
<td>[0.15]</td>
<td>[0.08]</td>
<td>[0.65]</td>
<td>[0.91]</td>
</tr>
<tr>
<td>Unwelcoming attitude</td>
<td>-1.57</td>
<td>-2.21</td>
<td>-0.76</td>
<td>-1.03</td>
</tr>
<tr>
<td></td>
<td>[1.87]*</td>
<td>[2.15]**</td>
<td>[0.57]</td>
<td>[0.58]</td>
</tr>
<tr>
<td>Target Bankrupt</td>
<td>2.13</td>
<td>2.82</td>
<td>1.37</td>
<td>-1.53</td>
</tr>
<tr>
<td></td>
<td>[1.47]</td>
<td>[1.59]</td>
<td>[0.60]</td>
<td>[0.51]</td>
</tr>
<tr>
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<td>-4.13</td>
<td>-3.07</td>
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<tr>
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<td>[0.59]</td>
<td>[1.21]</td>
<td>[1.03]</td>
<td>[0.57]</td>
</tr>
<tr>
<td>Observations</td>
<td>7171</td>
<td>7171</td>
<td>7172</td>
<td>7172</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.32</td>
<td>0.39</td>
<td>0.36</td>
<td>0.50</td>
</tr>
<tr>
<td>Change in returns for a standard deviation change in lambda</td>
<td>0.33</td>
<td>0.48</td>
<td>0.72</td>
<td>1.16</td>
</tr>
</tbody>
</table>
Table 49- Regressions of 3, 7, 15, and 29-day target cumulative-abnormal-returns

Table reports regressions of target abnormal returns cumulated using 3-day (-1,1), 7-day (-3,3), 15-day (-7,7) and 29-day (-14,14) windows on proxies for Heckman's lambda, bidder and target fit and bargaining power. Absolute values of t-statistics are reported in the second rows. * denotes significant at 10%, ** significant at 5%, *** significant at 1%. The regression coefficients, R², the change in returns are in %.

<table>
<thead>
<tr>
<th></th>
<th>CAR (-1, 1)</th>
<th>CAR (-3,3)</th>
<th>CAR (-7,7)</th>
<th>CAR (-14,14)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heckman's lambda</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lambda</td>
<td>16.32</td>
<td>18.71</td>
<td>20.21</td>
<td>6.44</td>
</tr>
<tr>
<td></td>
<td>[2.08]**</td>
<td>[2.27]**</td>
<td>[2.28]**</td>
<td>[0.64]</td>
</tr>
<tr>
<td><strong>All equity indicator</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>indicator</td>
<td>-3.86</td>
<td>-4.22</td>
<td>-4.23</td>
<td>-4.59</td>
</tr>
<tr>
<td><strong>Same industry</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>industry</td>
<td>-0.67</td>
<td>-0.55</td>
<td>-0.34</td>
<td>0.67</td>
</tr>
<tr>
<td></td>
<td>[0.68]</td>
<td>[0.54]</td>
<td>[0.30]</td>
<td>[0.53]</td>
</tr>
<tr>
<td><strong>Same state</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>state</td>
<td>-2.68</td>
<td>-3.17</td>
<td>-3.94</td>
<td>-4.41</td>
</tr>
<tr>
<td></td>
<td>[2.40]**</td>
<td>[2.71]***</td>
<td>[3.12]***</td>
<td>[3.10]***</td>
</tr>
<tr>
<td><strong>Target public</strong></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>public</td>
<td>6.11</td>
<td>5.03</td>
<td>5.36</td>
<td>7.44</td>
</tr>
<tr>
<td></td>
<td>[2.32]**</td>
<td>[1.83]*</td>
<td>[1.81]*</td>
<td>[2.22]**</td>
</tr>
<tr>
<td><strong>Anti-takeover defense</strong></td>
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<td>defense</td>
<td>4.30</td>
<td>3.65</td>
<td>4.87</td>
<td>5.84</td>
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<td>[1.26]</td>
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<td>[1.27]</td>
<td>[1.35]</td>
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<tr>
<td><strong>Unwelcoming attitude</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>attitude</td>
<td>-0.01</td>
<td>0.50</td>
<td>1.36</td>
<td>0.22</td>
</tr>
<tr>
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<td>[0.00]</td>
<td>[0.27]</td>
<td>[0.67]</td>
<td>[0.10]</td>
</tr>
<tr>
<td><strong>Target Bankrupt</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bankrupt</td>
<td>-5.69</td>
<td>-18.29</td>
<td>-15.47</td>
<td>-20.13</td>
</tr>
<tr>
<td></td>
<td>[1.09]</td>
<td>[3.33]***</td>
<td>[2.61]***</td>
<td>[3.01]***</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>3.58</td>
<td>4.78</td>
<td>5.21</td>
<td>15.50</td>
</tr>
<tr>
<td></td>
<td>[0.55]</td>
<td>[0.71]</td>
<td>[0.71]</td>
<td>[1.89]*</td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>3329</td>
<td>3331</td>
<td>3331</td>
<td>3331</td>
</tr>
<tr>
<td><strong>R²</strong></td>
<td>0.99</td>
<td>1.33</td>
<td>1.29</td>
<td>1.18</td>
</tr>
</tbody>
</table>

Change in returns for a std. dev. change in lambda

|                     |              |            |            |              |
| lambda              | 0.98        | 1.12       | 1.21       | 0.39         |

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Table 50 - The difference in 3-day CARs for equally anticipated bidders and targets

Table classifies bidders and targets into 10 categories according to the predicted probability of proposing and receiving bids. Panel A reports differences in 3-day CARs, the p-value for the t-test of the null hypothesis that the mean of bidder and target CARs are equal, the number of bidders and targets in each category. Panel B reports the average difference in CARs. The first row in Panel B reports the average of differences in the 10 categories, and the number of bidders and targets. The second row in Panel B reports the difference in CARs across all deals, and the number of bidders and targets.

### Panel A - Comparison of CARs to equally-anticipated bidders and targets

<table>
<thead>
<tr>
<th>Predicted probability (in %)</th>
<th>Difference in CARs (in %)</th>
<th>P-value</th>
<th>Number of bidders</th>
<th>Number of targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10%</td>
<td>19.32</td>
<td>0.00</td>
<td>4,007</td>
<td>2,763</td>
</tr>
<tr>
<td>10-20%</td>
<td>15.69</td>
<td>0.00</td>
<td>868</td>
<td>339</td>
</tr>
<tr>
<td>20-30%</td>
<td>18.59</td>
<td>0.00</td>
<td>687</td>
<td>91</td>
</tr>
<tr>
<td>30-40%</td>
<td>16.94</td>
<td>0.00</td>
<td>440</td>
<td>50</td>
</tr>
<tr>
<td>40-50%</td>
<td>10.41</td>
<td>0.00</td>
<td>244</td>
<td>31</td>
</tr>
<tr>
<td>50-60%</td>
<td>14.62</td>
<td>0.00</td>
<td>193</td>
<td>25</td>
</tr>
<tr>
<td>60-70%</td>
<td>26.27</td>
<td>0.01</td>
<td>174</td>
<td>17</td>
</tr>
<tr>
<td>70-80%</td>
<td>19.89</td>
<td>0.03</td>
<td>138</td>
<td>3</td>
</tr>
<tr>
<td>80-90%</td>
<td>10.61</td>
<td>0.13</td>
<td>145</td>
<td>5</td>
</tr>
<tr>
<td>90-100%</td>
<td>9.14</td>
<td>0.04</td>
<td>275</td>
<td>5</td>
</tr>
</tbody>
</table>

### Panel B - Difference in bidder and target CARs averaged across all categories and all deals

<table>
<thead>
<tr>
<th></th>
<th>Difference in CARs (in %)</th>
<th>Number of bidders</th>
<th>Number of targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of 10 categories</td>
<td>16.15</td>
<td>7,171</td>
<td>3,329</td>
</tr>
<tr>
<td>All deals</td>
<td>19.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Table 51 - The difference in 15-day CARs for equally anticipated bidders and targets

Table classifies bidders and targets into 15 categories according to the predicted probability of proposing and receiving bids. Panel A reports differences in 3-day CARs, the p-value for the t-test of the null hypothesis that the mean of bidder and target CARs are equal, the number of bidders and targets in each category. Panel B reports the average difference in CARs. The first row in Panel B reports the average of differences in the 10 categories, and the number of bidders and targets. The second row in Panel B reports the difference in CARs across all deals, and the number of bidders and targets.

Panel A – Comparison of CARs to equally-anticipated bidders and targets

<table>
<thead>
<tr>
<th>Predicted probability (in %)</th>
<th>Difference in CARs (in %)</th>
<th>P-value</th>
<th>Number of bidders</th>
<th>Number of targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10%</td>
<td>23.17</td>
<td>0.00</td>
<td>4,008</td>
<td>2,765</td>
</tr>
<tr>
<td>10-20%</td>
<td>17.66</td>
<td>0.00</td>
<td>868</td>
<td>339</td>
</tr>
<tr>
<td>20-30%</td>
<td>20.77</td>
<td>0.00</td>
<td>687</td>
<td>91</td>
</tr>
<tr>
<td>30-40%</td>
<td>20.83</td>
<td>0.00</td>
<td>440</td>
<td>50</td>
</tr>
<tr>
<td>40-50%</td>
<td>15.27</td>
<td>0.00</td>
<td>244</td>
<td>31</td>
</tr>
<tr>
<td>50-60%</td>
<td>18.86</td>
<td>0.00</td>
<td>193</td>
<td>25</td>
</tr>
<tr>
<td>60-70%</td>
<td>30.19</td>
<td>0.00</td>
<td>174</td>
<td>17</td>
</tr>
<tr>
<td>70-80%</td>
<td>28.43</td>
<td>0.00</td>
<td>138</td>
<td>3</td>
</tr>
<tr>
<td>80-90%</td>
<td>16.43</td>
<td>0.11</td>
<td>145</td>
<td>5</td>
</tr>
<tr>
<td>90-100%</td>
<td>14.22</td>
<td>0.09</td>
<td>275</td>
<td>5</td>
</tr>
</tbody>
</table>

Panel B – Difference in bidder and target CARs averaged across all categories and all deals

<table>
<thead>
<tr>
<th></th>
<th>Difference in CARs (in %)</th>
<th>Number of bidders</th>
<th>Number of targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of 10 categories</td>
<td>20.58</td>
<td>7,172</td>
<td>3,331</td>
</tr>
<tr>
<td>All deals</td>
<td>22.80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Table 52 - The difference in 29-day CARs for equally anticipated bidders and targets

Table classifies bidders and targets into 10 categories according to the predicted probability of proposing and receiving bids. Panel A reports differences in 29-day CARs, the p-value for the t-test of the null hypothesis that the mean of bidder and target CARs are equal, the number of bidders and targets in each category. Panel B reports the average difference in CARs. The first row in Panel B reports the average of differences in the 10 categories, and the number of bidders and targets. The second row in Panel B reports the difference in CARs across all deals, and the number of bidders and targets.

### Panel A - Comparison of CARs to equally-anticipated bidders and targets

<table>
<thead>
<tr>
<th>Predicted probability (in %)</th>
<th>Difference in CARs (in %)</th>
<th>P-value</th>
<th>Number of bidders</th>
<th>Number of targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10%</td>
<td>25.00</td>
<td>0.00</td>
<td>4,008</td>
<td>2,765</td>
</tr>
<tr>
<td>10-20%</td>
<td>22.23</td>
<td>0.00</td>
<td>868</td>
<td>339</td>
</tr>
<tr>
<td>20-30%</td>
<td>22.54</td>
<td>0.00</td>
<td>687</td>
<td>91</td>
</tr>
<tr>
<td>30-40%</td>
<td>27.05</td>
<td>0.00</td>
<td>440</td>
<td>50</td>
</tr>
<tr>
<td>40-50%</td>
<td>23.14</td>
<td>0.00</td>
<td>244</td>
<td>31</td>
</tr>
<tr>
<td>50-60%</td>
<td>23.75</td>
<td>0.00</td>
<td>193</td>
<td>25</td>
</tr>
<tr>
<td>60-70%</td>
<td>45.81</td>
<td>0.00</td>
<td>174</td>
<td>17</td>
</tr>
<tr>
<td>70-80%</td>
<td>33.86</td>
<td>0.01</td>
<td>138</td>
<td>3</td>
</tr>
<tr>
<td>80-90%</td>
<td>23.50</td>
<td>0.03</td>
<td>145</td>
<td>5</td>
</tr>
<tr>
<td>90-100%</td>
<td>15.05</td>
<td>0.15</td>
<td>275</td>
<td>5</td>
</tr>
</tbody>
</table>

### Panel B - Difference in bidder and target CARs averaged across all categories and all deals

<table>
<thead>
<tr>
<th>Difference in CARs (in %)</th>
<th>Number of bidders</th>
<th>Number of targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of 10 categories</td>
<td>26.19</td>
<td>7,172</td>
</tr>
<tr>
<td>All deals</td>
<td>25.44</td>
<td></td>
</tr>
</tbody>
</table>
Table 53 – Cumulative abnormal returns and predicted probabilities to single and multiple announcements

Table reports mean probabilities predicted by candidacy models and 7-day cumulative abnormal returns (CAR) to single and multiple announcements in the bidder subsample in Panel A, and in the target subsample in Panel B. Table also reports the t-statistic of t-test for the null hypothesis that the mean of distributions is equal for single and multiple announcements. Predicted probabilities and CARs are in %.

<table>
<thead>
<tr>
<th></th>
<th>Single announcements</th>
<th>Multiple announcements</th>
<th>T-test, t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A - Bidder subsample</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted probability to propose a bid</td>
<td>20.69</td>
<td>27.88</td>
<td>-4.37</td>
</tr>
<tr>
<td>7-day CAR</td>
<td>1.07</td>
<td>3.22</td>
<td>-2.43</td>
</tr>
<tr>
<td>Observations</td>
<td>7,171</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td><strong>Panel A – Target subsample</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted probability to receive a bid</td>
<td>7.10</td>
<td>11.42</td>
<td>-2.61</td>
</tr>
<tr>
<td>7-day CAR</td>
<td>21.61</td>
<td>17.86</td>
<td>0.85</td>
</tr>
<tr>
<td>Observations</td>
<td>3,331</td>
<td>42</td>
<td></td>
</tr>
</tbody>
</table>
Table 54 - Regressions of bidder and target cumulative abnormal returns to single and multiple announcements

Table reports regressions of 3-day cumulative returns to single announcements, and single and multiple announcements in the bidder subsample in Panel A, and in the target subsample in Panel B. Absolute values of t-statistics are reported in the second rows. * denotes significant at 10%, ** significant at 5%, *** significant at 1%. The regression coefficients and $R^2$ are in %.

<table>
<thead>
<tr>
<th></th>
<th>Single announcement</th>
<th>All announcements</th>
<th>Single announcement</th>
<th>All announcements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Panel A – Bidder subsample</td>
<td></td>
<td>Panel B – Target subsample</td>
<td></td>
</tr>
<tr>
<td>Heckman’s lambda</td>
<td>3.64</td>
<td>3.82</td>
<td>18.71</td>
<td>18.34</td>
</tr>
<tr>
<td></td>
<td>[3.13]***</td>
<td>[3.25]***</td>
<td>[2.27]***</td>
<td>[2.26]***</td>
</tr>
<tr>
<td>All equity indicator</td>
<td>-0.91</td>
<td>-0.83</td>
<td>-4.22</td>
<td>-4.15</td>
</tr>
<tr>
<td></td>
<td>[2.58]***</td>
<td>[2.32]**</td>
<td>[3.80]***</td>
<td>[3.75]***</td>
</tr>
<tr>
<td>Same industry</td>
<td>-0.39</td>
<td>-0.39</td>
<td>-0.55</td>
<td>-0.52</td>
</tr>
<tr>
<td></td>
<td>[1.18]</td>
<td>[1.15]</td>
<td>[0.54]</td>
<td>[0.50]</td>
</tr>
<tr>
<td>Same state</td>
<td>0.27</td>
<td>0.54</td>
<td>-3.17</td>
<td>-3.12</td>
</tr>
<tr>
<td></td>
<td>[0.75]</td>
<td>[1.50]</td>
<td>[2.71]***</td>
<td>[2.69]***</td>
</tr>
<tr>
<td>Bidder/Target public</td>
<td>2.68</td>
<td>2.74</td>
<td>5.03</td>
<td>4.57</td>
</tr>
<tr>
<td></td>
<td>[0.90]</td>
<td>[0.89]</td>
<td>[1.83]*</td>
<td>[1.69]*</td>
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<tr>
<td>Anti-takeover defense</td>
<td>0.16</td>
<td>0.40</td>
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<td>3.61</td>
</tr>
<tr>
<td></td>
<td>[0.08]</td>
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<tr>
<td>Unwelcoming attitude</td>
<td>-2.21</td>
<td>-2.47</td>
<td>0.50</td>
<td>0.62</td>
</tr>
<tr>
<td></td>
<td>[2.15]**</td>
<td>[2.39]**</td>
<td>[0.27]</td>
<td>[0.34]</td>
</tr>
<tr>
<td>Target Bankrupt</td>
<td>2.82</td>
<td>2.73</td>
<td>-18.29</td>
<td>-17.59</td>
</tr>
<tr>
<td></td>
<td>[1.59]</td>
<td>[1.50]</td>
<td>[3.33]***</td>
<td>[3.33]***</td>
</tr>
<tr>
<td>Constant</td>
<td>-3.74</td>
<td>-3.93</td>
<td>4.78</td>
<td>5.40</td>
</tr>
<tr>
<td></td>
<td>[1.21]</td>
<td>[1.22]</td>
<td>[0.71]</td>
<td>[0.81]</td>
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<td>7,411</td>
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<tr>
<td>$R^2$</td>
<td>0.39</td>
<td>0.40</td>
<td>1.33</td>
<td>1.29</td>
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</tbody>
</table>

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Table 55- Regressions of bidder and target cumulative abnormal returns that introduce deal value and relative value

Table reports regressions of 3-day bidder cumulative abnormal returns in Panel A, and target abnormal returns in Panel B. Absolute values of t-statistics are reported in the second rows. * denotes significant at 10, ** significant at 5, significant at 1. The regression coefficients, and R², the change in returns are in %.

<table>
<thead>
<tr>
<th>specifications</th>
<th>Panel A - Bidder CARs</th>
<th>Panel B - Target CARs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Specification 1</td>
<td>Specification 2</td>
</tr>
<tr>
<td>Heckman's lambda</td>
<td>3.64 [3.13]***</td>
<td>3.51 [2.61]***</td>
</tr>
<tr>
<td>All equity indicator</td>
<td>-0.91 [2.58]***</td>
<td>-0.49 [1.34]***</td>
</tr>
<tr>
<td>Same industry</td>
<td>-0.39 [1.18]</td>
<td>0.04 [0.11]</td>
</tr>
<tr>
<td>Same state</td>
<td>0.27 [0.75]</td>
<td>0.13 [0.33]</td>
</tr>
<tr>
<td>Bidder/Target public</td>
<td>2.68 [0.90]</td>
<td>2.90 [0.92]</td>
</tr>
<tr>
<td>Anti-takeover defense</td>
<td>0.16 [0.08]</td>
<td>-1.23 [0.59]</td>
</tr>
<tr>
<td>Unwelcoming attitude</td>
<td>-2.21 [2.15]**</td>
<td>-2.15 [2.09]**</td>
</tr>
<tr>
<td>Target bankrupt</td>
<td>2.82 [1.59]</td>
<td>1.44 [0.67]</td>
</tr>
<tr>
<td>Deal value</td>
<td>-0.37 [5.37]***</td>
<td>0.87 [6.52]***</td>
</tr>
<tr>
<td>Relative value</td>
<td>0.87 [6.52]***</td>
<td>0.87 [6.52]***</td>
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<tr>
<td>Constant</td>
<td>-3.74 [1.21]</td>
<td>-4.51 [1.37]</td>
</tr>
<tr>
<td>Observations</td>
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<td>5338</td>
</tr>
<tr>
<td>R²</td>
<td>0.39</td>
<td>1.58</td>
</tr>
</tbody>
</table>
Table 56 - Testing identification strategy in the bidder subsample

Table reports results for regressions of 7-day bidder abnormal returns on proxies for bidder and target fit, and bargaining power. Specifications 2 through 5 introduce proxies for managerial incentives that prove significant in models of bidder candidacy. Absolute values of t-statistics are reported in the second rows. * denotes significant at 10, ** significant at 5, significant at 1. The regression coefficients, and $R^2$, the change in returns are in %.

<table>
<thead>
<tr>
<th>Specification</th>
<th>1</th>
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<th>4</th>
<th>5</th>
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<td>3.64</td>
<td>3.24</td>
<td>0.28</td>
<td>3.60</td>
<td>3.19</td>
<td>4.71</td>
</tr>
<tr>
<td></td>
<td>[3.13]**</td>
<td>[1.34]</td>
<td>[0.24]</td>
<td>[3.09]**</td>
<td>[2.71]**</td>
<td>[1.75]*</td>
</tr>
<tr>
<td>All equity indicator</td>
<td>-0.91</td>
<td>-0.90</td>
<td>-1.24</td>
<td>-0.69</td>
<td>-0.81</td>
<td>-0.96</td>
</tr>
<tr>
<td></td>
<td>[2.58]**</td>
<td>[2.56]**</td>
<td>[3.55]**</td>
<td>[1.91]*</td>
<td>[2.29]**</td>
<td>[2.60]**</td>
</tr>
<tr>
<td>Same industry</td>
<td>-0.39</td>
<td>-0.39</td>
<td>-0.38</td>
<td>-0.37</td>
<td>-0.36</td>
<td>0.01</td>
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<tr>
<td></td>
<td>[1.18]</td>
<td>[1.18]</td>
<td>[1.16]</td>
<td>[1.12]</td>
<td>[1.08]</td>
<td>[0.03]</td>
</tr>
<tr>
<td>Same state</td>
<td>0.27</td>
<td>0.27</td>
<td>-0.05</td>
<td>0.33</td>
<td>0.28</td>
<td>-0.04</td>
</tr>
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<td>[0.75]</td>
<td>[0.14]</td>
<td>[0.92]</td>
<td>[0.78]</td>
<td>[0.09]</td>
</tr>
<tr>
<td>Bidder public</td>
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<td>2.68</td>
<td>4.02</td>
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<td>2.84</td>
<td>3.75</td>
</tr>
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<td>[0.90]</td>
<td>[1.36]</td>
<td>[0.95]</td>
<td>[0.95]</td>
<td>[1.20]</td>
</tr>
<tr>
<td>Anti-takeover defense</td>
<td>0.16</td>
<td>0.16</td>
<td>0.24</td>
<td>0.32</td>
<td>0.13</td>
<td>-0.73</td>
</tr>
<tr>
<td></td>
<td>[0.08]</td>
<td>[0.08]</td>
<td>[0.12]</td>
<td>[0.16]</td>
<td>[0.06]</td>
<td>[0.35]</td>
</tr>
<tr>
<td>Unwelcoming attitude</td>
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<td>-2.21</td>
<td>-1.63</td>
<td>-2.25</td>
<td>-2.23</td>
<td>-1.98</td>
</tr>
<tr>
<td></td>
<td>[2.15]**</td>
<td>[2.15]**</td>
<td>[1.60]</td>
<td>[2.20]**</td>
<td>[2.18]**</td>
<td>[1.93]*</td>
</tr>
<tr>
<td>Target Bankrupt</td>
<td>2.82</td>
<td>2.82</td>
<td>2.29</td>
<td>2.80</td>
<td>2.72</td>
<td>1.03</td>
</tr>
<tr>
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<td>[1.59]</td>
<td>[1.59]</td>
<td>[1.30]</td>
<td>[1.58]</td>
<td>[1.53]</td>
<td>[0.48]</td>
</tr>
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<td>Previous mergers</td>
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<td></td>
<td></td>
<td></td>
<td>0.52</td>
</tr>
<tr>
<td></td>
<td>[0.19]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[1.59]</td>
</tr>
<tr>
<td>Size</td>
<td>-0.93</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.70</td>
</tr>
<tr>
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<td>-1.94</td>
<td>[7.73]**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------</td>
<td>-------</td>
<td>---------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Merger intensity</td>
<td>[2.57]**</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative value</td>
<td></td>
<td>0.70</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
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<td>-3.38</td>
<td>2.59</td>
<td>-3.60</td>
<td>-2.86</td>
<td>-2.77</td>
</tr>
<tr>
<td></td>
<td>[1.21]</td>
<td>[0.93]</td>
<td>[0.83]</td>
<td>[1.16]</td>
<td>[0.92]</td>
<td>[0.71]</td>
</tr>
<tr>
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<td>7,171</td>
<td>7,171</td>
<td>7,171</td>
<td>5,338</td>
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<td>0.48</td>
<td>0.47</td>
<td>2.67</td>
</tr>
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</table>
Table 57 - Testing identification strategy in the target subsample

Table reports results for regressions of 7-day target abnormal returns on proxies for bidder and target fit, and bargaining power. Specifications 2 through 5 introduce proxies for managerial incentives that prove significant in models of target candidacy. Absolute values of t-statistics are reported in the second rows. * denotes significant at 10, ** significant at 5, significant at 1.

<table>
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<th></th>
<th></th>
<th></th>
</tr>
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<tr>
<td>Heckman’s lambda</td>
<td>18.71%</td>
<td>4.03%</td>
<td>19.53%</td>
<td>18.76%</td>
<td>18.52%</td>
</tr>
<tr>
<td></td>
<td>[2.27]**</td>
<td>[0.37]</td>
<td>[2.38]**</td>
<td>[2.28]**</td>
<td>[2.25]**</td>
</tr>
<tr>
<td>All equity indicator</td>
<td>-4.22%</td>
<td>-4.08%</td>
<td>-4.41%</td>
<td>-4.99%</td>
<td>-4.42%</td>
</tr>
<tr>
<td>Same industry</td>
<td>-0.55%</td>
<td>-0.44%</td>
<td>-0.23%</td>
<td>-0.54%</td>
<td>-0.66%</td>
</tr>
<tr>
<td></td>
<td>[0.54]</td>
<td>[0.43]</td>
<td>[0.22]</td>
<td>[0.52]</td>
<td>[0.64]</td>
</tr>
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<td>Same state</td>
<td>-3.17%</td>
<td>-3.16%</td>
<td>-3.25%</td>
<td>-3.35%</td>
<td>-3.14%</td>
</tr>
<tr>
<td></td>
<td>[2.71]***</td>
<td>[2.70]***</td>
<td>[2.78]***</td>
<td>[2.87]***</td>
<td>[2.69]***</td>
</tr>
<tr>
<td>Target public</td>
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<td>5.29%</td>
<td>5.71%</td>
<td>4.82%</td>
<td>4.67%</td>
</tr>
<tr>
<td></td>
<td>[1.83]*</td>
<td>[1.92]*</td>
<td>[2.07]**</td>
<td>[1.76]*</td>
<td>[1.69]*</td>
</tr>
<tr>
<td>Anti takeover defense</td>
<td>3.65%</td>
<td>3.31%</td>
<td>4.04%</td>
<td>3.82%</td>
<td>3.89%</td>
</tr>
<tr>
<td></td>
<td>[1.02]</td>
<td>[0.93]</td>
<td>[1.13]</td>
<td>[1.07]</td>
<td>[1.09]</td>
</tr>
<tr>
<td>Unwelcoming attitude</td>
<td>0.50%</td>
<td>0.65%</td>
<td>1.03%</td>
<td>0.77%</td>
<td>0.61%</td>
</tr>
<tr>
<td></td>
<td>[0.27]</td>
<td>[0.35]</td>
<td>[0.54]</td>
<td>[0.41]</td>
<td>[0.33]</td>
</tr>
<tr>
<td>Target Bankrupt</td>
<td>-18.29%</td>
<td>-17.90%</td>
<td>-17.80%</td>
<td>-17.79%</td>
<td>-17.86%</td>
</tr>
<tr>
<td>Previous mergers</td>
<td>-2.28%</td>
<td>-0.66%</td>
<td>-0.66%</td>
<td>-0.66%</td>
<td>-0.66%</td>
</tr>
<tr>
<td></td>
<td>[2.10]**</td>
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<td>[0.56]</td>
<td>[0.56]</td>
<td>[0.56]</td>
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<td>Size</td>
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<td>-0.80%</td>
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</table>

241
<table>
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<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-Statistic</th>
<th>p-value</th>
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</thead>
<tbody>
<tr>
<td>Cash ratio</td>
<td>7.87%</td>
<td></td>
<td>[3.26]***</td>
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</tr>
<tr>
<td>Merger intensity</td>
<td>6.25%</td>
<td></td>
<td>[3.23]***</td>
<td></td>
</tr>
<tr>
<td>Deal value</td>
<td>-0.07%</td>
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<td>[1.59]</td>
<td></td>
</tr>
<tr>
<td>Relative value</td>
<td>2.12%</td>
<td></td>
<td>[0.69]</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.78%</td>
<td>[0.71]</td>
<td></td>
<td>[1.97]**</td>
<td>[0.58]</td>
</tr>
<tr>
<td>18.44%</td>
<td>[1.14]</td>
<td></td>
<td>[1.14]</td>
<td>[0.58]</td>
</tr>
<tr>
<td>7.74%</td>
<td>[1.14]</td>
<td></td>
<td>[1.14]</td>
<td>[0.58]</td>
</tr>
<tr>
<td>3.89%</td>
<td>[1.14]</td>
<td></td>
<td>[1.14]</td>
<td>[0.58]</td>
</tr>
<tr>
<td>3.78%</td>
<td>[1.14]</td>
<td></td>
<td>[1.14]</td>
<td>[0.58]</td>
</tr>
<tr>
<td>Relative value</td>
<td>8.09%</td>
<td></td>
<td>[8.74]***</td>
<td></td>
</tr>
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<td>3,331</td>
<td>3,331</td>
<td>3,331</td>
</tr>
<tr>
<td>R²</td>
<td>1.33%</td>
<td>1.46%</td>
<td>1.64%</td>
<td>1.63%</td>
</tr>
</tbody>
</table>
Table 58 - Tabulation of bidder abnormal returns according to investor anticipations and method used to finance deals

Table tabulates 7-day bidder cumulative abnormal according to investor anticipations (anticipated vs. unanticipated) and method used to finance the merger (all-equity vs. not all-equity). A bid is classified as anticipated if the predicted probability of bidding is larger than the median probability, and as unanticipated otherwise. A bid is identified as all-equity financed if target shareholders are paid using bidder shares only, and as not all-equity otherwise. In the main cells, the first line reports mean cumulative abnormal returns and the second line the number of observations. In the difference cells the first line reports the mean CARs and the second line the t-statistic for the two-t-test of the null hypothesis that the difference is equal to 0. CARs are in %.

<table>
<thead>
<tr>
<th></th>
<th>Unanticipated</th>
<th>Anticipated</th>
<th>Difference between columns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not all-equity financed</td>
<td>1.44</td>
<td>1.16</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>2.691</td>
<td>2.621</td>
<td>0.83</td>
</tr>
<tr>
<td>All-equity financed</td>
<td>1.21</td>
<td>-0.33</td>
<td>1.53</td>
</tr>
<tr>
<td></td>
<td>870</td>
<td>988</td>
<td>2.23</td>
</tr>
<tr>
<td>Difference between rows</td>
<td>0.24</td>
<td>1.49</td>
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</tr>
<tr>
<td></td>
<td>0.45</td>
<td>3.22</td>
<td></td>
</tr>
</tbody>
</table>

Table 59 - Tabulation of bidder abnormal returns according to investor anticipations and deal size

Table tabulates 7-day bidder cumulative abnormal according to investor anticipations (anticipated vs. unanticipated) and size of the deal (big vs. small deal). A bid is classified as anticipated if the predicted probability of bidding is larger than the median probability, and as unanticipated otherwise. A bid is identified as big if the reported value of the deal is larger than the median value of all deals in the sample, and as small otherwise. In the main cells, the first line reports mean cumulative abnormal returns and the second line the number of observations. In the difference cells the first line reports the mean CARs and the second line the t-statistic for the two-t-test of the null hypothesis that the difference is equal to 0. CARs are in %.

<table>
<thead>
<tr>
<th></th>
<th>Unanticipated</th>
<th>Anticipated</th>
<th>Difference between columns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small deals</td>
<td>2.55</td>
<td>1.75</td>
<td>0.80</td>
</tr>
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<td></td>
<td>1,409</td>
<td>1,211</td>
<td>1.47</td>
</tr>
<tr>
<td>Large deals</td>
<td>-0.27</td>
<td>-0.96</td>
<td>0.69</td>
</tr>
<tr>
<td></td>
<td>1282</td>
<td>1,435</td>
<td>1.64</td>
</tr>
<tr>
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<td>2.71</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.36</td>
<td>6.09</td>
<td></td>
</tr>
</tbody>
</table>
Appendix A – Command file that downloads quarterly data from SDC

Table reports the file that downloads data from SDC.

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<th>Hits</th>
<th>Request Description</th>
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<td>DATABASES: Domestic Mergers, 1979-Present (MA, OMA)</td>
</tr>
<tr>
<td>1</td>
<td>-</td>
<td>Date Announced: 1/1/1962 to 3/6/2005 (Custom)</td>
</tr>
<tr>
<td>2</td>
<td>121334</td>
<td>Target or Acquiror Public Status : P</td>
</tr>
<tr>
<td>3</td>
<td>107496</td>
<td>Acquiror Nation : US</td>
</tr>
<tr>
<td>4</td>
<td>107495</td>
<td>Target Nation : US</td>
</tr>
<tr>
<td>5</td>
<td>75713</td>
<td>Deal Type : NOT 5,6,7,8,9,10,11,12</td>
</tr>
<tr>
<td>6</td>
<td>29668</td>
<td>Form of the Deal : NOT AP, AA, AC, AR, B, EO, R</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Custom Report: reportapril-52005 (Columnar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Save as:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C:\Tanyeri\april52005.txt</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Capture File: bostonpc.4406728</td>
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</tbody>
</table>
Appendix B – Command file that downloads quarterly data from CRSP-COMPUSTAT

Panel A reports the web-query file that downloads quarterly data from CRSP-COMPUSTAT database. Panel B reports the data-request-summary file that the web-query produces.

Panel A – Web-query file

Annual Updates

- Monthly Stocks
- Daily Stocks
- Indices and Deciles
- Mutual Funds
- Monthly Treasuries
- Daily Treasuries

CRSP/COMPUSTAT Merged Database - Industrial Quarterly

Data Query | Documentation | Data Manuals | Retrieve from myWRDS Queries

Step One: Date Range

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Quarterly</th>
</tr>
</thead>
</table>

| Beginning | 1975 |
| Ending    | 2004 |

Select frequency and range of data.

Step Two: Search
Select the variable used to search the database. Enter the companies using 1 of 3 methods.

1. Codes separated by a single space.
   Example: ibm
   msft
dell

2. A text file (File Format) on your local computer with codes entered one per line.
   Example:
   ibm
   msft
dell

3. All companies

Active denotes companies that are currently trading. Inactive denotes companies that have been deleted from the active file due to bankruptcy, acquisition
or merger, etc.

Optional
Build conditional statements using the list of variables, comparison operators, desired values, and logical operators. Most data items are represented in units of millions (see documentation for more information).

Example:
DATA6 > 10000
AND
DATA12 > 1000
- Fiscal period end date must be within link date range
- Entire fiscal period must be within link date range
- Any part of fiscal period is within link date range

**Step Three: Variables**

<table>
<thead>
<tr>
<th>CRSP/COMPSTAT Link History</th>
<th>Select All</th>
<th>Clear</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPERM</td>
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<td></td>
</tr>
</tbody>
</table>

- Historical CRSP PERMNO Link to COMPSTAT Record
- Historical CRSP PERMCO Link to COMPSTAT Record

<table>
<thead>
<tr>
<th>Effective Date of Link</th>
<th>Last Effective Date of Link</th>
<th>Link Type Code</th>
<th>Link Flag</th>
<th>Link Used Flag</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Identifying Information/Codes</th>
<th>Select All</th>
<th>Clear</th>
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</thead>
<tbody>
<tr>
<td>CUSIP Issue Code</td>
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<td></td>
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<tr>
<td>CUSIP Issue Number</td>
<td></td>
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</tr>
<tr>
<td>Ticker</td>
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<tr>
<td>Company</td>
<td></td>
<td></td>
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<tr>
<td>Name</td>
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<tr>
<td>File Identification Code</td>
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<tr>
<td>Employer Identification Number</td>
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<tr>
<td>Update Code</td>
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<tr>
<td>Incorporation Code - State</td>
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<tr>
<td>Incorporation Code - Foreign</td>
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<tr>
<td>Stock Ownership Code</td>
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<tr>
<td>Source Document Code</td>
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<tr>
<td>Canadian Index Code - Current</td>
<td></td>
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<tr>
<td>Canadian Index Code</td>
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</tr>
<tr>
<td>SPC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calendar Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPC Calendar Quarter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company Location Code</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Select variables to be included in the output. You can select multiple data items by holding the control key while clicking.

See documentation for a description of each data item.
State □ Company Location Code - County □ Industry Name
□ Industry Classification Code □ North American Industry Classification System
Fiscal Year-end Month of Data □ Fiscal Quarter Begin Date □ Fiscal Quarter End Date

S&P Information □ Select All □ Clear

Expanded Data (1993-present)
### Step Four: Output

#### Primary Sort Variable

| GVKEY (default) |  |

#### Output Format

Select desired format of the output file. For large data requests, select a compression type to expedite.
Compression Type
<none>

E-Mail Address (Optional)

---

How 'Save Query' works -- Using myWRDS Queries

downloads. If you enter your email address, you will receive an email that contains a URL to the output file when the data request is finished processing.

Example:
username@school.edu

---

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Appendix C - Stata Command File

! Data formatting and preparation!
! File 1!

set virtual on
set memory 900m
set matsize 800
set more off
log using "C:\Basak\Mergers\March2006\Output\March162006", replace

insheet using "C:\Basak\Mergers\March2006\Data\Dec122005.txt", clear

tabmiss gvkey dnum
!726,377 obs!
desc
log off
tab dnum
log on
!dropping SIC's excluded in SDC, all dnum with 6000-6999!
drop if dnum>5999 & dnum <7000
tabmiss fqenddtfqbegdtfyr gvk ey
!564,131 non missing data!

!check for double counted firms, by cusip and fiscalquarters!
format fqbegdtfqenddt %dN/D/Y
!fqbegdt and fqenddt gives true financial statement coverage!
!if a firm has the same cnum and financial statement coverage, it means it is double counted!
bysort cnum fqbegdt fqenddt: egen samecnumdate=count(_n)
tab samecnumdate
!1900 with 2 counts, 45 with 3 counts, 24 with 4 counts, 5 with 5 counts. Check if data same!
bysort gvkey fqbegdt fqenddt cnum data101 data90 data69 data61 data60 data54 data51 data46 data44 data38 data37 data36 data31 data30 data24 data22 data21 data20 data18 data14 data8 data6 data2 data1: egen samegvkeycnumdatadate=count(_n)
tab samegvkeycnumdatadate
!same data, gvkey, cnum, dates: 788 with count 2 and 3 with count 3; drop the extras!
bysort gvkey fqbegdt fqenddt cnum data101 data90 data69 data61 data60 data54 data51 data46 data44 data38 data37 data36 data31 data30 data24 data22 data21 data20 data18 data14 data8 data6 data2 data1: egen flag=min(_n)
drop if flag~=_n
!788/2+3/3*2=396 repeating firms dropped!
drop flag samegvkeycnumdatadate samecnumdate
tabmiss gvkey cnum
!563,735 obs!
!check for cnum double counts!
bysort cnum fqenddt data101 data90 data69 data61 data60 data54 data51 data46 data44 data38 data37 data36 data31 data30 data24 data22 data21 data20 data18 data14 data8 data6 data2 data1: egen datecusipdatasame=count(_n)
tab datecusipdatasame
!2 double counts with same data!
bysort cnum fqenddt data101 data90 data69 data61 data60 data54 data51 data46 data44 data38 data37 data36 data31 data30 data24 data22 data21 data20 data18 data14 data8 data6 data2 data1: egen flag=min(_n)
drop if _n~flag

drop datecusipdatasame flag
bysort fqenddt gvkey cnum: egen samedategvkeycnum=count(_n)
tab samedategvkeycnum
!778 double counts!
bysort fqenddt cnum: egen samedatecnum=count(_n)

253
tab samedatecnum samedategvkeycnum
!778 double counts due to same gvkey and cnum, 336 double counts due to repeated cusip and different gvkey, 39 triple counts due to repeated cusip and different gvkey, 24 4 counts due to repeated cusip and different gvkey, 5 5 counts due to repeated cusip and different gvkey!
list gvkey cnum fqenddt fqbegdt data2 data44 if  samedatecnum==5
!some double counts due to changes in gvkey and data. For ex. cnum=372917 has 5 different gvkeys corresponding to five company names, subsidiaries with different data. Hence these double counts with different gvkeys I'll leave untouched!
log off
list gvkey cnum fyr fqenddt fqbegdt data2 data44 if  samedatecnum==2 & samedategvkeycnum==2
log on
!some double counts due to same gvkey and cusip but changes in fyr. Due to changes in fyr (fiscal year announcement dates), data changes as well!
bysort fqenddt cnum gvkey fyr: egen samedatecnumfyr=count(_n)
tab samedatecnumfyr
drop samedatecnumfyr
!no double counts!
!drop the first observation in the double counted gvkey cnum with differing fyrs!
bysort gvkey fqbegdt fqenddt cnum: egen flag=min(_n)
drop if flag~=_n
!389 = 778/2 dropped!
drop flag samedatecnum samedategvkeycnum
bysort fqenddt gvkey cnum: egen samedategvkeycnum=count(_n)
tab samedategvkeycnum
!no double counts!
drop samedategvkeycnum

!year qtr according to fiscal years not true dates, get true dates from fqenddt!
rename year fiscalyear
rename qtr fiscalquarter
gen year=year(fqenddt)
gen month=month(fqenddt)

bysort year month cnum: egen samedatecnum=count(_n)
tab samedatecnum
!336 double counts and 39 triple counts and 24 4 counts and 5 5 counts due to repeated cusip and different gvkey!
generate samedatecusipdummy=0
replace samedatecusipdummy=1 if samedatecnum>1

tab samedatecusipdummy
!404 double cusip counts!

egen numberofdifferentgvkeys=group(gvkey)
sum numberofdifferentgvkeys
!14,278 different gvkeys and 563,345 observations!
egen numberofdifferentcusips=group(cnum)
sum numberofdifferentcusips
!14,270 different gvkeys and 563,345 observations!
drop samedatecusipdummy samedatecnum
bysort year month cnum: egen samedatecnum=count(_n)
tab samedatecnum
!336 double counts and 39 triple counts and 24 4 counts and 5 5 counts due to repeated cusip and different gvkey!
generate samedatecusipdummy=0
replace samedatecusipdummy=1 if samedatecnum>1

rename cnum cusip
sort cusip year month
tabmiss cusip
1563,345

!563,345!
gen CRSPobsno=_n
save "C:\Basak\Mergers\March2006\Data\December12COMPUSTAT.dta", replace

insheet using "C:\Basak\Mergers\March2006\Data\Dec 122005outputSDC.txt", clear
desc
drop if dateannounced=""
tabmiss dealnumber dateannounced
18,325 deals!

gen str1 onedigitsica=substr(acquirorprimarysic, 1,1)
gen str1 onedigitsict=substr(targetprimarysic, 1,1)
drop if onedigitsica="6"
drop if onedigitsict="6"
drop onedigitsict onedigitsica
tabmiss dealnumber dateannounced
18272 deals!

gen dateannounced1=date(dateannounced, "mdy")
format dateannounced1 %d/N/D/Y
gen dateeffective1=date(dateeffective, "mdy")
format dateeffective1 %d/N/D/Y
gen datewithdrawn1=date(datethrown, "mdy")
format datewithdrawn1 %d/N/D/Y
drop dateannounced datethrown dateeffective
rename dateannounced1 dateannounced
rename dateeffective1 dateeffective
rename datewithdrawn1 datewithdrawn

gen sameacquirortargetcusip=match(acquirorcusip,targetcusip)
tab sameacquirortargetcusip
!check if acquiror and target cusip same, 41 with same!
list targetname acquirorname dealnumber if sameacquirortargetcusip==1
!checked names, acquiror and target names and cusips same, hence drop these deals!
drop if sameacquirortargetcusip==1
drop sameacquirortargetcusip
tabmiss dateannounced
!18,231 deals!

bysort acquirorcusip dateannounced: egen multipleacquirorannouncements=count(_n)
bysort targetcusip dateannounced: egen multipletargetannouncements=count(_n)
tab multipleacquirorannouncements
!multiple acquiror announcements 249 firms with 2 ann. (249*2=498 double counts), 22 with 3, 6 with 4, 3 with 5, 2 with 6!
tab multipletargetannouncements
!multiple target announcements 54 firms with 2 (54*2=108 multiples), 1 with 3, 3 with 4!

!make a long list of acquirers and targets with identifier tdummy=0 if acquirer and tdummy=1 if target!
keep dealnumber dateannounced targetname acquirorname acquirorcusip targetcusip acqtickersymbol targettickersymbol
rename targetname name1
rename acquirorname name0
rename acquirorcusip cusip0
rename targetcusip cusip1
rename acqtickersymbol ticker0
rename targettickersymbol ticker1
reshape long name cusip ticker, i(dealnumber) j(tdummy)

!Number of obs. 18231 -> 36462, Number of variables 8 -> 6 j variable (2 values)-> tdummy xij variables: name0 name1 -> name, cusip0 cusip1 -> cusip, ticker0 ticker1 -> ticker!

bysort dateannounced cusip tdummy :egen multipleannouncementsbytdummy=count(_n)

!find multiple announcements on the same day by tdummy, 303 firms with double (249+54), 23 with 3 (22+1), 9 with 4 (6+3), 3 with 5, 2 with 6!

bysort dateannounced cusip:egen multipleannouncements=count(_n)

!318 with double, hence 16 both recieved and made bids, 1 made a bid and received 2 offers!

!For each bidder at each announcement organize bids into dealnumber1, ..., dealnumber6, and each target the same way!

gen announcementrank=1

sort cusip tdummy dateannounced

bysort cusip tdummy: replace announcementrank=2 if dateannounced[_n]==dateannounced[_n-1]

bysort cusip tdummy: replace announcementrank=3 if dateannounced[_n]==dateannounced[_n-2]

bysort cusip tdummy: replace announcementrank=4 if dateannounced[_n]==dateannounced[_n-3]

bysort cusip tdummy: replace announcementrank=5 if dateannounced[_n]==dateannounced[_n-4]

bysort cusip tdummy: replace announcementrank=6 if dateannounced[_n]==dateannounced[_n-5]

egen uniquecusipdateidentifier=group(cusip tdummy dateannounced)

sum uniquecusipdateidentifier
!
36064 unique cusips, acquirer-target identity and dateannounced out of 36462 observations.

(606/2+69/3+36/4+15/5+12/6+35724=36064)!

reshape wide dealnumber, i(uniquecusipdateidentifier) j(announcementrank)

!Number of obs. 36462 -> 36064; Number of variables 10 -> 14; j variable (6 values) announcementrank -> (dropped); variables:dealnumber -> dealnumber1 dealnumber2 ... dealnumber6!

drop uniquecusipdateidentifier

tabmiss dateannounced

!36064 unique cusips, acquirer-target identity and dateannounced deals!
gen year=year(dateannounced)
gen month=month(dateannounced)
bysort cusip tdummy year month:egen multipleannouncementsinmonth=count(_n)
tab multipleannouncementsinmonth
!find multiple announcements on the same month by tdummy, 444 double announcements, 18 triple ann., 3 four ann., and 1 five ann.!
bysort cusip year month:egen multipleanninmonthnotdummy=count(_n)
tab multipleanninmonthnotdummy
list dateannounced tdummy dealnumber1 name cusip if multipleanninmonthnotdummy==3 & (multipleannouncementsinmonth==1 | multipleannouncementsinmonth==2)
!in the same month 53 firms both received and made bids, 2 firms received 2 bids and made 1, 1 firm made 2 bids and received 1!
tab multipleanninmonthnotdummy
!find multiple announcements on the same month, 988 double announcements, 63 triple ann., 12 four ann., and 5 five ann.!
sort cusip
tabmiss dateannounced
!36,064 observations!
replace month=month-1
replace year=year-1 if month==0
replace month=12 if month==0
sort cusip year month
save "C:\Basak\Mergers\March2006\Data\December162005mergecusips.dta", replace

merge cusip year month using "C:\Basak\Mergers\March2006\Data\December12COMPUSTAT.dta"
sort cusip	tab _merge
!matched(3) 4386, CRSP 559,050 SDC 31,682. 36,064 obs in SDC, after merge 4386+31682=36,068 -> 4 extra. 563,345 obs in CRSP, 559050 +4,386=563,436 -> 91 extra!
!Clean CRSP extras: these should be due to multiple announcements in same month!
tab multipleanninmonthnotdummy

!182/2 = 91 merged firms with double announcements and 3/3*2 = 2 with triple announcements, total 93, these are the ones causing the problems. However, we have 93 extra from the announcements we should have 91!
bysort CRSPobsno: egen flag = count(_n)
tab flag _merge
!178/2 = 89 double + 3/3*2 = 2 = 91 extra observations, all in merged subsample!
tab flag multipleanninmonthnotdummy
!all coincide with multipleannouncements except 4!
list gvkey cusip name coname dateannounced tdummy multipleanninmonthnotdummy dealnumber1 if flag == 1 & multipleanninmonthnotdummy == 2, nodisplay noobs
!Double Sprint Corp Announcements matched with only Sprint Pcs or Spring Corp when they should have been matched with both!
save "C:\Basak\Mergers\March2006\Data\December162005mergecusips.dta", replace
!going to keep the ones that are matched to Sprint Pcs and convert them to Spring Corp manually!
keep if (dealnumber1 == 929419020 & coname == "SPRINT PCS GROUP") | (dealnumber1 == 875836020 & coname == "SPRINT PCS GROUP") | (dealnumber1 == 870850020 & coname == "SPRINT PCS GROUP") | (dealnumber1 == 925835020 & coname == "SPRINT PCS GROUP")
keep dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6 tdummy name cusip ticker dateannounced multipleannouncementsbytdummy multipleannouncements year month multipleannouncementsinmonth multipleanninmonthnotdummy
sort cusip year month
merge cusip year month using "C:\Basak\Mergers\March2006\Data\December12COMPUSTAT.dta"

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append using "C:\Basak\Mergers\March2006\Data\December162005mergecusips.dta"
list gvkey cusip name coname dateannounced tdummy multipleanninmonthnotdummy if _merge==3 & name=="Sprint Corp", nodisplay noobs
drop if coname=="SPRINT PCS GROUP" & _merge==3
tab _merge
tab multipleanninmonthnotdummy _merge
!182/2=91 merged firms with double announcements and 3/3*2=2 with triple announcements, total 93, these are the ones causing the problems. We have 93 (89+4 the extras that were manually corrected) extra from the announcements. EXACT!

!Clean SDC extras, 11 matched with double cusip counts, clean manually, the coname and name should match (name from SDC the primary criteria)!
tab _merge samedatecusipdummy
list gvkey cusip name coname dateannounced tdummy dealnumber1 if _merge==3 & samedatecusipdummy==1, nodisplay
drop if _merge==3 & samedatecusipdummy==1 & (coname=="GENZYME MOLECULAR ONCOLOGY" | coname=="GENZYME BIOSURGERY" | coname=="GEORGIA-PACIFIC TIMBER CO"| coname=="ZDNET")
!4 companies dropped, SDC EXACT now!

tab _merge
!matched(3) 4,382, CRSP 559,050 SDC 31,682. 36,064 obs in SDC, after merge 4382+31682=36,064 -> NO extra. 563,345 obs in CRSP, 559050 +4,384=563,432 -> 87 extra, the 4 deleted were originally in the CRSP universe hence the CRSP should be 91 extra due to multiple announcements, OK!
!check multipleanninmonthnotdummy!
tab _merge multipleanninmonthnotdummy
!save the matched (3) sample mergingfirmssampleDec19.dta and the unmatched (1) SDCunmatchedfirmsDec19.dta, and the unmatched (2) CRSPunmatchedfirmsDec19.dta!
drop flag
save "C:\Basak\Mergers\March2006\Data\mergingfirmssampleDec19.dta",replace
keep if _merge==2

261
drop _merge
tabmiss tdummy name ticker multipleanninmonthnotdummy dateannounced dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6
drop tdummy name ticker multipleanninmonthnotdummy dateannounced dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6
tabmiss cusip
!559,050!
sort cusip year month
save "C:\Basak\Mergers\March2006\Data\CRSPunmatchedfirmsDec19.dta",replace
use "C:\Basak\Mergers\March2006\Data\mergingfirmssampleDec19.dta",clear
keep if _merge==1
drop _merge
keep dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6 tdummy name cusip ticker dateannounced multipleannouncementsbytdummy multipleannouncements year month multipleannouncementsinmonth multipleanninmonthnotdummy
!these SDC cusips could not be matched by going back 1 month so now we'll go back two months!
replace month=month-1
replace year=year-1 if month==0
replace month=12 if month==0
drop multipleannouncementsinmonth multipleanninmonthnotdummy
bysort cusip year month:egen multipleanninmonthnotdummy=count(_n)
tab multipleanninmonthnotdummy tdummy
!in the same month 806 (617+189) firms both received and made bids, (806+182=988 ok), 60 (49+11) triple ann. (60+3=63) ok, 12 four ann., and 5 five ann.!
tabmiss cusip
!31,682 cusips!
sort cusip year month
save "C:\Basak\Mergers\March2006\Data\SDCunmatchedfirmsDec19.dta",replace
use "C:\Basak\Mergers\March2006\Data\mergingfirmssampleDec19.dta",clear
keep if _merge==3
drop _merge
! these were matched to one month prior statements hence generate a variable that indicates the match statement month, -1 for one
month prior, -2 for two months prior, and -3 for three months prior, 0 for no match!
gen statementmatchmonth=-1	
tabmiss cusip
!4382 matched firm-quarters!
sort cusip year month	
save "C:\Basak\Mergers\March2006\Data\mergingfirmssampleDec19.dta",replace

!2 month prior match!
use "C:\Basak\Mergers\March2006\Data\SDCunmatchedfirmsDec19.dta", clear
merge cusip year month using "C:\Basak\Mergers\March2006\Data\CRSPunmatchedfirmsDec19.dta"
tab_merge
!matched(3) 4,010, CRSP 555,130 SDC 27,679 . 31,682 obs in SDC, after merge 4010+27,679=31,689 -> 7 extra. 559,050 obs in
CRSP, 555,130+4,010=559,140 -> 90 extra!

!Clean CRSP extras: these should be due to multiple announcements in same month!
tab multipleanninmonthnotdummy
tab multipleanninmonthnotdummy _merge
!166/2=83 merged firms with double announcements and 6/3*2=4 with triple announcements 4/4*3=3 with four ann., total 90, these
are the ones causing the problems. EXACT for CRSP!
!Clean SDC extras, 13 matched with double cusip counts, clean manually, the coname and name should match (name from SDC the
primary criteria)!
tab _merge samedatecusipdummy
list gvkey cusip name coname dateannounced tdummy dealnumber1 if _merge==3 & samedatecusipdummy==1, nodisplay
drop if _merge==3 & sameDatecusipdummy==1 & (coname=="GEORGIA-PACIFIC TIMBER CO" | coname=="DISNEY (WALT) INTERNET GROUP" | coname=="GENZYME TISSUE REPAIR" | coname=="GENZYME MOLECULAR ONCOLOGY" | coname=="GENZYME BIOSURGERY")
!7 companies dropped, SDC EXACT now!

!append the matched (3) sample mergingfirmssampleDec19.dta and the unmatched (1) SDCunmatchedfirmsDec19.dta, and the unmatched (2) CRSPunmatchedfirmsDec19.dta!
save "C:\Basak\Mergers\March2006\Data\CRSPunmatchedfirmsDec19.dta",replace
keep if _merge==1
！

keep dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6 tdummy name cusip ticker dateannounced multipleannouncementsbytdummy multipleannouncements year month multipleannouncementsinmonth multipleanninmonthnotdummy
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！these SDC cusips could not be matched by going back 2 month so now we'll go back 3 months!
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! 27,679 cusips!
sort cusip year month
save "C:\Basak\Mergers\March2006\Data\SDCunmatchedfirmsDec19.dta",replace
use "C:\Basak\Mergers\March2006\Data\CRSPunmatchedfirmsDec19.dta",clear
keep if _merge==3
drop _merge
! these were matched to two month prior statements hence generate a variable that indicates the match statement month, -1 for one month prior, -2 for two months prior, and -3 for three months prior, 0 for no match!
gen statementmatchmonth=-2
tabmiss cusip
!4003 matched firm-quarters!
sort cusip year month
append using "C:\Basak\Mergers\March2006\Data\mergingfirmssampleDec19.dta"
tabmiss cusip
!8385 cusips!
save "C:\Basak\Mergers\March2006\Data\mergingfirmssampleDec19.dta", replace
use "C:\Basak\Mergers\March2006\Data\CRSPunmatchedfirmsDec19.dta",clear
keep if _merge==2
drop _merge
tabmiss dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6 tdummy name ticker dateannounced multipleannouncementsbytdummy multipleannouncements multipleanninmonthnotdummy multipleannouncementsinmonth
drop dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6 tdummy name ticker dateannounced multipleannouncementsbytdummy multipleannouncements multipleanninmonthnotdummy multipleannouncementsinmonth
tabmiss cusip
!555,130 obs!
sort cusip year month
save "C:\Basak\Mergers\March2006\Data\CRSPunmatchedfirmsDec19.dta",replace

!3 month prior match!
merge cusip year month using "C:\Basak\Mergers\March2006\Data\SDCunmatchedfirmsDec19.dta"

\textbf{tab \_merge}

\textbf{!matched(3) 3,870, CRSP  551,331  SDC  23,813. 27,679 obs in SDC, after merge 3,870+23,813=27,683 -> 4 extra. 551,130 obs in CRSP,  551,331 +3,870= 555,201-> 71 extra!}

\textbf{!Clean CRSP extras: these should be due to multiple announcements in same month!}
\textbf{tab multipleanninmonthnotdummy}
\textbf{tab multipleanninmonthnotdummy \_merge}
\textbf{!122/2=61 merged firms with double announcements and 15/3*2=10 with triple announcements, total 71, these are the ones causing the problems. EXACT!}
\textbf{!Clean SDC extras, 6 matched with double cusip counts,clean manually, the coname and name should match (name from SDC the primary criteria)!}
\textbf{tab \_merge samedatecusipdummy}
\textbf{list gvkey cusip name dateannounced tdummy dealnumber1 smbl ticker if \_merge==3 & samedatecusipdummy==1, nodisplay}
\textbf{drop if \_merge==3 & samedatecusipdummy==1 & ( coname="GENZYME SURGICAL PRODUCTS" | coname="GENZYME MOLECULAR ONCOLOGY" | coname="GENZYME TISSUE REPAIR" | coname="TELE-COMM TCI VENTRS -SER A")}
\textbf{!4 companies dropped, SDC EXACT now!}
\textbf{tab \_merge}
\textbf{!matched(3) 3,866, CRSP  551,331  SDC  23,813. 27,679 obs in SDC, after merge 3,866+23,813=27,683-> Exact. 551,130 obs in CRSP,  551,331 +3,866= 555,197+ 4 that were deleted=555,201 -> 71 extra EXACT!}

\textbf{!append the matched (3) sample mergingfirmssampleDec19.dta and the unmatched (1) SDCunmatchedfirmsDec19.dta, and the unmatched (2) CRSPunmatchedfirmsDec19.dta!}
\textbf{save "C:\Basak\Mergers\March2006\Data\CRSPunmatchedfirmsDec19.dta",replace}
\textbf{keep if \_merge==2}
\textbf{drop \_merge}
\textbf{keep dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6 cusip year month tdummy name ticker}
\textbf{dateannounced multipleannouncementsbytdummy multipleannouncements multipleanninmonthnotdummy}
drop multipleanninmonthnotdummy
bysort cusip year month:egen multipleanninmonthnotdummy=count(_n)
tab multipleanninmonthnotdummy tdummy
!in the same month 528 (417+101) firms both received and made bids, (528+122+166+182=988 ok), 39 (33+6) triple ann. (39+15+6+3=63) ok, 8 four ann. (8+4=12), and 5 five ann.!
tabmiss cusip
!23,813 cusips!
sort cusip year month
save "C:\Basak\Mergers\March2006\Data\SDCunmatchedfirmsDec19.dta", replace
use "C:\Basak\Mergers\March2006\Data\CRSPunmatchedfirmsDec19.dta", clear
keep if _merge==3
drop _merge
! these were matched to three month prior statements hence generate a variable that indicates the match statement month, -1 for one month prior, -2 for two months prior, and -3 for three months prior, 0 for no match!
gen statementmatchmonth=-3
tabmiss cusip
!3866 matched firm-quarters!
sort cusip year month
append using "C:\Basak\Mergers\March2006\Data\mergingfirmssampleDec19.dta"
tabmiss cusip
!12,251 cusips!
save "C:\Basak\Mergers\March2006\Data\mergingfirmssampleDec19.dta", replace

!make sure there is only one bidder and target in each quarter!
drop year month
gen year=year(fqenddt)
gen month=month(fqenddt)
gen quarter=quarter(fqenddt)
egen yearquarterind=group(year quarter)
tab yearquarterind
tab year month if yearquarterind==1
tab year month if yearquarterind==110
bysort yearquarterind cusip tdummy: egen multipleanninquarterbytdummy=count(_n)
tab multipleanninquarterbytdummy
tab multipleanninquarterbytdummy
cusip
drop multipleannouncementsinmonth multipleanninmonthnotdummy
!For each bidder in each month organize bids into dealnumber1, ..., dealnumber6, and each target the same way!
egen uniquecusipquartertdummmyid=group(yearquarterind cusip tdummy)
sum uniquecusipquartertdummmyid
!12,020 unique cusip tdummy identifiers = 11,798+428/2+213+4/4=12,020!
gen announcementmonthrank=1
sort cusip tdummy dateannounced
bysort cusip tdummy: replace announcementmonthrank=2 if dateannounced[_n]>dateannounced[_n-1] &
yearquarterind[_n]==yearquarterind[_n-1]
bysort cusip tdummy: replace announcementmonthrank=3 if dateannounced[_n]>dateannounced[_n-2] &
yearquarterind[_n]==yearquarterind[_n-2]
bysort cusip tdummy: replace announcementmonthrank=4 if dateannounced[_n]>dateannounced[_n-3] &
yearquarterind[_n]==yearquarterind[_n-3]
reshape wide dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6
dateannounced
multipleannouncementsbytdummy multipleannouncements, i(uniquecusipquartertdummmyid) j(announcementmonthrank)
4 observations pose problem, since they change fyr they are matched to different data but end up in the same yearquarterind, will manually change the yearquarterind in these!

log off
 reshape error
 log on
drop uniquecusipquartertdummyid announcementmonthrank
save "C:\Basak\Mergers\March2006\Data\mergingfirmssampleDec19.dta", replace
list yearquarterind fyr fqenddt dateannounced cusip dealnumber1 if _n==11374 | _n==11375 | _n==964 | _n==965
list yearquarterind fyr fqenddt dateannounced cusip dealnumber1 data44 if cusip=="925653" | cusip=="422203", nodisplay
!2 of the 4 problematic announcements don't have assets data, hence we'll drop these!
drop if (cusip=="422203" & yearquarterind==24 & fyr==4) | (cusip=="925653" & yearquarterind==101 & fyr==7)
egen uniquecusipquartertdummyid=group(yearquarterind cusip tdummy)
sum uniquecusipquartertdummyid
!12,020 unique cusip tdummy identifiers = 11,798+428/2+21/3+4/4=12,020!
gen announcementmonthrank=1
sort cusip tdummy dateannounced
bysort cusip tdummy: replace announcementmonthrank=2 if dateannounced[_n]>dateannounced[_n-1] & yearquarterind[_n]==yearquarterind[_n-1]
bysort cusip tdummy: replace announcementmonthrank=4 if dateannounced[_n]>dateannounced[_n-3] & yearquarterind[_n]==yearquarterind[_n-3]
reshape wide dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6 dateannounced multipleannouncementsbytdummy multipleannouncements, i(uniquecusipquartertdummyid) j(announcementmonthrank)
!dealnumber11 dealnumber21 dealnumber31 dealnumber41 dealnumber51 dealnumber61: first announcementdate in month and the different number of announcements at that particular date!
tabmiss dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6 tdummy name ticker dateannounced multipleannouncementsbytdummy multipleannouncementsbytdummy2 multipleannouncementsbytdummy3 multipleannouncementsbytdummy4
replace multipleannouncementsbytdummy1=0 if multipleannouncementsbytdummy1==.
replace multipleannouncementsbytdummy2=0 if multipleannouncementsbytdummy2==.
replace multipleannouncementsbytdummy3=0 if multipleannouncementsbytdummy3==.
replace multipleannouncementsbytdummy4=0 if multipleannouncementsbytdummy4==.
tabmiss cusip
!12,020 obs!
save "C:\Basak\Mergers\March2006\Data\mergingfirmssampleDec19.dta", replace

use "C:\Basak\Mergers\March2006\Data\CRSPunmatchedfirmsDec19.dta",clear
keep if _merge==1
drop _merge
tabmiss dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6 tdummy name ticker dateannounced multipleannouncementsbytdummy multipleannouncements multipleanninmonthnotdummy
drop dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6 tdummy name ticker dateannounced multipleannouncementsbytdummy multipleannouncements multipleanninmonthnotdummy
tabmiss cusip
!551,331!
gen tdummy=2
sort cusip year month
save "C:\Basak\Mergers\March2006\Data\CRSPunmatchedfirmsDec19.dta",replace
append using "C:\Basak\Mergers\March2006\Data\mergingfirmssampleDec19.dta"
tabmiss cusip
!563,351=551,331+12,020 cusips!
sort cusip year month
save "C:\Basak\Mergers\March2006\Data\December20COMPUSTATCRSPSDCmerged.dta", replace
desc data1 data2 data6 data8 data14 data18 data20 data21 data22 data24 data30 data31 data36 data37 data38 data44 data46 data51 data54 data60 data61 data69 data90 data101
destroy data1, gen(adminexp) force
destroy data2, gen(netsales) force
destroy data6, gen(taxes) force
destroy data8, gen(incomebefext) force
destroy data21, gen(opincomebefdepr) force
destroy data22, gen(interestexp) force
destroy data24, gen(preferreddiv) force
destroy data30, gen(cogs) force
destroy data31, gen(nonopincome) force
destroy data36, gen(cash) force
destroy data37, gen(receivables) force
destroy data38, gen(inventories) force
destroy data46, gen(accpayable) force
destroy data51, gen(longtermdebt) force
destroy data54, gen(liabilities) force
destroy data60, gen(stockholdersequity) force
destroy data61, gen(sharesoutstanding) force
destroy data69, gen(netincome) force
destroy data90, gen(capex) force
destroy data101, gen(chngNWC) force
rename data14 priceclose
rename data18 sharestraded
rename data20 commondividends
rename data44 assets
drop data101 data90 data69 data61 data60 data54 data51 data46 data38 data37 data36 data31 data30 data24 data22 data21 data8 data6 data2 data1

drop yearquarterind year month quarter
gen year=year(fqenddt)
gen quarter=quarter(fqenddt)
egen yearquarterind=group(year quarter)
tab yearquarterind
tab year quarter if yearquarterind==1 | yearquarterind==123
!123 quarters from 1974/3 to 2005/1!
drop year quarter

bysort cusip yearquarterind: egen numberofcusipsperquarter=count(_n)
tab numberofcusipsperquarter tdummy
!1426 double counts (41 bidders, 31 targets and 1354 nonmerging), 33 triple counts (all nonmerging), 20 four counts (all nonmerging)
5 5 counts (nonmerging)!
bysort cusip yearquarterind tdummy: egen numberofcusipsperquartertdummy=count(_n)
tab numberofcusipsperquartertdummy tdummy
!1332 double counts (all nonmerging), 33 triple counts (all nonmerging), 20 four counts (all nonmerging)
5 5 counts (nonmerging)!
list gvkey cusip fyr fqenddt netsales coname if numberofcusipsperquartertdummy==4, nodisplay
log off
list gvkey cusip fyr fqenddt netsales coname if numberofcusipsperquartertdummy==2, nodisplay
log on
!multiples mainly due to differing gvkeys for same cusip, different subdivisions of the same company!
bysort gvkey yearquarterind: egen numberofgvkeysperquarter=count(_n)
tab numberofgvkeysperquarter tdummy
!1290 double counts, 42 bidders, 31 targets and 1217 nonmerging!
bysort gvkey yearquarterind tdummy: egen numberofgvkeysperquartertdummy=count(_n)
tab numberofgvkeysperquartertdummy tdummy
!!1194 double counts all nonmerging!
log off
list gvkey cusip fyr fqenddt netsales capex coname smbl if numberofgvkeysperquartertdummy==2, nodisplay
log on
!everything including data but the names seem to be same. I need unique gvkeys so I am going to randomly drop one the
doublecounts!
bysort gvkey yearquarterind tdummy: egen flag=min(_n)
drop if _n!=flag
!597 (1194/2) of the double counts deleted. Unique gvkey, tdummy, quarters!
drop numberofcusipsperquartertdummy numberofcusipsperquarter numberofgvkeysperquartertdummy numberofgvkeysperquarter flag
!8134 bidders (more than one announcement possible), 3886 targets (more than one announcement possible), 550,734 no merger firm
quarters!
save "C:\Basak\Mergers\March2006\Data\December20COMPUSTATCRSPSPSDCmerged.dta", replace
log off

! File 2 !

log using "C:\Basak\Mergers\March2006\Output\April142006_1", replace
use "C:\Basak\Mergers\March2006\Data\December20COMPUSTATCRSPSPSDCmerged.dta", clear
save "C:\Basak\Mergers\March2006\Data\April14COMPUSTATCRSPSPSDCmerged.dta", replace

!I need unique gvkey yearquarterind. However I have firms making bids and recieving bids with same gvkey in the same quarter!
bysort yearquarterind gvkey: egen multipleannvgkeyinquarter=count(_n)
!42 bidders and 31 targets, 23 nonmerging!
lst gvkey cusip fyr yearquarterind netsales coname if multipleannngvkeyinquarter==2 & tdummy==2, nodisplay
!Drop the firms which make and receive bids in the same quarter!
drop if multipleannngvkeyinquarter==2
tab tdummy
!8092 bidders, 3855 targets, 550,711 no merger firm quarters!

!Let's look at years!
tab yearquarterind tdummy if yearquarterind<20 | yearquarterind>120
gen year=year(fqenddt)
gen quarter=quarter(fqenddt)
tab year quarter if yearquarterind>122
!1 (1974/3) to 124 (2005/2) no merging-firms in quarters 1-12 and 123-124!
drop if yearquarterind<13 | yearquarterind>122
tab tdummy
!8092 bidders, 3855 targets, 515,209 nonmerging firm quarters!
bysort gvkey tdummy: egen repeatgvkeytdummy=count(_n)
tab repeatgvkeytdummy tdummy
gen countflag=count(_n) if repeatgvkeytdummy>1

tab countflag tdummy
gen uniquegvkeyaidentifier=group(gvkey) if tdummy==0
gen uniquegvkeytidentifier=group(gvkey) if tdummy==1
gen uniquegvkeynidentifier=group(gvkey) if tdummy==2

tab multipleannincusipquarter
!same since we dropped firms that make and recieve bids in the same quarter!
tab multipleanninquarterbytdummy tdummy

!first generate variables that rely on merger history!
!Generate bids made, bids received!
tsset gvkey yearquarterind
for num 1/7: gen multipleannincusipquarterX=LX.multipleannincusipquarter
for num 1/7: replace multipleannincusipquarterX=0 if multipleannincusipquarterX==.
replace multipleannincusipquarter=0 if multipleannincusipquarter==.
gen previousmergers=(multipleannincusipquarter+multipleannincusipquarter1+multipleannincusipquarter2+multipleannincusipquarter3+
multipleannincusipquarter4+multipleannincusipquarter5+multipleannincusipquarter6+multipleannincusipquarter7)
drop multipleannincusipquarter1-multipleannincusipquarter7
tabmiss previousmergers
!2 digit sic industry classification!
gen sic2digit=int(dnum/100)
replace sic2digit=sic2digit*10 if sic2digit<10
!sic 10-99, nothing between 60-69!
bysort sic2digit yearquarterind: egen firmsinindustryq=count(_n)
replace sic2digit=int(sic2digit/10)*10 if firmsinindustryq<5
drop firmsinindustryq
bysort sic2digit yearquarterind: egen firmsinindustryq=count(_n)
tab firmsinindustryq if firmsinindustryq <10
!all industry-quarters have more than 4 firms!
drop firmsinindustryq
sort sic2digit yearquarterind
save "C:\Basak\Mergers\March2006\Data\April14COMPUESTATCRSPSDCmerged.dta", replace
!merger intensity!
gen acquiordummy=0
replace acquiordummy=1 if tdummy==0
gen targetdummy=0
replace targetdummy=1 if tdummy==1
gen mergerdummy=0
replace mergerdummy=1 if acquiordummy==1 | targetdummy==1
bysort sic2digit yearquarterind: egen mergerfirmsinindustry=sum(mergerdummy)
bysort yearquarterind sic2digit: egen firmsinindustry=count(_n)
tab firmsinindustry
tabmiss firmsinindustry
gen mergerintensity=mergerfirmsinindustry/firmsinindustry
tabmiss mergerintensity
keep mergerintensity yearquarterind sic2digit
egen unique=group(sic2digit yearquarterind)
sum unique
! 6039 industries in quarters!
drop unique
bysort sic2digit yearquarterind: egen firmsinindustry=count(_n)
tab firmsinindustry
! max. of 1042 firms in an industry in a quarter!
bysort sic2digit yearquarterind: egen flag=min(_n)
drop if _n~=flag
tabmiss sic2digit
! 6039 obs!
drop flag
tsset sic2digit yearquarterind
for num 1/7: gen mergerintensityX=LX.mergerintensity
tabmiss mergerintensity1-mergerintensity7
gen mergerintensityalt1= mergerintensity+ mergerintensity1 + mergerintensity2+ mergerintensity3+ mergerintensity4+ mergerintensity5+ mergerintensity6+ mergerintensity7
!436 missing!
for num 1/7: replace mergerintensityX=0 if mergerintensityX==.
gen mergerintensityalt2=mergerintensity+ mergerintensity1 + mergerintensity2+ mergerintensity3+ mergerintensity4+ mergerintensity5+ mergerintensity6+ mergerintensity7
!nonemissing!
drop mergerintensity mergerintensity1-mergerintensity7
sort sic2digit yearquarterind
merge sic2digit yearquarterind using "C:\Basak\Mergers\March2006\Data\April14COMPUS TATCRSPSDCmerged.dta"
tab_merge
drop_merge
tabstat mergerintensityalt1 mergerintensityalt2, by(tdummy) stats(mean sd min p1 p5 p10 p25 p50 p75 p90 p95 p99 max n)
columns(statistics) longstub

!generate variables that rely on financial data!
tsset gvkey yearquarterind
!panel variable: gvkey, 1000 to 265008 time variable: yearquarterind, 1 to 123, but with gaps
!generate 2 year sales growth!
for num 1/8: gen netsalesX=LX.netsales
gen salesgrowth2=[(netsales-netsalesX)/netsalesX]*(8/X) if salesgrowth2==.
for num 7/1: replace salesgrowth2=[(netsales-netsalesX)/netsalesX]*(8/X) if salesgrowth2==.
for num 8/2: replace salesgrowth2=[(netsales1-netsalesX)/netsalesX]*(8/(X-1)) if salesgrowth2==.
for num 8/3: replace salesgrowth2=[(netsales2-netsalesX)/netsalesX]*(8/(X-2)) if salesgrowth2==.
for num 8/4: replace salesgrowth2=[(netsales3-netsalesX)/netsalesX]*(8/(X-3)) if salesgrowth2==.
for num 8/5: replace salesgrowth2=[(netsales4-netsalesX)/netsalesX]*(8/(X-4)) if salesgrowth2==.
for num 8/6: replace salesgrowth2=[(netsales5-netsalesX)/netsalesX]*(8/(X-5)) if salesgrowth2==.
for num 8/7: replace salesgrowth2=[(netsales6-netsalesX)/netsalesX]*(8/(X-6)) if salesgrowth2==.
for num 8/8: replace salesgrowth2=\((\text{netsales7-netsalesX})/\text{netsalesX}\)\*\((8/(X-7))\) if salesgrowth2==.
drop netsales1-netsales8
tabmiss salesgrowth2
!generate pricerunup!
tseset gvkey yearquarterind
for num 1/8: gen pricecloseX=LX.priceclose
gen pricerunup2=[(priceclose-priceclose8)/priceclose8] for num 7/1: replace pricerunup2=\((\text{priceclose-pricecloseX})/\text{pricecloseX}\)\*\((8/X)\) if pricerunup2==.
for num 8/2: replace pricerunup2=\((\text{priceclose1-pricecloseX})/\text{pricecloseX}\)\*\((8/(X-1))\) if pricerunup2==.
for num 8/3: replace pricerunup2=\((\text{priceclose2-pricecloseX})/\text{pricecloseX}\)\*\((8/(X-2))\) if pricerunup2==.
for num 8/4: replace pricerunup2=\((\text{priceclose3-pricecloseX})/\text{pricecloseX}\)\*\((8/(X-3))\) if pricerunup2==.
for num 8/5: replace pricerunup2=\((\text{priceclose4-pricecloseX})/\text{pricecloseX}\)\*\((8/(X-4))\) if pricerunup2==.
for num 8/6: replace pricerunup2=\((\text{priceclose5-pricecloseX})/\text{pricecloseX}\)\*\((8/(X-5))\) if pricerunup2==.
for num 8/7: replace pricerunup2=\((\text{priceclose6-pricecloseX})/\text{pricecloseX}\)\*\((8/(X-6))\) if pricerunup2==.
for num 8/8: replace pricerunup2=\((\text{priceclose7-pricecloseX})/\text{pricecloseX}\)\*\((8/(X-7))\) if pricerunup2==.
drop priceclose1-priceclose8
tabmiss pricerunup2
!gen industry sales shock variable!
bysort yearquarterind: egen totalsalesgrowth2=median(salesgrowth2)
bysort sic2digit yearquarterind: egen indsalesgrowth2=median(salesgrowth2)
gen salesshock=abs(indsalesgrowth2-totalsalesgrowth2)
tabmiss salesshock
drop indsalesgrowth2 totalsalesgrowth2
gen salesshock2=salesshock*salesshock
tabmiss salesshock
!gen profitability, cash ratio, log assets!
gen logassets=log(assets)
tabmiss logassets
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tsset gvkey yearquarterind
for num 1/8: gen assetsX=LX.assets
gen changeinassets=((assets-assetsX)/assetsX)*(8/X) if changeinassets==.
for num 7/1: replace changeinassets=((assets1-assetsX)/assetsX)*(8/(X-1)) if changeinassets==.
for num 7/2: replace changeinassets=((assets2-assetsX)/assetsX)*(8/(X-2)) if changeinassets==.
for num 8/3: replace changeinassets=((assets3-assetsX)/assetsX)*(8/(X-3)) if changeinassets==.
for num 8/4: replace changeinassets=((assets4-assetsX)/assetsX)*(8/(X-4)) if changeinassets==.
for num 8/5: replace changeinassets=((assets5-assetsX)/assetsX)*(8/(X-5)) if changeinassets==.
for num 8/6: replace changeinassets=((assets6-assetsX)/assetsX)*(8/(X-6)) if changeinassets==.
for num 8/7: replace changeinassets=((assets7-assetsX)/assetsX)*(8/(X-7)) if changeinassets==.
drop assets1-assets8

for num 1/8: gen cashratio=cash/assets
for num 1/8: gen ROA=incomebefext/assets
!
gen growth-capital access mismatch variables!
bysort sic2digit yearquarterind: egen indsalesgrowth2=median(salesgrowth2)
bysort sic2digit yearquarterind: egen indlongtermdebt=median(longtermdebt/assets)
gen resourcecapitalmismatch=0
replace resourcecapitalmismatch=1 if (longtermdebt/assets>indlongtermdebt & salesgrowth2<indsalesgrowth2) |
                    (longtermdebt/assets<indlongtermdebt & salesgrowth2>indsalesgrowth2)
drop indsalesgrowth2 indlongtermdebt

tabmiss resourcecapitalmismatch ROA cashratio changeinassets
	no missings!
!
fourfirmconcentration!
bysort sic2digit yearquarterind: egen totalindustry sales=sum(netsales)
bysort sic2digit yearquarterind: egen max1=max(netsales) if netsales==.
bysort sic2digit yearquarterind: egen max2=max(netsales) if netsales==. & netsales==max1
bysort sic2digit yearquarterind: egen max3=max(netsales) if netsales-= & netsales-=max1 & netsales-=max2
bysort sic2digit yearquarterind: egen max4=max(netsales) if netsales-= & netsales-=max1 & netsales-=max2 & netsales-=max3
gen fourfinnconcentration=(max1+max2+max3+max4)/totalindustrysales if totalindustrysales-= & max1-= & max2-= & max3-= & max4=-.
replace fourfinnconcentration=(max1+max2+max3)/totalindustrysales if totalindustrysales-= & max1-= & max2-= & max3-= & fourfinnconcentration==.
replace fourfinnconcentration=(max1+max2)/totalindustrysales if totalindustrysales-= & max1-= & max2-= & fourfinnconcentration==.
replace fourfinnconcentration=(max1)/totalindustrysales if totalindustrysales-= & max1-= & fourfinnconcentration==.
drop max1-max4 totalindustrysales
!high information asymmetry variable!
gen MB=priceclose*sharesoutstanding/stockholdersequity
gen shareturnover=sharestraded/sharesoutstanding
bysort sic2digit yearquarterind: egen indMB=median(MB)
bysort sic2digit yearquarterind: egen indshareturnover=median(shareturnover)
gen hMB|shareturnover=0
replace hMB|shareturnover=1 if MB>indMB & shareturnover<indshareturnover
drop indMB indshareturnover
tab hMB|shareturnover
tabmiss hMB|shareturnover shareturnover fourfinnconcentration
tab tdummy
!8092 bidders, 3855 targets, 515,209 nonmerging firm quarters!

!lets look at years!
drop yearquarterind
egen yearquarterind=group(year quarter)
tab year quarter if yearquarterind==1 | yearquarterind==110
!1 (1977/3) to 110 (2004/4)!
tab yearquarterind tdummy if yearquarterind<20 | yearquarterind>105
!until yearquarterind=14, less than bidders and targets in each quarter and in yearquarterind==110, only 9 bidders!
!First 2 years needed for previous mergers calculations hence disregard them. Pool quarters 9-13 into one pool. Pool the 4th quarter of 2004 into 3rd quarter since there are only 9 bidders and no targets!
egen yearquarterindadj=group(year quarter) if yearquarterind>8
!1979/3 to 2004/4, group first 5 quarters and last two quarters together due to data problems!
replace yearquarterindadj=5 if yearquarterindadj==1|yearquarterindadj==2|yearquarterindadj==3 |yearquarterindadj==4
replace yearquarterindadj=101 if yearquarterindadj==102
!1979/3 to 2004/4, group first 5 quarters and last two quarters together due to data problems!
tab yearquarterindadj tdummy if yearquarterindadj<20 | yearquarterindadj>100
save "C:\Basak\Mergers\March2006\Data\April14COMPUESTATCRSPSDCmerged.dta", replace

tabmiss ROA resourcecapitalmismatch salesshock salesshock2 pricerunup shareturnover hMBIshareturnover mergerintensityalt1
mergerintensityalt2 cashratio logassets changeinassets fourfirmconcentration previousmergers


bysort gvkey fiscalyear: egen flag=count(_n)
tab flag
!upto 4 quarters in a gvkey in a fiscal year!
drop flag
tabmiss gvkey
sort gvkey year
save "C:\Basak\Mergers\March2006\Data\April14COMPUESTATCRSPSDCmerged.dta", replace
Bidder and target candidacy models, analysis!

cd C:\Basak\Mergers\March2006\Tables
set more off

!acquirers!
quietly probit acquirordummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIlshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers if yearquarterindadj==5
quietly predict pa if e(sample)
quietly predict xbA if e(sample), xb
quietly outreg using "April14stageldynamicA.txt", replace bracket ctitle("4") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)
quietly mfx compute, at(median resourcecapitalmismatch=0 hMBIlshareturnover=0) nose
quietly matrix bA5=e(Xmfx_dydx)'
quietly matrix medianA5=e(Xmfx_X)'
for XY in num 6/101: quietly probit acquirordummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIlshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers if yearquarterindadj==XY
quietly predict patemp if e(sample)
quietly replace pa=patemp if yearquarterindadj==XY & pa==.
drop patemp
quietly predict xbAtemp if e(sample), xb
quietly replace xbA=xbAtemp if yearquarterindadj==XY & xbA==.
drop xbAtemp
quietly outreg using "April14stageldynamicA.txt", append bracket ctitle("XY") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)
quietly mfx compute, at(median resourcecapitalmismatch=0 hMBIlshareturnover=0) nose
quietly matrix bAXY=e(Xmfx_dydx)
quietly matrix medianAXY=e(Xmfx_X)'

!target!
quietly probit targetdummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIlshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers if yearquarterindadj==5

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quietly predict pt if e(sample)
quietly predict xbT if e(sample), xb
quietly outreg using "April14stage1dynamicT.txt", replace bracket ctitle("4") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)
quietly mfx compute, at(median resourcecapitalmismatch=0 hMBIshareturnover=0) nose
quietly matrix bT5=e(Xmfx_dydx)'
quietly matrix medianT5=e(Xmfx_X)'
for XY in num 6/101: quietly probit targetdummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers if yearquarterindadj==XY\quietly predict pttemp if e(sample)\quietly replace pt=pttemp if yearquarterindadj==XY & pt==.\drop pttemp\quietly predict xbTtemp if e(sample)\quietly replace xbT=xbTtemp if yearquarterindadj==XY & xbT==.\drop xbTTemp\quietly outreg using "April14stage1dynamicT.txt", append bracket ctitle("XY") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)\quietly mfx compute, at(median resourcecapitalmismatch=0 hMBIshareturnover=0) nose\quietly matrix bTXY=e(Xmfx_dydx)\quietly matrix medianTXY=e(Xmfx_X)'

!Tdummy Data!

!8092 bidders, 3855 targets, 515209 nonmerging!
egen flagO=group(gvkey) if tdummy==0
gen flag1=group(gvkey) if tdummy==1
gen flag2=group(gvkey) if tdummy==2
sum flagO flag1 flag2

!3896 unique bidders, 3442 targets, 14105 nonmerging!

drop flagO flag1 flag2

tab tdummy

!2092 bidders, 3855 targets, 515209 nonmerging!

drop flag0 flag1 flag2

save "C:\Basak\Mergers\March2006\Data\April14COMPUSTATCRSPSDCmerged.dta", replace

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drop flag
gen flag=yearquarterindadj-4

!Alt. 2!
!acquiror!
quietly probit acquirordummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensityalt2 cashratio logassets changeinassets fourfirmconcentration previousmergers if yearquarterindadj==5
quietly predict paalt if e(sample)
quietly predict xbAalt if e(sample), xb
quietly outreg using "Apri14stage1dynamicAalt2.txt", replace bracket ctitle("4") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)
quietly mfx compute, at(median resourcecapitalmismatch=0 hMBIshareturnover=0) nose
quietly matrix bAalt5=e(Xmfx_dydx)'
quietly matrix medianAalt25=e(Xmfx_X)'
for XY in num 6/101: quietly probit acquirordummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensityalt2 cashratio logassets changeinassets fourfirmconcentration previousmergers if yearquarterindadj==XY
quietly predict paalttemp if e(sample) quietly replace paalt=paalttemp if yearquarterindadj==XY & paalt==.
drop paalttemp
quietly predict xbAalttemp if e(sample), xb quietly replace xbAalt=xbAalttemp if yearquarterindadj==XY & xbAalt==.
drop xbAalttemp
quietly outreg using "Apri14stage1dynamicAalt2.txt", append bracket ctitle("XY") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2) quietly mfx compute, at(median resourcecapitalmismatch=0 hMBIshareturnover=0) nose quietly matrix bAaltXY=e(Xmfx_dydx)'
quietly matrix medianAalt2XY=e(Xmfx_X)'

!target!
probit targetdummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensityalt2 cashratio logassets changeinassets fourfirmconcentration previousmergers if yearquarterindadj==5
quietly predict ptalt if e(sample)
quietly predict xbTaltalt2 if e(sample), xb
quietly outreg using "April14stage1dynamicTalt2.txt", replace bracket ctitle("4") bdec(4) noaster addstat("Pseudo R squared", 
  e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)
quietly mfx compute, at(median resourcecapitalmismatch=0 hMBIshareturnover=0) nose
quietly matrix bTalt5=e(Xmfx_dydx)'
quietly matrix medianTalt5=e(Xmfx_X)'
for XY in num 6/101: quietly probit targetdummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensityalt2 cashratio logassets changeinassets fourfirmconcentration previousmergers if yearquarterindadj==XY\quietly predict ptalttemp if e(sample)\quietly replace ptalt=ptalttemp if yearquarterindadj==XY & ptalt==\drop ptalttemp\quietly predict xbTaltalt2temp if e(sample), xb\quietly replace xbTaltalt2=xbTaltalt2temp if yearquarterindadj==XY & xbTaltalt2==\drop xbTaltalt2temp\quietly outreg using "April14stage1dynamicTalt2.txt", append bracket 
ctitle("XY") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)\quietly mfx compute, 
at(median resourcecapitalmismatch=0 hMBIshareturnover=0) nose\quietly matrix bTaltXY=e(Xmfx_dydx)\quietly matrix 
medianTaltXY =e(Xmfx_X)'
tabstat pa pt, by(tdummy) stats(mean sd p5 p25 p50 p75 p95 n) columns(statistics) longstub

matrix bA=[bA5]
for num 6/101: matrix bA=[bA, bAX]
matrix bT=[bT5]
for num 6/101: matrix bT=[bT, bTX]
!bt9 not conforming!
matrix list bT9
matrix
bT9temp=[bT9[1,1],bT9[2,1],bT9[3,1],bT9[4,1],bT9[5,1],bT9[6,1],bT9[7,1],0,bT9[8,1],bT9[9,1],bT9[10,1],bT9[11,1],bT9[12,1],bT9 [13,1]]
matrix bT9=bT9temp'

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matrix bT=[bT5]
for num 6/101: matrix bT=[bT, bTX]
!bT22 not conforming!
matrix list bT22
matrix
bT22temp=[bT22[1,1],bT22[2,1],bT22[3,1],bT22[4,1],bT22[5,1],bT22[6,1],bT22[7,1],0,bT22[8,1],bT22[9,1],bT22[10,1],bT22[11,1],
bT22[12,1], bT22[13,1]]
matrix bT22=bT22temp'
matrix bT=[bT5]
for num 6/101: matrix bT=[bT, bTX]

matrix medianA=[medianA5]
matrix
medianT9temp=[medianT9[1,1],medianT9[2,1],medianT9[3,1],medianT9[4,1],medianT9[5,1],medianT9[6,1],medianT9[7,1],0,medianT9[8,1],medianT9[9,1],medianT9[10,1],medianT9[11,1],medianT9[12,1],medianT9[13,1]]
matrix medianT9=medianT9temp'
matrix medianT22temp=[medianT22[1,1],medianT22[2,1],medianT22[3,1],medianT22[4,1],medianT22[5,1],medianT22[6,1],medianT22[7,1],0,medianT22[8,1],medianT22[9,1],medianT22[10,1],medianT22[11,1],medianT22[12,1], medianT22[13,1]]
matrix medianT22=medianT22temp'
matrix medianT=[medianT5]
for num 6/101: matrix medianT=[medianT, medianTX]
drop if tdummy==2
keep cusip gvkey dateannounced1
svmat bA, name(aperiod)
svmat bT, name(temps)
svmat medianA, name(medianaperiod)
svmat medianT, name(medianTperiod)

keep aperiod1-aperiod97 tperiod1-tperiod97 medianaperiod1-medianaperiod97 mediantperiod1-mediantperiod97

save "C:\Basak\Mergers\March2006\Data\April14marginalcoefficients.dta", replace

outsheet aperiod1-aperiod97 tperiod1-tperiod97 using "C:\Basak\Mergers\March2006\Data\April14marginalcoefficients.txt", replace
outsheet medianaperiod1-medianaperiod97 mediantperiod1-mediantperiod97 using "C:\Basak\Mergers\March2006\Data\April14marginalcoefficients1.txt", replace

!File 3!

!transpose the data, create period variable, name the variables in excel!
insheet using C: \Basak\Mergers\March2006\Data\April14marginalcoefficients.txt, clear
rename v1 tdummy
rename v2 period
rename v3 ROA
rename v4 resourcecapitalmismatch
rename v5 salesshock
rename v6 salesshock2
rename v7 salesgrowth2
rename v8 pricerunup
rename v9 shareturnover
rename v10 hMBIshareturnover
rename v11 mergerintensity
rename v12 cashratio
rename v13 logassets
rename v14 changeinassets
dename v15 fourfirmconcentration
dename v16 previousmergers
for any ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover
mergerintensity cashratio logassets changeinassets fourfirmconcentration previousmergers: replace X=. if X==0
tabstat ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover
mergerintensity cashratio logassets changeinassets fourfirmconcentration previousmergers if tdummy==0, stats(mean sd p25 p50 p75 n) columns(statistics) longstub
tabstat ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover
mergerintensity cashratio logassets changeinassets fourfirmconcentration previousmergers if tdummy==1, stats(mean sd p25 p50 p75 n) columns(statistics) longstub
for any ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover
mergerintensity cashratio logassets changeinassets fourfirmconcentration previousmergers: ttest X=0 if tdummy==0
destring period, replace force
sort tdummy period
save "C:\Basak\Mergers\March2006\Data\April14marginalcoefficients.dta", replace
insheet using C:\Basak\Mergers\March2006\Data\April14marginalcoefficients1.txt, clear
rename v1 tdummy
dename v2 period
dename v3 medianROA
dename v4 medianresourcecapitalmismatch
dename v5 mediansalesshock
dename v6 mediansalesshock2
dename v7 mediansalesgrowth2
dename v8 medianpricerunup
dename v9 medianshareturnover
rename v10 medianhMBlshareturnover
rename v11 medianmergerintensity
rename v12 medianceashratio
rename v13 medianlogassets
rename v14 medianchangeinassets
rename v15 medianfourfirmconcentration
rename v16 medianpreviousmergers
for any medianROA medianresourcecapitalmismatch mediansalesshock mediansalesshock2 mediansalesgrowth2 medianpricerunup
medianshareturnover medianhMBlshareturnover medianmergerintensity medianceashratio medianlogassets medianchangeinassets
medianfourfirmconcentration medianpreviousmergers: replace X=. if X==1000000
sort tdummy period
merge tdummy period using "C:\Basak\Mergers\March2006\Data\April14marginalcoefficients.dta"
tab _merge
drop _merge
!paste R2 and likelihood test from April14stage1dynamicA and T!
rename var31 R2
rename var32 X2
tabstat R2 X2, stats(mean sd p25 p50 p75 n) columns(statistics) longstub by(tdummy)

gen str10 testtype="main"
rename period quarter
for any medianROA medianresourcecapitalmismatch mediansalesshock mediansalesshock2 mediansalesgrowth2 medianpricerunup
medianshareturnover medianhMBlshareturnover medianmergerintensity medianceashratio medianlogassets medianchangeinassets
medianfourfirmconcentration medianpreviousmergers: rename X X0
rename medianROAO ROAO
rename medianresourcecapitalmismatch0 resourcecapitalmismatch0
rename mediansalesshock0 salesshock0
rename mediansalesshock20 salesshock20
rename mediansalesgrowth20 salesgrowth20 
rename medianpricerunup0 pricerunup0 
rename mediansharetumover0 sharetumover0 
rename medianhMBLshareturnover0 hMBLshareturnover0 
rename medianmergerintensity0 mergerintensity0 
rename mediancashratio0 cashratio0 
rename medianlogassets0 logassets0 
rename medianchangeinassets0 changeinassets0 
rename medianfourfirmconcentration0 fourfirmconcentration0 
rename medianpreviousmergers0 previousmergers0 
for any ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup sharetumover hMBLshareturnover mergerintensity cashratio logassets changeinassets fourfirmconcentration previousmergers:rename X X1 
reshape long ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup hMBLshareturnover mergerintensity cashratio logassets changeinassets fourfirmconcentration previousmergers sharetumover, i(tdummy quarter) j(coefficientormedian) 
gen str15 coefficientormedian1="coefficient" if coefficientormedian==1 
replace coefficientormedian1="median" if coefficientormedian==0 
drop coefficientormedian 
rename coefficientormedian1 coefficientormedian 
rename previousmergers previousmergers1 
rename hMBLshareturnover hMBLshareturnover 
rename mergerintensity mergerintensityalt1 
save "C:\Basak\Mergers\March2006\Data\April14marginalcoefficients.dta", replace 

tabstat ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup sharetumover hMBLshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 if tdummy==0 & coefficientormedian=="coefficient", stats(mean sd p25 p50 p75 n) columns(statistics) longstub
tabstat ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 if tdummy==1 & coefficientormedian="coefficient", stats(mean sd p25 p50 p75 n) columns(statistics) longstub
for any ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1: ttest X=0 if tdummy==0 & coefficientormedian="coefficient"
for any ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1: ttest X=0 if tdummy==1 & coefficientormedian="coefficient"

save "C:\Basak\Mergers\March2006\Data\April14marginalcoefficients.dta", replace
append using "C:\Basak\Mergers\March2006\Data\April30marginalcoefficientsrob1.dta"
append using "C:\Basak\Mergers\March2006\Data\April30marginalcoefficientsrob2.dta"
save "C:\Basak\Mergers\March2006\Data\may3allmarginalcoefficients.dta", replace

log close

! Robustness, STATIONARITY OF PARAMETERS, Section 7.1.4! 

use "C:\Basak\Mergers\March2006\Data\April14marginalcoefficients.dta", clear

gen post92dummy=1 if quarter>48
replace post92dummy=0 if quarter<49
tab post92dummy coefficientormedian if tdummy==0
tab post92dummy coefficientormedian if tdummy==1
tabstat ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBlshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 if tdummy==0 & coefficientormedian="coefficient", by(post92dummy) stats(mean sd p25 p50 p75 n) columns(statistics) longstub
matrix z=0
matrix p=0
matrix chi=0
for any ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBlshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 if tdummy==0 & coefficientormedian="coefficient", by(post92dummy) matrix z=(z,r(z)) ksmirnov X if tdummy==0 & coefficientormedian="coefficient", by(post92dummy) matrix p=(p, r(p)) kwallis X if tdummy==0 & coefficientormedian="coefficient", by(post92dummy) matrix chi=(chi, r(chi2_adj))
matrix final=(z', p', chi')
matrix list final

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use "C:\Basak\Mergers\March2006\Data\April14COMPUSTATCRSPSDCmerged.dta", clear

gen flag=yearquarterindadj-4
gen post92dummy=0 if flag<49
replace post92dummy=1 if flag>48
for any ROA resourcecapitalmismatch saleshock saleshock2 salesgrowth2 pricerunup2 shareturnover hMBLshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers: gen Xpost92=X*post92dummy

probit acquirordummy post92dummy ROA resourcecapitalmismatch saleshock saleshock2 salesgrowth2 pricerunup2 shareturnover hMBLshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers: ROApost92 resourcecapitalmismatchpost92 saleshockpost92 saleshock2post92 salesgrowth2post92 pricerunup2post92 shareturnoverpost92 hMBLshareturnoverpost92 mergerintensityalt1post92 cashratio_post92 logassetspost92 changeinassetspost92 fourfirmconcentrationpost92 previousmergerspost92,cluster(gvkey)
test ROApost92=0
for any resourcecapitalmismatch saleshock saleshock2 salesgrowth2 pricerunup2 shareturnover hMBLshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers: test Xpost92=0, accum matrix p=0
for any ROA resourcecapitalmismatch saleshock saleshock2 salesgrowth2 pricerunup2 shareturnover hMBLshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers: test X+Xpost92=0\matrix p=(p, r(p))

probit targetdummy post92dummy ROA resourcecapitalmismatch saleshock saleshock2 salesgrowth2 pricerunup2 shareturnover hMBLshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers: ROApost92 resourcecapitalmismatchpost92 saleshockpost92 saleshock2post92 salesgrowth2post92 pricerunup2post92 shareturnoverpost92 hMBLshareturnoverpost92 mergerintensityalt1post92 cashratio_post92 logassetspost92 changeinassetspost92 fourfirmconcentrationpost92 previousmergerspost92, cluster(gvkey)
test ROApost92=0
for any resourcecapitalmismatch saleshock saleshock2 salesgrowth2 pricerunup2 shareturnover hMBLshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers: test Xpost92=0, accum
matrix p=0
for any ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup2 shareturnover hMBlshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers: test X+Xpost92=0\matrix p=(p, r(p))

!File 4!

log using C:\Basak\Mergers\March2006\Output\april20out.smcl, replace
use "C:\Basak\Mergers\March2006\Data\April14COMPUSTATCRSPSDCmerged.dta", clear

drop if tdummy==2

!8092 bidders and 3855 targets!
tab tdummy if pa-=.
!7559 bidders with pa!
tab tdummy if pt-=.
!3564 targets with pt!
tab multipleanninquarterbytdummy multipleannincusipquarter
!11,727 single, 212 double, 7 triple, 1 four!

!put the data into long version, quarters to dates!
reshape long dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6 dateannounced multipleannouncementsbytdummy multipleannouncements, i(uniquecusipquartertdummyid) j(announcementmonthrank)
tabmiss dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6
tabmiss dealnumber1
!12,174= 11,727+(212*2)+(7*3)+(1*4), actual is 12,174 2 missing !
tab multipleannincusipquarter
!problem doubles it is 422 instead of 424!
we are going to reshape using gvkey, so we need gvkey double counts!

```
tab multipleannngvkeyinquarter
!all single!
drop multipleannngvkeyinquarter
bysort gvkey yearquarterind: egen multipleannngvkeyinquarter=count(_n)
tab multipleannngvkeyinquarter
!420 doubles!
tab multipleannngvkeyinquarter multipleannincusipquarter
list gvkey dateannounced dealnumber1 dealnumber2 yearquarterindadj if multipleannngvkeyinquarter==1 & multipleannincusipquarter==2
!2 problematic deals!
list gvkey dateannounced dealnumber1 dealnumber2 yearquarterind yearquarterindadj multipleannngvkeyinquarter multipleannincusipquarter if gvkey==129635, nodisplay
list gvkey dateannounced dealnumber1 dealnumber2 yearquarterind yearquarterindadj multipleannngvkeyinquarter multipleannincusipquarter if gvkey==5555, nodisplay
!both deals single announcements, the others must have been not matched!
```

```
tab tdummy
!12,174 obs, 8266 bidders and 3908 targets!
tab tdummy if pa-=.
!7724 bidders with pa!
tab tdummy if pt-=.
!3613 targets with pt!
!count how many announcements in one day!
tab multipleannouncements
!12,028 single announcements, 134 double ann., 8 triple ann. 3 four ann., 1 6 ann.
!For now, we are going to exclude multiple announcements in the analysis!
sort dateannounced cusip tdummy drop uniquecusipquartertdummyid
egen uniquecusipquartertdummyid=group(yearquarterind tdummy gvkey)
sum uniquecusipquartertdummyid
!12,174 obs, 11947 unique!
sort uniquecusipquartertdummyid
save "C:\Basak\Mergers\March2006\Data\April20secondstage.dta", replace

!we need to obtain CAR from EVENTUS. This is to obtain the input file to EVENTUS!
keep dateannounced cusip
gen year=year(dateannounced)
gen month=month(dateannounced)
gen day=day(dateannounced)
gen str2 months=string(month)
gen length=length(months)
replace months="0"+months if length==1
drop length
gen str2 days=string(day)
gen length=length(days)
replace days="0"+days if length==1
drop length
gen str4 years=string(year)
gen str8 date=years+months+days
gen length=length(cusip)
replace cusip="000"+cusip if length==3
replace cusip="00"+cusip if length==4
replace cusip="0"+cusip if length==5
replace cusip=cusip+"10"
outsheet cusip date using C:\Basak\Mergers\March2006\Data\Eventus.txt, replace nonames noquote
!input this file into EVENTUS database, output is a SAS file which then I convert into a txt file!
tabmiss cusip
!12,174 bidders and targets!

use "C:\Basak\Mergers\March2006\Data\April20secondstage.dta", clear
gen year1=year(dateannounced)
gen month1=month(dateannounced)
gen day1=day(dateannounced)
gen str2 months=string(month1)
gen length=length(months)
replace months="0"+months if length==1
drop length
gen str2 days=string(day1)
gen length=length(days)
replace days="0"+days if length==1
drop length
gen str4 years=string(year1)
gen str8 eventdat=years+months+days
drop year1 month1 day1 years months days
destring eventdat, replace force
sort eventdat cusip
save "C:\Basak\Mergers\March2006\Data\April20secondstage.dta", replace

insheet using "C:\Basak\Mergers\March2006\Data\EventusOutApril202006.txt", clear
tabmiss cusip
!11,325 bidders and targets, 12174-11325=849 missing!
rename cusip cusip8
gen str6 cusip=substr(cusip8,1,6)
drop cusip8
sort eventdat cusip
merge eventdat cusip using "C:\Basak\Mergers\March2006\Data\April20secondstage.dta"

tab _merge
tab _merge tdummy
!97 unmatched from EVENTUS, 946 of which are bidders and targets from CRSP-SDC, 11,228 matched!
!11,228+97=11,325, 11,228+946=12,174 exact from COMPUSTAT/SDC data!
drop if _merge==1
drop_merge

sort permno eventdat

replace flag=0 if flag==.
bysort flag: tabstat carwindow1 carwindow2 carwindow3, by(tdummy) statistics(mean sd p25 p50 p75 n) columns(statistics) longstub
for any carwindow1 carwindow2 carwindow3: ranksum X if tdummy==0, by(flag)
for any carwindow1 carwindow2 carwindow3: ranksum X if tdummy==1, by(flag)
save "C:\Basak\Mergers\March2006\Data\April20secondstage.dta", replace

!12,174 nonmissing deals!
tab multipleannouncements
!doubles 134, triples 8, fours 3, sixes 1!
!reshape such that separate dealnumbers for dates that have more than one announcement!
egen uniquegvkeydatetdummyid=group(gvkey dateannounced tdummy)
sum uniquegvkeydatetdummyid
!12,174 unique ids!
drop uniquegvkeydatetdummyid
reshape long dealnumber, i(gvkey dateannounced tdummy) j(announcementrank)
Number of obs. 12174 -> 73044, Number of variables 126 ->122, j variable (6 values) -> announcementrank!
tabmiss dealnumber
60706 missing!
drop if dealnumber==.
tab tdummy
8406 bidders and 3932 targets total 12338!
Before was 8266 bidders and 3908 targets total 12,174. 12,338=12,174+134+16+9+5 EXACT!
sort permno eventdat
Descriptive statistics!
gen flagmultipleann=0
replace flagmultipleann=1 if multipleannouncements>1
bysort tdummy: tabstat carwindow1 carwindow2 carwindow3, statistics(mean sd p25 p50 p75 n) by(flagmultipleann) longstub columns(statistics)
sort dealnumber tdummy
save "C:\Basak\Mergers\March2006\Data\April20secondstage.dta", replace

!EXECOMP, IRRC, CRSP checks refer to previous do file!

insheet using "C:\Basak\Mergers\March2006\Data\Dec122005outputSDC.txt", clear
tabmiss dealnumber dateannounced
drop if dateannounced==""
tabmiss dealnumber dateannounced
18,325 deals!
gen str1 onedigitsica=substr(acquirorprimarysic,1,1)
gen str1 onedigitsict=substr(targetprimarysic,1,1)
drop if onedigitsica=="6"
drop if onedigitsict=="6"
drop onedigitsict onedigitsica
tabmiss dealnumber dateannounced
!18272 deals!
gen dateannounced1= date(dateannounced, "mdy")
format dateannounced1 %dN/D/Y
gen dateeffective1= date(dateeffective, "mdy")
format dateeffective1 %dN/D/Y
gen datewithdrawn1= date(datewithdrawn, "mdy")
format datewithdrawn1 %dN/D/Y
drop dateannounced datewithdrawn dateeffective
rename dateannounced1 dateannounced
rename dateeffective1 dateeffective
rename datewithdrawn1 datewithdrawn
gen sameacquirortargetcusip= match(acquirorcusip,targetcusip)
tab sameacquirortargetcusip
!check if acquiror and target cusip same, 41 with same!
list targetname acquiromame dealnumber if sameacquirortargetcusip==1
!checked names, acquiror and target names and cusips same, hence drop these deals!
drop if sameacquirortargetcusip==1
drop sameacquirortargetcusip
tabmiss dealnumber
!18,231 deals!
bysort acquirorcusip dateannounced: egen multipleacquirorannouncements=count(_n)
bysort targetcusip dateannounced: egen multipletargetannouncements=count(_n)
tab multipleacquirorannouncements
!multiple acquiror announcements 249 firms with 2 ann. (249*2=498 double counts), 22 with 3, 6 with 4, 3 with 5, 2 with 6!
tab multipletargetannouncements
!multiple target announcements 54 firms with 2 (54*2=108 multiples), 1 with 3, 3 with 4!
drop multipleacquirorannouncements multipletargetannouncements
gen sameindustry=match( acquirorprimarysiccode, targetprimarysiccode)
tab sameindustry
gen mktpowerincrease=

!make a long list of acquirers and targets with identifier tdummy=0 if acquirer and tdummy=1 if target!
rename targetname name1
rename acquirorname name0
rename acquirorcusip cusip0
rename targetcusip cusip1
rename acqtickersymbol ticker0
rename targettickersymbol ticker1
rename acquirorprimarysiccode siccode0
rename targetprimarysiccode siccode1
rename targetpublicstatus publicstatus1
rename acqpublicstatus publicstatus0
rename acqclosingprice1 daypriortoann price1 daypriortoann0
rename targetclosingprice1 daypriortoann price1 daypriortoann1
rename acqclosingprice1 wkpriortoann price1 wkpriortoann0
rename targetclosingprice1 wkpriortoann price1 wkpriortoann1
rename acquirorclosingprice1 dayafterann price1 dayafterann0
rename targetclosingprice1 dayafterann price1 dayafterann1
rename acquirorclosingprice1 weekafterann price1 weekafterann0
rename targetclosingprice1 weekafterann price1 weekafterann1
rename acquirorclosingpriceatann priceatann0
rename targetclosingpriceatann date priceatann1
reshape long name cusip ticker siccode publicstatus price1dayprioroann price1wkpriortoann price1dayafterann price1weekafterann priceatann, i(dealnumber) j(tdummy)
tabmiss dealnumber

tab tdummy
!36,462 bidders and targets; 18231 each!
sort dealnumber tdummy
merge dealnumber tdummy using "C:\Basak\Mergers\March2006\Data\April20secondstage.dta"
tab _merge
!24,124 1 (master unmatched) and 12338 matched, EXACT!
drop if _merge==1
drop _merge
tab multipleannouncements
!We now have 11,787 single ann. 268 double ann., 24 triple ann. 12 four ann., 4 6 ann. exact!
save "C:\Basak\Mergers\March2006\Data\April20secondstage.dta", replace

!VARIABLES!

cd C:\Basak\Mergers\March2006\Tables

gen defensedummy=0
replace defensedummy=1 if defense=="Yes"
gen HotileorUnsolAttitude=0
replace HotileorUnsolAttitude=1 if attitude=="Hostile" | attitude=="Unsolic."
gen targetbankruptdummy=0
replace targetbankruptdummy=1 if targetbankrupt=="Yes"
gen allequity=0
replace allequity=1 if ofstock==100
!FIT!
gen publicdummy=0
replace publicdummy=1 if publicstatus=="Public"
gen samestate=0
replace samestate=1 if intrastate=="Yes"
sort dealnumber
save "C:\Basak\Mergers\March2006\Data\April20secondstage.dta", replace

gen lambdaA=normden(-pa)/(1-norm(-pa))
gen lambdaT=normden(-pt)/(1-norm(-pt))

! Univariate Analysis !
egen percent25a=pctile(pa) if multipleannouncements==1 & tdummy==0,p(25)
gen anticipateda25=0 if pa<percent25a & pa==. & multipleannouncements==1 & tdummy==0
replace anticipateda25=1 if pa>percent25a & pa==. & multipleannouncements==1 & tdummy==0
gen medianpa=median(pa) if tdummy==0 & multipleannouncements==1
egen anticipateda50=0 if pa<medianpa & pa==. & multipleannouncements==1 & tdummy==0
replace anticipateda50=1 if pa>medianpa & pa==. & multipleannouncements==1 & tdummy==0
drop medianpa percent25a percent75a
egen percent25t=pctile(pt) if tdummy==1 & multipleannouncements==1, p(25)
gen anticipatedt25=0 if pt<percent25t & pt==. & tdummy==1 & multipleannouncements==1
replace anticipatedt25=1 if pt>percent25t & pt==. & tdummy==1 & multipleannouncements==1
gen medianpt=median(pt) if tdummy==1 & multipleannouncements==1
egen anticipatedt50=0 if pt<medianpt & pt==. & tdummy==1 & multipleannouncements==1
replace anticipatedt50=1 if pt>medianpt & pt==. & tdummy==1 & multipleannouncements==1
drop medianpt percent25t percent75t
tabstat carwindow1 carwindow2 carwindow4 carwindow5 if multipleannouncements==1 & tdummy==0, stats(mean sd n) columns(statistics) longstub by(anticipateda25)
tabstat carwindow1 carwindow2 carwindow4 carwindow5 if multipleannouncements==1 & tdummy==0, stats(mean sd n) columns(statistics) longstub by(anticipateda50)
tabstat carwindow1 carwindow2 carwindow4 carwindow5 if multipleannouncements==1 & tdummy==0, stats(p1 p5 p10 p25 p50 p75 p90 p95 p99) columns(statistics) longstub by(anticipateda25)

for any carwindow1 carwindow2 carwindow4 carwindow5: gen absX=abs(X)
matrix t=0
for any abscarwindow1 abscarwindow2 abscarwindow4 abscarwindow5: ttest X if multipleannouncements==1 & tdummy==0, by(anticipateda25)
matrix t=(t,r(t))
matrix t1=t'
matrix list t1
matrix t=0
for any carwindow1 carwindow2 carwindow4 carwindow5: ttest X if multipleannouncements==1 & tdummy==0, by(anticipateda25)
matrix t=(t,r(t))
matrix list t
matrix f=0
for any carwindow1 carwindow2 carwindow4 carwindow5: sdtest X if multipleannouncements==1 & tdummy==0, by(anticipateda25)
matrix f=(f,r(p))
matrix list f
matrix z=0
for any carwindow1 carwindow2 carwindow4 carwindow5: ranksum X if multipleannouncements==1 & tdummy==0, by(anticipateda25)
matrix z=(z,r(z))
matrix z=z'
matrix p=0
for any carwindow1 carwindow2 carwindow4 carwindow5: ksmirnov X if multipleannouncements==1 & tdummy==0, by(anticipateda25)
  matrix p=(p, r(p))
  matrix p=p'
  matrix chi=0
for any carwindow1 carwindow2 carwindow4 carwindow5: kwallis X if multipleannouncements==1 & tdummy==0, by(anticipateda25)
  matrix chi=(chi, r(chi2_adj))
  matrix chi=chi'
  matrix final=(z, p, chi)
  matrix list final
  matrix t=0
for any abscarwindow1 abscarwindow2 abscarwindow4 abscarwindow5: ttest X if multipleannouncements==1 & tdummy==0, by(anticipateda50)
  matrix t=(t, r(t))
  matrix t1=t'
  matrix list t1
  matrix t=0
for any carwindow1 carwindow2 carwindow4 carwindow5: ttest X if multipleannouncements==1 & tdummy==0, by(anticipateda50)
  matrix t=(t, r(t))
  matrix list t
  matrix f=0
for any carwindow1 carwindow2 carwindow4 carwindow5: sdtest X if multipleannouncements==1 & tdummy==0, by(anticipateda50)
  matrix f=(f, r(p))
  matrix list f

  tabstat carwindow1 carwindow2 carwindow4 carwindow5 if multipleannouncements==1 & tdummy==1, stats(mean sd n)
  columns(statistics) longstub by(anticipated25)
  tabstat carwindow1 carwindow2 carwindow4 carwindow5 if multipleannouncements==1 & tdummy==1, stats(mean sd n)
  columns(statistics) longstub by(anticipated50)
tabstat carwindow1 carwindow2 carwindow4 carwindow5 if multipleannouncements==1 & tdummy==1, stats(p1 p5 p10 p25 p50 p75 p90 p95 p99) columns(statistics) long stub by(anticipatedt25)

matrix t=0
for any abscarwindow1 abscarwindow2 abscarwindow4 abscarwindow5: ttest X if multipleannouncements==1 & tdummy==1, by(anticipatedt25)
matrix t=(t, r(t))
matrix t=t'
matrix list t

matrix f=0
for any carwindow1 carwindow2 carwindow4 carwindow5: sdtest X if multipleannouncements==1 & tdummy==1, by(anticipatedt25)
matrix f=(f, r(f))
matrix f=f'
matrix list f

matrix p=0
for any carwindow1 carwindow2 carwindow4 carwindow5: ksmimov X if multipleannouncements==1 & tdummy==1, by(anticipatedt25)
matrix p=(p, r(p))
matrix p=p'
matrix chi=0
for any carwindow1 carwindow2 carwindow4 carwindow5: kwallis X if multipleannouncements==1 & tdummy==1, by(anticipatedt25)\n    matrix chi=(chi, r(chi2_adj))
    matrix chi=chi'
    matrix final=(z, p, chi)
    matrix list final
    matrix t=0
for any abscarwindow1 abscarwindow2 abscarwindow4 abscarwindow5: ttest X if multipleannouncements==1 & tdummy==1, by(anticipatedt50)\n    matrix t=(t,r(t))
    matrix t=t'
    matrix list t
    matrix t=0
for any carwindow1 carwindow2 carwindow4 carwindow5: ttest X if multipleannouncements==1 & tdummy==1, by(anticipatedt50)\n    matrix t=(t,r(t))
    matrix t=t'
    matrix list t
    matrix f=0
for any carwindow1 carwindow2 carwindow4 carwindow5: sdtest X if multipleannouncements==1 & tdummy==1, by(anticipatedt50)\n    matrix f=(f,r(p))
    matrix f=f'
    matrix list f
    matrix z=0
for any carwindow1 carwindow2 carwindow4 carwindow5: ranksum X if multipleannouncements==1 & tdummy==1, by(anticipatedt50)\n    matrix z=(z,r(z))
    matrix z=z'
    matrix p=0
for any carwindow1 carwindow2 carwindow4 carwindow5: ksmirnov X if multipleannouncements==1 & tdummy==1, by(anticipatedt50)\n    matrix p=(p, r(p))
    matrix p=p'
matrix chi=0
for any carwindow1 carwindow2 carwindow4 carwindow5: kwallis X if multipleannouncements==1 & tdummy==1,
by(anticipatedt50)\matrix chi=(chi, r(chi2_adj))
matrix chi=chi'
matrix final=(z, p, chi)
matrix list final

!For data purposes!
tab tdummy
!8406 bidders, and 3982 targets!
tabmiss carwindow1 carwindow2 carwindow4 carwindow5 if tdummy==0
tabmiss carwindow1 carwindow2 carwindow4 carwindow5 if tdummy==1

! Data Restrictions!

!CRSP-COMPUSTAT coverage!
replace flag=1 if flag==.
tabstat carwindow1 carwindow2 carwindow4 carwindow5 if tdummy==0 & multipleannouncements==1, statistics(mean sd n)
columns(statistics) by(flag) longstub
tabstat carwindow1 carwindow2 carwindow4 carwindow5 if tdummy==1 & multipleannouncements==1, statistics(mean sd n)
columns(statistics) by(flag) longstub
matrix t=0
for any carwindow1 carwindow2 carwindow4 carwindow5: ttest X if multipleannouncements==1 & tdummy==0, by(flag)\matrix
t=(t,r(t))
matrix list t
matrix t=0
for any carwindow1 carwindow2 carwindow4 carwindow5: ttest X if multipleannouncements==1 & tdummy==1, by(flag)
matrix t=(t,r(t))
matrix list t
matrix t=0
matrix z=0
matrix p=0
matrix chi=0
for any carwindow1 carwindow2 carwindow4 carwindow5: ttest X if multipleannouncements==1 & tdummy==0, by(flag)
matrix t=(t,r(t))
ranks X if multipleannouncements==1 & tdummy==0, by(flag)
matrix z=(z,r(z))
smirnov X if multipleannouncements==1 & tdummy==0, by(flag)
matrix p=(p, r(p))
kwallis X if multipleannouncements==1 & tdummy==0, by(flag)
matrix chi=(chi, r(chi2_adj))
matrix final=(t', z', p', chi')
matrix list final
matrix t=0
matrix z=0
matrix p=0
matrix chi=0
for any carwindow1 carwindow2 carwindow4 carwindow5: ttest X if multipleannouncements==1 & tdummy==1, by(flag)
matrix t=(t,r(t))
ranks X if multipleannouncements==1 & tdummy==1, by(flag)
matrix z=(z,r(z))
smirnov X if multipleannouncements==1 & tdummy==1, by(flag)
matrix p=(p, r(p))
kwallis X if multipleannouncements==1 & tdummy==1, by(flag)
matrix chi=(chi, r(chi2_adj))
matrix final=(t', z', p', chi')
matrix list final
drop flag
! Multivariate Analysis!
!
!regressions with industry and year dummies!
cd C:\Basak\Mergers\March2006\Tables
!acquirers!
drop year
tab yearann if yearann>1980, gen (yeardummy)
tab sic2digit, gen(inddummy)
regress carwindow2 lambdaA allequity inddummy1-inddummy57 yeardummy2-yeardummy24 if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity using "april20regressionsacq.txt", replace bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy inddummy1-inddummy57 yeardummy2-yeardummy24 if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using "april20regressionsacq.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity sameindustry samestate publicdummy inddummy1-inddummy57 yeardummy2-yeardummy24 if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity sameindustry samestate publicdummy using "april20regressionsacq.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy inddummy1-inddummy57 yeardummy2-yeardummy24 if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "april20regressionsacq.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy inddummy1-inddummy57 yeardummy2-yeardummy24 if (e(sample)
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "april20regressionsacq.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
tabstat lambdaA if (e(sample), stats(mean sd p25 p50 p75 n)
\l \economic significance .1320974(sd)*3.66 to 3.83 = 48 to 51 basis points!
regress carwindow2 lambdaT allequity inddummy1-inddummy57 yeardummy2-yeardummy24 if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity using "april20regressionstar.txt", replace bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy inddummy1-inddummy57 yeardummy2-yeardummy24 if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using "april20regressionstar.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity sameindustry samestate publicdummy inddummy1-inddummy57 yeardummy2-yeardummy24 if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity sameindustry samestate publicdummy using "april20regressionstar.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy inddummy1-inddummy57 yeardummy2-yeardummy24 if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "april20regressionstar.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy inddummy1-inddummy57 yeardummy2-yeardummy24 if e(sample)
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "april20regressionstar.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
tabstat lambdaT if e(sample), stats(mean sd p25 p50 p75 n)

!regressions with no industry & year dummies!
cd C:\Basak\Mergers\March2006\Tables
!acquirers!
regress carwindow2 lambdaA allequity if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity using "april20regressionsacq_nodummies.txt", replace bracket rdec(4) bdec(4) 3aster tdec(2)
outreg lambdaA allequity using "april20regressionsacq_nodummies1.txt", replace bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using "april20regressionsacq_nodummies.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using "april20regressionsacq_nodummies1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity sameindustry samestate publicdummy if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity sameindustry samestate publicdummy using "april20regressionsacq_nodummies.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
outreg lambdaA allequity sameindustry samestate publicdummy using "april20regressionsacq_nodummies1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "april20regressionsacq_nodummies.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "april20regressionsacq_nodummies1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if e(sample)
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "april20regressionsacq_nodummies.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "april20regressionsacq_nodummies1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
tabstat lambdaA if e(sample), stats(mean sd p25 p50 p75 n)

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!targets!

```
regress carwindow2 lambdaT allequity if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity using "april20regressionstar_nodummies.txt", replace bracket rdec(4) bdec(4) 3aster tdec(2)
outreg lambdaT allequity using "april20regressionstar_nodummies1.txt", replace bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using "april20regressionstar_nodummies.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using "april20regressionstar_nodummies1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity sameindustry samestate publicdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity sameindustry samestate publicdummy using "april20regressionstar_nodummies.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
outreg lambdaT allequity sameindustry samestate publicdummy using "april20regressionstar_nodummies1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "april20regressionstar_nodummies.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "april20regressionstar_nodummies1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if e(sample)
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "april20regressionstar_nodummies.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
```
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "april20regressionstar_nodummies1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
tabstat lambdaT if e(sample), stats(mean sd p25 p50 p75 n)

!Sample characteristics!

gencodeflag=0
regress carwindow2 lambdaallequity if acquirordummy==1 & multipleannouncements==1
replace sampleflag=1 if e(sample)
regress carwindow2 lambdaallequity if targetdummy==1 & multipleannouncements==1
replace sampleflag=1 if e(sample)
tab tdummy sampleflag

!5771 bidders and 2829 targets with data!
bysort cusip: egen numberofbidders=count(_n) if sampleflag==1 & tdummy==0
bysort cusip: egen numberoftargets=count(_n) if sampleflag==1 & tdummy==1
	tab numberofbidders
1-1504, 2-1142/2=571, 3-834/3=278, 4-576/4=144, 5-325/5=65, 6-354/6=59, 7-175/7=25, 8-224/8=28, 9-144/9=16, 10-40/10=4, 11-132/11=12, 12-72/12=6, 13-39/13=3, 14-36/14=3, 15-5/15=1, 16-19/19=1, 20-40/20=2, 33-33/33=1 TOTAL=
	tab numberoftargets
1-2, 2-472/2=236, 3-117/3=39, 4-8/4=2, 5-15/5=3, TOTAL=2,497!

droptofnumberofbidders numberoftargets
bysort dealnumber: egen numberofdeals=count(_n) if sampleflag==1
	tab numberofdeals
!6202 single deals, 2398 doubles total 8600, TOTAL=6202+2398=7401!
!FOR TABLE 3!
tabstat carwindow2 if sampleflag, by(tdummy) statistics(mean sd p25 p50 p75 n)
tabstat allequity publicdummy defensedummy competedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate relativevalue if sampleflag, by(tdummy) statistics(mean sd p25 p50 p75 n) columns(statistics) longstub

! Returns to equally anticipated bidder and targets!

ttest carwindow2 if multipleannouncements==1 & (pa~=. | pt~=.), by(tdummy) unequal
matrix p=r(p)
matrix dif=r(mu_2)-r(mu_1)
matrix N1=r(N_1)
matrix N2=r(N_2)
for num 1 2 3 4 .5 .6 .7 .8 .9 1: ttest carwindow2 if multipleannouncements==1 & ((pa<=X & pa>(X-.1) & tdummy==0)|(pt<=X & pt>(X-.1) & tdummy==1)), unequal by(tdummy)
matrix p=(p,r(p))
matrix dif=(dif,r(mu_2)-r(mu_1))
matrix N1=(N1,r(N_1))
matrix N2=(N2, r(N_2))
matrix final=(dif,p',N1',N2')
matrix list final

ttest carwindow2 if multipleannouncements==1 & (pa~=. | pt~=.), by(tdummy) unequal
matrix p=r(p)
matrix dif=r(mu_2)-r(mu_1)
matrix N1=r(N_1)
matrix N2=r(N_2)
for num 1/15: ttest carwindow2 if multipleannouncements==1 & ((tdummy==0 & pa<=(X/100) & pa>=(X/100)-.01))|(tdummy==1 & pt<=(X/100)& pt>=(X/100)-.01)), by(tdummy) unequal
matrix p=(p,r(p))
matrix dif=(dif,r(mu_2)-r(mu_1))
matrix N1=(N1,r(N_1))
matrix N2=(N2, r(N_2))
for num .20 .25 .30 .35: ttest carwindow2 if multipleannouncements==1 & ((tdummy==0 & pa<=X & pa>(X-.05))|(tdummy==1 & pt<=X& pt>(X-.05))), by(tdummy) unequal
matrix p=(p,r(p))
matrix dif=(dif,r(mu_2)-r(mu_1))
matrix N1=(N1,r(N_1))
matrix N2=(N2, r(N_2))
for num .45 .55 .65 .75: ttest carwindow2 if multipleannouncements==1 & ((tdummy==0 & pa<=X & pa>(X-.1)))(tdummy==1 & pt<=X & pt>(X-.1)), by(tdummy) unequal
matrix p=(p,r(p))
matrix dif=(dif,r(mu_2)-r(mu_1))
matrix N1=(N1,r(N_1))
matrix N2=(N2, r(N_2))
ttest carwindow2 if multipleannouncements==1 & ((tdummy==0 & pa<=1 & pa>.75)|(tdummy==1 & pt<=1 & pt>.75)), by(tdummy) unequal
matrix p=(p,r(p))
matrix dif=(dif,r(mu_2)-r(mu_1))
matrix N1=(N1,r(N_1))
matrix N2=(N2, r(N_2))
matrix final=(dif ,p' ,N1' ,N2')
matrix list final

! File 5 !

! Robustness, Annual event window and EXECOMP IRRC variables, Sections 7.1.1 and 7.1.2! log using C:\Basak\Mergers\March2006\Output\april25.smcl, replace
insheet using "C:\Basak\Mergers\March2006\Data\April29CRSPannualdata.txt", clear

tabmiss gvkey dnum
!187,172 obs!
desc

tab miss fyenddt fybegdt fyr gvkey

drop if dnum>5999 & dnum <7000
tabmiss fyenddt fybegdt fyr gvkey
!145,785 non missing data!
drop if data1=="" & data6==. & data9=="" & data12==. & data18=="" & data24==. & data25=="" & data28==. & data60=="" &
data85=="

tabmiss fyenddt fybegdt fyr gvkey
!145,346 obs!
!check for double counted firms, by cusip and fiscalquarters!
!fybegdt and fyenddt gives true financial statement coverage!
!if a firm has the same cnun and financial statement coverage, it means it is double counted!
bysort cnun fybegdt fyenddt: egen samecnumdate=count(_n)
tab samecnumdate
!66 with 2 counts, 9 with 3 counts, 8 with 4 counts. Check if data same!
bysort gvkey fybegdt fyenddt cnun fyr data1 data6 data9 data12 data18 data24 data25 data28 data60
data85 coname: egen
samegvkeycnumnumdatadate=count(_n)
tab samegvkeycnumnumdatadate
!all unique!
drop samegvkeycnumnumdatadate samecnumdate

!145,346 non missing data!

!check for cnun double counts!
bysort cnun fyenddt data1 data6 data9 data12 data18 data24 data25 data28 data60 data85 coname: egen
datecusipdatsame=count(_n)
tab datecusipdatsame
!all unique!
drop datecusipdatsame

bysort fyenddt gvkey cnun: egen samedategvkeycnum=count(_n)
tab samedategvkeycnum
!all unique!
bysort fyenddt cnun: egen samedatecnum=count(_n)
tab samedatecnum samedategvkeycnum
!all due to repeated cusip and different gvkey!
list gvkey cnum fyenddt fybegdt data12 data6 if samedatecnum==4
list gvkey cnum fyenddt fybegdt data12 data6 if samedatecnum==2
!all due to repeated cusip and different gvkey!
bysort fyenddt cnum gvkey fyr: egen samedatecnumfyr=count(_n)
tab samedatecnumfyr
drop samedatecnumfyr samedatecnum samedategvkey
bysort fyenddt gvkey: egen samegvkey=count(_n)
tab samegvkey
drop samegvkey
!gvkey is unique identifier!
!check if 2 gvkeys in a year!
gen year=int(fyenddt/10000)
gen month=int(fyenddt/100)-year*100
rename yeara fiscal year
bysort year cnum: egen samedatecnum=count(_n)
tab samedatecnum
!896 double counts and 9 triple counts and 8 4 counts!
drop samedatecnum
bysort year gvkey: egen samedatecnum=count(_n)
tab samedatecnum
!822 double counts!
list fyr year fyenddt cnum gvkey data6 if samedatecnum==2
!change in fyr in the year, causes multiple counts!
drop samedatecnum
bysort year gvkey: egen samedatecnum=count(_n)
tab samedatecnum
drop samedatecnum
!822 doubles!
bysort gvkey year: egen flag=min(_n)
drop if flag~=_n
!411 = 822/2 dropped!
drop flag
bysort year gvkey: egen samedatecnum=count(_n)
tab samedatecnum
!all unique!
drop samedatecnum
bysort year cnum: egen samedatecnum=count(_n)
tab samedatecnum
!74 double counts and 9 triple counts and 8 4 counts!
list fyr year fyenddt cnum gvkey data6 coname if samedatecnum==4, nodisplay
!differing gvkeys same cusips causing problem!
rename cnum cusip
desc data1 data6 data9 data12 data18 data24 data25 data28 data60 data85
destring data1, gen(cash) force
destring data9, gen(longtermdebt) force
destring data18, gen(incomebefext) force
destring data25, gen(sharesoutstanding) force
destring data60, gen(stockholdersequeity) force
destring data85, gen(commonstock) force
rename data6 assets
rename data12 netsales
rename data24 priceclose
rename data28 sharestraded
drop data1 data9 data18 data25 data60 data85
bysort gvkey year: egen samegvkey=count(_n)
tag samegvkey
!unique!
drop samegvkey
tabmiss gvkey
!144,935!
!I need unique gvkey and cusips!
bysort year cusip: egen flag=count(_n)
tag flag
drop if flag>1
drop flag
bysort year gvkey: egen flag=count(_n)
tag flag
drop if flag>1
drop flag
sort cusip year
tagmiss cusip
!144,844 obs!
save "C:\Basak\Mergers\March2006\Data\april29annualdata.dta", replace

insheet using "C:\Basak\Mergers\March2006\Data\Dec122005outputSDC.txt", clear
desc
drop if dateannounced=="
htagmiss dealnumber dateannounced
!18,325 deals!

gen str1 onedigitsica=stracquirerprimarysic,1,1
ngen str1 onedigitsict=strtargetprimarysic,1,1
drop if onedigitsica=="6"
drop if onedigitsict=="6"
drop onedigitsict onedigitsica
tabmiss dealnumber dateannounced
! 18272 deals!
gen dateannounced1=date(dateannounced, "mdy")
format dateannounced1 %dN/D/Y
gen dateeffective1=date(dateeffective, "mdy")
format dateeffective1 %dN/D/Y
gen datewithdrawn1=date(datewithdrawn, "mdy")
format datewithdrawn1 %dN/D/Y
drop dateannounced datewithdrawn dateeffective
rename dateannounced1 dateannounced
rename dateeffective1 dateeffective
rename datewithdrawn1 datewithdrawn
gen sameacquirortargetcusip=match(acquirorcusip,targetcusip)
tab sameacquirortargetcusip
! check if acquiror and target cusip same, 41 with same!
list targetname acquirorname dealnumber if sameacquirortargetcusip==1
! checked names, acquiror and target names and cusips same, hence drop these deals!
drop if sameacquirortargetcusip==1
drop sameacquirortargetcusip
tabmiss dateannounced
! 18,231 deals!
bysort acquirorcusip dateannounced: egen multipleacquirorannouncements=count(_n)
bysort targetcusip dateannounced: egen multipletargetannouncements=count(_n)
tab multipleacquirorannouncements
! multiple acquiror announcements 249 firms with 2 ann. (249*2=498 double counts), 22 with 3, 6 with 4, 3 with 5, 2 with 6!
tab multipletargetannouncements
!multiple target announcements  54 firms with 2 (54*2=108 multiples), 1 with 3, 3 with 4!

!make a long list of acquirers and targets with identifier tdummy=0 if acquirer and tdummy=1 if target!
keep dealnumber dateannounced targetname acquirename acquirecusip targetcusip acqtickersymbol targettickersymbol
rename targetname name1
rename acquirename name0
rename acquirecusip cusip0
rename targetcusip cusip1
rename acqtickersymbol ticker0
rename targettickersymbol ticker1
reshape long name cusip ticker, i(dealnumber) j(tdummy)
!Number of obs. 18231   ->  36462, Number of variables 8   ->   6 j variable (2 values)->   tdummy xij variables: name0 name1   ->
name, cusip0 cusip1   ->   cusip, ticker0 ticker1   ->   ticker!
bysort dateannounced cusip tdummy :egen multipleannouncementsbytdummy=count(_n)
tab multipleannouncementsbytdummy tdummy
!Find multiple announcements on the same day by tdummy, 303 firms with double (249+54), 23 with 3 (22+1), 9 with 4 (6+3), 3 with 5, 2 with 6!
bysort dateannounced cusip:egen multipleannouncements=count(_n)
tab multipleannouncementsbytdummy multipleannouncements
!318 with double, hence 16 both received and made bids, 1 made a bid and received 2 offers!
!For each bidder at each announcement organize bids into dealnumner1, ..., dealnumner6, and each target the same way!
gen announcementrank=1
sort cusip tdummy dateannounced
bysort cusip tdummy: replace announcementrank=2 if dateannounced[_n]==dateannounced[_n-1]
bysort cusip tdummy: replace announcementrank=3 if dateannounced[_n]==dateannounced[_n-2]
bysort cusip tdummy: replace announcementrank=4 if dateannounced[_n]==dateannounced[_n-3]
bysort cusip tdummy: replace announcementrank=5 if dateannounced[_n]==dateannounced[_n-4]
bysort cusip tdummy: replace announcementrank=6 if dateannounced[_n]==dateannounced[_n-5]
eegen uniquecusipupdateidentifier=group(cusip tdummy dateannounced)
sum uniquecusipupdateidentifier

!36064 unique cusips, acquirer-target identity and dateannounced out of 36462 observations.

(606/2+69/3+364+15/5+12/6+35724=36064)

reshape wide dealnumber, i(uniquecusipupdateidentifier) j(announcementrank)

!Number of obs. 36462 -> 36064; Number of variables 10 -> 14; j variable (6 values) announcementrank -> (dropped);
variables:dealnumber -> dealnumber1 dealnumber2 ... dealnumber6!
drop uniquecusipupdateidentifier
tabmiss dateannounced

!36064 unique cusips, acquirer-target identity and dateannounced deals!

gen year=year(dateannounced)
gen month=month(dateannounced)
bysort cusip tdummy year:eegen multipleannouncementsinyear=count(_n)
tab multipleannouncementsinyear

!find multiple announcements on the same month by tdummy, 3798 double announcements, 987 triple ann., 380 four ann., and 125
five ann., 72 6 ann., 42 7 ann., 16 8 ann., 30 10 ann., 11 11 ann., 12 12 ann., 17 17 ann.!
bysort cusip year:eegen multipleanninyearnotdummy=count(_n)
tab multipleanninyearnotdummy

!4338 double announcements, 1101 triple ann., 428 four ann., and 135 five ann., 72 6 ann., 35 7 ann., 32 8 ann., 30 10 ann., 11 11
ann., 12 12 ann., 17 17 ann.!
tab multipleanninyearnotdummy multipleannouncementsinyear

!some firms both make and receive bids in the same year!
sort cusip
tabmiss dateannounced

!36,064 observations!
gen announcementrankyear=1
sort cusip tdummy dateannounced
for num 2/17: bysort cusip tdummy year: replace announcementrankyear=X if dateannounced[_n]>dateannounced[_n-X+1]
tab announcementrankyear
!32,948 single rank, of which 30,574 have only one ann. in year!
keep if announcementrankyear==1
tabmiss cusip
!32,948 obs!
drop multipleanninyearnotdummy announcementrankyear
bysort cusip year:e gen multipleanninyearnotdummy=count(_n)
tab multipleanninyearnotdummy
!doubles 796!
drop dealnumber2-dealnumber6
rename dealnumber1 dealnumber
gen numberofannouncementsinyear=multipleannouncementsinyear+ multipleannouncements-1
tab numberofannouncementsinyear
!upto 17 announcements!
tabmiss cusip
!32,948 obs!
gen SDCid=_n
replace year=year-1
sort cusip year
save "C:\Basak\Mergers\March2006\Data\April292006mergecusipsfyr.dta", replace
merge cusip year using "C:\Basak\Mergers\March2006\Data\April29annualdata.dta"
tab _merge
!matched(3) 10615, CRSP 134,455  SDC 22,333 . 32,948 obs in SDC, after merge 10,615+22333 =32,948 -> exact. 144,844 obs in CRSP, 134455 +10,615=145,070 -> 226 extra!
!Clean CRSP extras: these should be due to multiple announcements in same year!
tab multipleanninyearnotdummy

!452/2=226 merged firms with double announcements, these are the ones causing the problems. !
drop if _merge==1
replace tdummy=2 if _merge==2

!145,070 obs.!
save "C:\Basak\Mergers\March2006\Data\april29annualdata.dta", replace

!make sure there is only one bidder and target in each year!
drop year month

gen year=int(fyenddt/10000)
gen yearann=year(dateannounced)
tab year
!1974 to 2005!
drop if year==2005

!upto 12, some of which is no longer in!
bysort cusip yearann: egen multipleannouncementflag= count(_n) if tdummy~==2

!doubles 452, receiving and bidding in the same year!
gen announcementyearrank=1 if tdummy==2 | multipleannouncementflag==1 | (multipleannouncementflag==2 & tdummy==0)
replace announcementyearrank=2 if multipleannouncementflag==2 & tdummy==1

tab announcementyearrank tdummy

!drop multipleannouncementflag
by sort gvkey year announcementyearrank: egen flag=count(_n)
tab flag
! all unique!
drop flag
tabmiss cusip
! 144477 obs!
drop _merge
drop SDCid ticker name
drop multipleannouncementsbytdummy multipleannouncements multipleannouncementssinyear multipleannouncementsyearnotdummy
! make sure one cusip in each year, even if they recieve and solicit bids in the same year!
reshape wide dealnumber dateannounced tdummy numberofannouncementssinyear, i(cusip year) j(announcementyearrank)
! Number of obs. 144477 -> 144251; Number of variables 29 -> 32; j variable (2 values) announcementyearrank -> (dropped)!
tab tdummy1
    tab tdummy2
save "C:\Basak\Mergers\March2006\Data\april29annualdata.dta", replace

tabmiss cusip
! 144251 obs!
bysort year cusip: egen flag=count(_n)
tab flag
! unique!
drop flag
bysort year gvkey: egen flag=count(_n)
tab flag
! unique!
drop flag

! lets look at years!
tab year tdummy1
! 1976 1 announcement, 2004 no announcements!
tab year tdummy2
 1980-2003!
drop 74-75, 2004 no ann., drop 76 only one announcement!
drop if year<1977 | year==2004
tabmiss cusip
128912 obs!
tab tdummy1
 6789 bidders, 3599 targets, 118,524 nonmerging firm quarters!
tab tdummy2
226 targets!

! first generate variables that rely on merger history!
! Generate bids made, bids received!
tset gvkey year
gen numberofannouncementsinyear1lag1=L1.numberofannouncementsinyear1
gen numberofannouncementsinyear2lag1=L1.numberofannouncementsinyear2
for num 1/2: replace numberofannouncementsinyearXlag1=0 if numberofannouncementsinyearXlag1=.
for num 1/2: replace numberofannouncementsinyearX=0 if numberofannouncementsinyearX==.
gen previousmergers1=(numberofannouncementsinyear1lag1+numberofannouncementsinyear1)
gen previousmergers2=(numberofannouncementsinyear2lag1+numberofannouncementsinyear2)
tabmiss previousmergers1 previousmergers2
2 digit sic industry classification!
gen sic2digit=int(dnum/100)
replace sic2digit=sic2digit*10 if sic2digit<10
! sic 10-99, nothing between 60-69!
bysort sic2digit year: egen firmsinindustryq=count(_n)
replace sic2digit=int(sic2digit/10)*10 if firmsinindustryq<5
drop firmsinindustryq
bysort sic2digit year: egen firmsinindustryq=count(_n)
tab firmsinindustryq if firmsinindustryq <10
!all industry-quarters have more than 4 firms!
drop firmsinindustryq
sort sic2digit year
save "C:\Basak\Mergers\March2006\Data\april29annualdata.dta", replace
!merger intensity!
gen acquirordummy=0
replace acquirordummy=1 if tdummy1==0
gen targetdummy=0
replace targetdummy=1 if tdummy1==1 | tdummy2==1
gen mergerdummy=0
replace mergerdummy=1 if acquirordummy==1 | targetdummy==1
bysort sic2digit year: egen mergerfirmsinindustry=sum(mergerdummy)
bysort year sic2digit: egen firmsinindustry=count(_n)
tab firmsinindustry
tabmiss firmsinindustry
gen mergerintensity=mergerfirmsinindustry/firmsinindustry
tabmiss mergerintensity
keep mergerintensity year sic2digit
egen unique=group(sic2digit year)
sum unique
!1479 industries in quarters!
drop unique
bysort sic2digit year: egen firmsinindustry=count(_n)
tab firmsinindustry
!max. of 1006 firms in an industry in a quarter!
bysort sic2digit year: egen flag=min(_n)
drop if _n-=flag
tabmiss sic2digit
!1479 obs!
drop flag
tsset sic2digit year
gen mergerintensity1=L1.mergerintensity
tabmiss mergerintensity1 mergerintensity
gen mergerintensityalt1= mergerintensity+ mergerintensity1
!62 missing!
drop mergerintensity mergerintensity1
sort sic2digit year
merge sic2digit year using "C:\Basak\Mergers\March2006\Data\april29annualdata.dta"
tab_merge
drop_merge
tabstat mergerintensityalt1, by(tdummy1) stats(mean sd min p1 p5 p10 p25 p50 p75 p90 p95 p99 max n) columns(statistics) longstub
tabstat mergerintensityalt1, by(tdummy2) stats(mean sd min p1 p5 p10 p25 p50 p75 p90 p95 p99 max n) columns(statistics) longstub

!generate variables that rely on financial data!
tsset gvkey year
!panel variable: gvkey, 1000 to 230796 time variable: year, 1977 to 2003, but with gaps
!generate 2 year sales growth!
for num 1/2: gen netsalesX=LX.netsales
drop netsales1-netsales2
tabmiss salesgrowth2
!generate pricerunup!
tsset gvkey year
for num 1/2: gen pricecloseX=LX.priceclose
    gen pricerunup2=[(priceclose-priceclose2)/priceclose2]
    replace pricerunup2=[(priceclose-priceclose1)/priceclose1]*2 if pricerunup2==.
    drop priceclose1-priceclose2
    tabmiss pricerunup2
    !gen industry sales shock variable!
    bysort year: egen totalsalesgrowth2=median(salesgrowth2)
    bysort sic2digit year: egen indsalesgrowth2=median(salesgrowth2)
    gen salesshock=abs(indsalesgrowth2-totalsalesgrowth2)
    tabmiss salesshock
    drop indsalesgrowth2 totalsalesgrowth2
    gen salesshock2=salesshock*salesshock
    tabmiss salesshock salesshock2
    !gen profitability, cash ratio, log assets!
    gen logassets=log(assets)
    tabmiss logassets
    tsset gvkey year
    for num 1/2: gen assetsX=LX.assets
    gen changeinassets=(assets-assets2)/assets2
    replace changeinassets=((assets-assets1)/assets1)*2 if changeinassets==.
    drop assets1-assets2
    gen cashratio=cash/assets
    gen ROA=incomebefext/assets
    !gen growth-capitalaccess mismatch variables!
    bysort sic2digit year: egen indsalesgrowth2=median(salesgrowth2)
    bysort sic2digit year: egen indlongtermdebt=median(longtermdebt/assets)
    gen resourcecapitalmismatch=0
replace resourcecapitalmismatch=1 if (longtermdebt/assets>indlongtermdebt & salesgrowth2<indsalesgrowth2) | (longtermdebt/assets<indlongtermdebt & salesgrowth2>indsalesgrowth2)
drop indsalesgrowth2 indlongtermdebt
tabmiss resourcecapitalmismatch ROA cashratio changeinassets !fourfirmconcentration!
bysort sic2digit year: egen totalindustrysales=sum(netsales)
bysort sic2digit year: egen max1=max(netsales) if netsales==.
bysort sic2digit year: egen max2=max(netsales) if netsales==. & netsales==max1
bysort sic2digit year: egen max3=max(netsales) if netsales==. & netsales==max1 & netsales==max2
bysort sic2digit year: egen max4=max(netsales) if netsales==. & netsales==max1 & netsales==max2 & netsales==max3
gen fourfirmconcentration=(max1+max2+max3+max4)/totalindustrysales if totalindustrysales==. & max1==. & max2==. & max3==. & max4==.
replace fourfirmconcentration=(max1+max2+max3)/totalindustrysales if totalindustrysales==. & max1==. & max2==. & max3==. & fourfirmconcentration==.
replace fourfirmconcentration=(max1+max2)/totalindustrysales if totalindustrysales==. & max1==. & max2==. & fourfirmconcentration==.
replace fourfirmconcentration=(max1)/totalindustrysales if totalindustrysales==. & max1==. & fourfirmconcentration==.
drop max1-max4 totalindustrysales
!high information asymmetry variable!
gen MB=priceclose*sharesoutstanding/stockholdersequity
gen shareturnover=sharestraded/sharesoutstanding
bysort sic2digit year: egen indMB=median(MB)
bysort sic2digit year: egen indshareturnover=median(shareturnover)
gen hMB|shareturnover=0
replace hMB|shareturnover=1 if MB>indMB & shareturnover<indshareturnover
drop indMB indshareturnover
tab hMBLshareturnover
tabmiss hMB|shareturnover shareturnover fourfirmconcentration
save "C:\Basak\Mergers\March2006\Data\april29annualdata.dta", replace

.tabmiss ROA resourcecapitalmismatch salesshock salesshock2 pricerunup shareturnover hMBLshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 previousmergers2
.tab tdummy1 if ROA-= & resourcecapitalmismatch-= & salesshock-= & salesshock2-= & pricerunup-= & shareturnover-= & hMBLshareturnover-= & mergerintensityalt1-= & cashratio-= & logassets-= & changeinassets-= & fourfirmconcentration-= & previousmergers1-=
.tab tdummy2 if ROA-= & resourcecapitalmismatch-= & salesshock-= & salesshock2-= & pricerunup-= & shareturnover-= & hMBLshareturnover-= & mergerintensityalt1-= & cashratio-= & logassets-= & changeinassets-= & fourfirmconcentration-= & previousmergers2-=
.tabmiss gvkey
!128912 obs!
sort gvkey year
.save "C:\Basak\Mergers\March2006\Data\april29annualdata.dta", replace

!EXECOMP variables!

.insheet using "C:\Basak\Mergers\March2006\Data\may9execomp.txt", clear
.tabmiss year gvkey
!144108!
tab year
!1992 to 2004!
egen firmid=group(gvkey)
sum firmid
!2610 unique gvkeys and 144,108 firm-director years!

.tabmiss ceoann
gen ceodummy=1 if ceoann=="CEO"

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gen index = index(titleann, "CEO")
if there is something after CEO, it is not good ie. like division or subsidiary!
gen length = length(titleann)
gen str50 leftpiece = substr(titleann, index, length)
replace ceodummy = 1 if ceodummy = . & index = 0 & leftpiece = "CEO"
replace ceodummy = 0 if ceodummy = .
tab ceodummy
drop leftpiece length index

gen execdirdummy = 0 if exec_dir = "FALSE"
replace execdirdummy = 1 if exec_dir = "TRUE"
bysort year gvkey: egen numexecdir = sum(execdirdummy)
replace execdirdummy = 2 if exec_dir = ""

drop if ceodummy =~ 1

dobsort year gvkey: egen countgvkey = count(gvkey)
tab countgvkey
list gvkey year titleann if countgvkey = 4
!some firms have more than one ceo in the same year. May be due to co-CEO's, may be due change in CEOs, or wrong data!
gen index = index(titleann, "CEO")
gen index1 = index(titleann, "co-CEO")
gen flag = 1 if index = 0
replace flag = 0 if index = 0
tab flag countgvkey
drop if flag = 0 & countgvkey > 1
drop countgvkey
bysort year gvkey: egen countgvkey = count(gvkey)
tabulate countgvkey
gen index2=index(titleann, "to CEO")
drop if index2==0
drop index2
gen index2=index(titleann, "former CEO")
drop if index2==0
drop index2
gen index2=index(titleann, "CEO (former)")
drop if index2==0
drop index2
gen index2=index(titleann, "CEO-sub")
drop if index2==0
drop index2
drop countgvkey
bysort year gvkey: egen countgvkey=count(gvkey)
tagulate countgvkey
list gvkey year titleann if countgvkey==4

!these ones seem to have more than one CEO, so take the averages for these!
gen percompfromstockop=(tdc1-tcc)/tdc1
gen pershrown= shrown/ shrsout
bysort gvkey year: egen meanpercompfromstockop=mean(percompfromstockop)
bysort gvkey year: egen meanshrown=mean(shrown)
bysort gvkey year: egen meanshrsout=mean(shrsout)
bysort gvkey year: egen meanpershrown=mean(pershrown)
bysort gvkey year: egen meannumexecdir=mean(numexecdir)
bysort gvkey year: egen meanage=mean(p_age_2)
bysort gvkey year: egen meanretirementyears=mean(retyrs)
bysort year gvkey: egen mingvkey=min(_n)
drop if _n==mingvkey

keep gvkey year fyr meanpercompfromstockop meanshrown meanshrsout meanpershrown meannumexecdir meanage
meanretirementyears
rename year fiscalyear
tab fiscalyear
!1992 to 2004!
!generate real reporting year!
gen year=fiscalyear if fyr>5
replace year=fiscalyear+1 if fyr<5
sort gvkey year
tabmiss fiscalyear year fyr gvkey meanpercompfromstockop meanshrown meanshrsout meannumexecdir meanpershrown meanage
meanretirementyears
bysort year gvkey: egen countgvkey=count(gvkey)
tabulate countgvkey
drop countgvkey

sort gvkey year
merge gvkey year using "C:\Basak\Mergers\March2006\Data\april29annualdata.dta"
tab _merge
! CRSPSDC unmerged 113830 , merged 15099-> total 128,929, CRSP before merge is 128912!
derop if _merge==1

tab tdummy1 if meanpercompfromstockop==. & meanshrown==. & meanshrsout==. & meanretirementyears==.
!bidders 1635, targets 439, nonmerging 12707!
tab tdummy2 if meanpercompfromstockop==. & meanshrown==. & meanshrsout==. & meanretirementyears==.
!49 targets!
rename _merge _mergeEXECOMP
sort cusip year
save "C:\Basak\Mergers\March2006\Data\april29annualdata.dta", replace

!IRRC data!

insheet using "C:\Basak\Mergers\March2006\Data\IRRCmay92005.txt", clear
tabmiss gindex year cn6
tab year
!1990 to 2004!
egen firmid=group(cn6)
sum firmid
!3469 unique cusips and 12104 cusip-years!
rename cn6 cusip
gen length=length(cusip)
tab length
drop length
tabmiss coname year gindex antigreen blankcheck cboard dutiesnf fairprice lachtr labylw lspmt lcwnst ppill supermajor uneqvote advnr cumvotess cumbloss dirliab dirind dirindc compplan sparachute pparachute cusip secretballot goldenparachute severance firmid
bysort cusip year: egen flag=count(_n)
tab flag
!4 double counts!
list coname year gindex cusip if flag==2
! 2 are financial institutions so we can drop one (none will be merged anyway), the other one is the same firm repeated!
by sor cusip year: egen flag1=min(_n)
drop if _n==flag1 & flag>1
drop flag flag1
bysort cusip year: egen flag=count(_n)
tab flag
drop flag
keep cusip year gindex
sort cusip year

merge cusip year using "C:\Basak\Mergers\March2006\Data\april29annualdata.dta"
  tab _merge
  !merged 7732, CRSPSDC 121197!
drop if _merge==1
tab tdummy1 if gindex==.
  !bidders 720, targets 234, nonmerging 6778!
tab tdummy2 if gindex==.
  !21 targets!
rename _merge _mergeIRRC
sort cusip year
save "C:\Basak\Mergers\March2006\Data\april29annualdata.dta", replace

cd C:\Basak\Mergers\March2006\Tables
set more off
gen acquirordummy=0
replace acquirordummy=1 if tdummy1==0
gen targetdummy=0
replace targetdummy=1 if tdummy1==1 | tdummy2==1

!ROBUSTNESS, Annual Predictions!

!acquirers!
quietly probit acquirordummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 if year==1979
quietly predict pa if e(sample)
quietly predict xbA if e(sample), xb
quietly outreg using "April30rob1A.txt", replace bracket ctitle("4") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)
quietly mfx compute, at(median resourcecapitalmismatch=0 hMBIshareturnover=0) nose
quietly matrix bA1979=e(Xmfx_dydx)'
quietly matrix medianA1979=e(Xmfx_X)'
for XY in num 1980/2003:
quietly probit acquirordummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 if year==XY
quietly predict patemp if e(sample)
quietly replace pa=patemp if year==XY & pa==.
drop patemp
quietly predict xbAtemp if e(sample), xb
quietly replace xbA=xbAtemp if year==XY & xbA==.
drop xbAtemp
quietly outreg using "April30rob1A.txt", append bracket ctitle("XY") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)
quietly mfx compute, at(median resourcecapitalmismatch=0 hMBIshareturnover=0) nose
quietly matrix bAXY=e(Xmfx_dydx)'
quietly matrix medianAXY=e(Xmfx_X)'
quietly probit acquirordummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 if year==1979
gen sampleflag=1 if e(sample)
for XY in num 1980/2003:
quietly probit acquirordummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 if year==XY
replace sampleflag=1 if e(sample)
!target!
replace previousmergers1=previousmergers2 if tdummy2==1
quietly probit targetdummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 if year==1979

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quietly predict pt if e(sample)
quietly predict xbT if e(sample), xb
quietly outreg using "April30rob1T.txt", replace bracket ctitle("4") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)
quietly mfx compute, at(median resourcecapitalmismatch=O hMBlshareturnover=O) nose
quietly matrix bT1979=e(Xmfx_dydx)'
quietly matrix medianT1979=e(Xmfx_X)'

for XY in num 1980/2003: quietly probit targetdummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBlshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 if year==XY quietly predict pttemp if e(sample) quietly replace pt=pttemp if year==XY & pt==.
drop pttemp quietly predict xbTtemp if e(sample), xb quietly replace xbT=xbTtemp if year==XY & xbT==.
drop xbTtemp quietly outreg using "April30rob1T.txt", append bracket ctitle("XY") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)
quietly mfx compute, at(median resourcecapitalmismatch=O hMBlshareturnover=O) nose quietly matrix bTXY=e(Xmfx_dydx)'
quietly matrix medianTXY=e(Xmfx_X)'

tabstat pa, by(acquirordummy) stats(mean sd p25 p50 p75 n) columns(statistics) longstub
tabstat pt, by(targetdummy) stats(mean sd p25 p50 p75 n) columns(statistics) longstub

for XY in num 1979/2003: quietly probit targetdummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBlshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 if year==XY replace sampleflag=1 if e(sample)
tab tdummy1 if sampleflag==1
tab tdummy2 if sampleflag==1

save "C:\Basak\Mergers\March2006\Data\april29annualdatarob1.dta", replace

matrix bA=[bA1979]
matrix bT=[bT1979]
for num 1980/2003: matrix bT=[bT, bTX]
matrix medianA=[medianA1979]
matrix medianT=[medianT1979[1,1],medianT1979[2,1],medianT1979[3,1],medianT1979[4,1],medianT1979[5,1],medianT1979[6,1],medianT1979[7,1],medianT1979[8,1],medianT1979[9,1],medianT1979[10,1],medianT1979[11,1],medianT1979[12,1],medianT1979[13,1],0]

matrix medianT1980=[medianT1980[1,1],medianT1980[2,1],medianT1980[3,1],medianT1980[4,1],medianT1980[5,1],medianT1980[6,1],medianT1980[7,1],medianT1980[8,1],medianT1980[9,1],medianT1980[10,1],medianT1980[11,1],medianT1980[12,1],medianT1980[13,1],0]

for num 1980/2003: matrix medianT=[medianT, medianTX]
svmat bA, name(aperiod)
svmat bT, name(tperiod)
svmat medianA, name(medianaperiod)
svmat medianT, name(mediantperiod)
keep aperiod1-aperiod25 tperiod1-tperiod25 medianaperiod1-medianaperiod25 mediantperiod1-mediantperiod25
save "C:\Basak\Mergers\March2006\Data\April30marginalcoefficients.dta", replace

outsheet aperiod1-aperiod25 tperiod1-tperiod25 medianaperiod1-medianaperiod25 mediantperiod1-mediantperiod25 using "C:\Basak\Mergers\March2006\Data\April30marginalcoefficientsrob1.txt", replace
!transpose data!
insheet using "C:\Basak\Mergers\March2006\Data\April30marginalcoefficientsrob1.txt", clear
rename v1 coefficientmedian
rename v2 tdummy
rename v3 year
rename v4 ROA
rename v5 resourcecapitalmismatch
rename v6 salesshock
rename v7 salesshock2
rename v8 salesgrowth2
rename v9 pricerunup
rename v10 shareturnover
rename v11 hMBIshareturnover
rename v12 mergerintensityalt1
rename v13 cashratio
rename v14 logassets
rename v15 changeinassets
rename v16 fourfirmconcentration
rename v17 previousmergers1
save "C:\Basak\Mergers\March2006\Data\April30marginalcoefficients.dta", replace

tabstat ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensity cashratio logassets changeinassets fourfirmconcentration previousmergers1 if coefficientormedian=="coefficient" & tdummy==0, stats(mean sd p25 p50 p75 n) columns(statistics) longstub
tabstat ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensity cashratio logassets changeinassets fourfirmconcentration previousmergers1 if coefficientormedian=="coefficient" & tdummy==1, stats(mean sd p25 p50 p75 n) columns(statistics) longstub
matrix t=0
for any ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensity cashratio logassets changeinassets fourfirmconcentration previousmergers1: test X=0 if coefficientormedian=="coefficient" & tdummy==0
matrix t=t'
matrix list t

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matrix t=0
for any ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover
mergerintensity cashratio logassets changeinassets fourfirmconcentration previousmergers1: ttest X=0 if
coefficientormedian=="coefficient" & tdummy==1\matrix t=(t,r(t))
matrix t=t'
matrix list t

! File 6 !

log using C:\Basak\Mergers\March2006\Output\april30.smcl, replace

!Annual data robustness, Stage 2!

use "C:\Basak\Mergers\March2006\Data\april29annualdatarob1.dta", clear
drop if tdummy1==2
tab tdummy1
!6791 bidders and 3599 targets!
tab tdummy1 if pa==.
!5921 bidders with pa!
tab tdummy1 if pt==.
tab tdummy1 if pt==.
!3176+194 targets with pt!
drop if pa==, & pt==.
!put data into long by tdummy!
reshape long mergerintensityalt dealnumber tdummy dateannounced numberofannouncementsinyear, i(gvkey fiscalyear) j(doubles)
tabmiss tdummy
drop if tdummy==.
tab tdummy
!5921 bidder, 3370 target, total=9291!
keep gvkey cusip tdummy dateannounced pa pt
gen year=year(dateannounced)
sort cusip year tdummy
save "C:\Basak\Mergers\March2006\Data\may15AnnualRobMerge.dta"

use "C:\Basak\Mergers\March2006\Data\April20secondstage.dta", clear

drop xbA pt xBT pa
sort cusip year tdummy
merge cusip year tdummy using "C:\Basak\Mergers\March2006\Data\may15AnnualRobMerge.dta"

tab _merge
!merged 8332, unmerged pa-pt 2028, total= 10360 due to more than one announcement in year!
drop if _merge-=3

gen lambdaA=normden(-pa)/(1-norm(-pa))
gen lambdaT=normden(-pt)/(1-norm(-pt))

cd C:\Basak\Mergers\March2006\Tables
!acquirers!

regress carwindow2 lambdaA allequity if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity using "May15regressionsRobustAnnual.txt", replace bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy if acquirordummy==1 &
multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using "May15regressionsRobustAnnual.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity sameindustry samestate publicdummy if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity sameindustry samestate publicdummy using "May15regressionsRobustAnnual.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "May15regressionsRobustAnnual.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if e(sample)
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "May15regressionsRobustAnnual.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
tabstat lambdaA if e(sample), stats(mean sd p25 p50 p75 n)
!economic significance = 48 to 51 basis points!

!targets!

regress carwindow2 lambdaT allequity if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity using "May15regressionsRobustAnnual.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using "May15regressionsRobustAnnual.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity sameindustry samestate publicdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity sameindustry samestate publicdummy using "May15regressionsRobustAnnual.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defendedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defendedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "May15regressionsRobustAnnual.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 allequity defendedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if e(sample)
outreg allequity defendedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "May15regressionsRobustAnnual.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
tabstat lambdaT if e(sample), stats(mean sd p25 p50 p75 n)

!Robustness, EXECOMP and IRRC data, Section 7.1.1 Stage 1 & 2!

use "C:\Basak\Mergers\March2006\Data\april29annualdata.dta", clear

cd C:\Basak\Mergers\March2006\Tables
set more off
gen acquirordummy=0
replace acquirordummy=1 if tdummy1==0
gen targetdummy=0
replace targetdummy=1 if tdummy1==1 & tdummy2==1
gen CEOequity= meanshrown/ meanshrsout
gen flagEXECOMP=1 if meanpercompfromstockop==. | meanretirementyears==. | CEOequity==.
replace flagEXECOMP=0 if flagEXECOMP==.
tab tdummy1 if flagEXECOMP==0
tab tdummy2 if flagEXECOMP==0
drop flagEXECOMP
gen flagIIRC=1 if gindex==.
replace flagIIRC=0 if flagIIRC==.
tab tdummy1 if flagIIRC==0
tab tdummy2 if flagIIRC==0
tab tdummy1 flagIIRC
tab tdummy2 flagIIRC
drop flagIIRC

!acquirers!

quietly probit acquirordummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBLshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 meanpercompfromstockop meanretirementyears CEOequity gindex if year==1993

gen sampleflag=1 if e(sample)
quietly predict pa if e(sample)
quietly predict xbA if e(sample), xb
quietly outreg using "Apr130rob2A.txt", replace bracket rdec(4) pvalue ctitle("4") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)
quietly mfx compute, at(median resourcecapitalmismatch=0 hMBLshareturnover=0) nose
quietly matrix bA1993=e(Xmfx_dydx)'
quietly matrix medianA1993=e(Xmfx_X)'
for XY in any 1995 1998 2000 2002: quietly probit acquirordummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBLshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 meanpercompfromstockop meanretirementyears CEOequity gindex if year==XY
quietly predict patemp if e(sample)
quietly replace pa=patemp if year==XY & pa=.\drop patemp\quietly predict xbAtemp if e(sample), xb\quietly replace xbA=xbAtemp if year==XY & xbA=.\drop xbAtemp\quietly outreg using "Apr130rob2A.txt", append bracket rdec(4) pvalue ctitle("XY") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)\quietly mfx compute, at(median resourcecapitalmismatch=0 hMBLshareturnover=0) nose\quietly matrix bAXY=e(Xmfx_dydx)\quietly matrix medianAXY=e(Xmfx_X)\replace sampleflag=1 if e(sample)
!target!
replace previousmergers1=previousmergers2 if tdummy2==1
quietly probit targetdummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBLshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 meanpercompfromstockop meanreirementyears CEOequity gindex if year==1993
replace sampleflag=1 if e(sample)
quietly predict pt if e(sample)
quietly predict xbt if e(sample), xb
quietly outreg using "April30rob2T.txt", replace bracket rdec(4) pvalue ctitle("4") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)
quietly mfx compute, at(median resourcecapitalmismatch=0 hMBLshareturnover=0) nose
quietly matrix bT1993=e(Xmfx_dydx)'
quietly matrix medianT1993=e(Xmfx_X)'
for XY in any 1995 1998 2000 2002: 
quietly probit targetdummy ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBLshareturnover mergerintensityalt1 cashratio logassets changeinassets fourfirmconcentration previousmergers1 meanpercompfromstockop meanreirementyears CEOequity gindex if year==XY
quietly predict pttemp if e(sample)
quietly replace pt=pttemp if year==XY & pt==.
drop pttemp
quietly predict xbttemp if e(sample), xb
quietly replace xbt=xbTtemp if year==XY & xbt==.
drop xbttemp
quietly outreg using "April30rob2T.txt", append bracket rdec(4) pvalue ctitle("XY") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)
quietly mfx compute, at(median resourcecapitalmismatch=0 hMBLshareturnover=0) nose
quietly matrix bTXY=e(Xmfx_dydx)
quietly matrix medianTXY=e(Xmfx_X)'
replace sampleflag=1 if e(sample)

tabstat pa, by(acquirordummy) stats(mean sd p5 p25 p50 p75 p95 n) columns(statistics) longstub
tabstat pt, by(targetdummy) stats(mean sd p5 p25 p50 p75 p95 n) columns(statistics) longstub

save "C:\Basak\Mergers\March2006\Data\april29annualdatarob2.dta", replace
matrix bA=[bA1993]
matrix bT=[bT1993]
matrix bT2002=[bT2002[1,1], bT2002[2,1],bT2002[3,1], bT2002[4,1], bT2002[5,1],
bT2002[6,1],bT2002[7,1],0,bT2002[8,1],bT2002[9,1],bT2002[10,1],bT2002[11,1],bT2002[12,1],bT2002[13,1],bT2002[14,1],bT2002
[15,1],bT2002[16,1],bT2002[17,1]]'
matrix medianA=[medianA1993]
matrix medianT=[medianT1993]
matrix medianT2002=[medianT2002[1,1], medianT2002[2,1],medianT2002[3,1], medianT2002[4,1], medianT2002[5,1],
medianT2002[6,1],medianT2002[7,1],0,medianT2002[8,1],medianT2002[9,1],medianT2002[10,1],medianT2002[11,1],medianT2002[12,1],
medianT2002[13,1],medianT2002[14,1],medianT2002[15,1],medianT2002[16,1],medianT2002[17,1]]'
svmat bA, name(aperiod)
svmat bT, name(tperiod)
svmat medianA, name(medianaperiod)
svmat medianT, name(mediantperiod)
keep aperiod1-aperiod5 tperiod1-tperiod5 medianaperiod1-medianaperiod5 mediantperiod1-mediantperiod5
save "C:\Basak\Mergers\March2006\Data\April30marginalcoefficientsrob2.dta", replace
outsheet aperiod1-aperiod5 tperiod1-tperiod5 medianaperiod1-medianaperiod5 mediantperiod1-mediantperiod5 using
"C:\Basak\Mergers\March2006\Data\April30marginalcoefficientsrob2.txt", replace
!transpose data!
insheet using "C:\Basak\Mergers\March2006\Data\April30marginalcoefficientsrob2.txt", clear
rename v1 coefficientormedian
rename v2 tdummy
rename v3 year
rename v4 ROA
rename v5 resourcecapitalmismatch
rename v6 salesshock
rename v7 salesshock2
rename v8 salesgrowth2
rename v9 pricerunup
rename v10 shareturnover
rename v11 hMBLshareturnover
rename v12 mergerintensityalt1
rename v13 cashratio
rename v14 logassets
rename v15 changeinassets
rename v16 fourfirmconcentration
rename v17 previousmergers1
rename v18 meanpercompfromstockop
rename v19 meanretirementyears
rename v20 CEOequity
rename v21 gindex
gen str10 testtype="robust2"
save "C:\Basak\Mergers\March2006\Data\April30marginalcoefficientsrob2.dta", replace

replace hMBLshareturnover=, if hMBLshareturnover==0 & coefficientormedian=="coefficient"
sort coefficientormedian tdummy year
mkmat ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBLshareturnover mergerintensity cashratio logassets changeinassets fourfirmconcentration previousmergers1 meanpercompfromstockop meanretirementyears CEOequity gindex if coefficientormedian=="coefficient" & tdummy==0, matrix(biddertable)
tabstat ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBLshareturnover mergerintensity cashratio logassets changeinassets fourfirmconcentration previousmergers1 meanpercompfromstockop
meanretirementyears CEOequity gindex if coefficientormedian=="coefficient" & tdummy==1, stats(min p25 p50 p75 max) columns(statistics) longstub
matrix t=0
for any ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensity cashratio logassets changeinassets fourfirmconcentration previousmergers1 meanpercompfromstockop meanretirementyears CEOequity gindex: t test X=0 if coefficientormedian=="coefficient" & tdummy==0\matrix t=(t,r(t))
matrix t=t'
matrix list t
for any ROA resourcecapitalmismatch salesshock salesshock2 salesgrowth2 pricerunup shareturnover hMBIshareturnover mergerintensity cashratio logassets changeinassets fourfirmconcentration previousmergers1 meanpercompfromstockop meanretirementyears CEOequity gindex: t test X=0 if coefficientormedian=="coefficient" & tdummy==1\matrix t=(t,r(t))
matrix t=t'
matrix list t

declare traditional file names
use "C:\Basak\Mergers\March2006\Data\may3allmarginalcoefficients.dta", clear
tabstat R2 X2 if tdummy==0 & coefficientormedian=="coefficient" & testtype=="robust1", statistics(mean sd p25 p50 p75 n) columns(statistics) longstub	tabstat R2 X2 if tdummy==1 & coefficientormedian=="coefficient" & testtype=="robust1", statistics(mean sd p25 p50 p75 n) columns(statistics) longstub

gen rob1testflag=0 if testtype=="main" & coefficientormedian=="median"
replace rob1testflag=1 if testtype=="robust1" & coefficientormedian=="median"
ranksum ROA if tdummy==0, by(rob1testflag)

declare traditional file names
use "C:\Basak\Mergers\March2006\Data\april29annualdatarob2.dta", clear
drop if tdummy1==2
tab tdummy1
!6791 bidders and 3599 targets!
tab tdummy1 if pa==
!552 bidders with pa!
tab tdummy1 if pt==
tab tdummy2 if pt==
!148+17 targets with pt!
!put data into long by tdummy!
reshape long mergerintensityalt dealnumber tdummy dateannounced numberofannouncementsinyear, i(gvkey fiscalyear) j(doubles)
tabmiss tdummy
drop if tdummy==
tab tdummy
!552 bidder, 165 target, total=717!
keep gvkey cusip tdummy dateannounced pa pt
gen year=year(dateannounced)
sort cusip year tdummy
save "C:\Basak\Mergers\March2006\Data\may15EXECOMPIRRCRobMerge.dta", replace

use "C:\Basak\Mergers\March2006\Data\April20secondstage.dta", clear

drop xbA pt xbT pa
sort cusip year tdummy
merge cusip year tdummy using "C:\Basak\Mergers\March2006\Data\may15EXECOMPIRRCRobMerge.dta"
tab _merge
!merged 9510, unmerged pa-pt 2349!
drop if _merge==3

!IRRC AND EXECOMP DATA!
gen flagEXECOMP=1 if meanpercompfromstockop==. | meanretirementyears==. | CEOequity==.
replace flagEXECOMP=0 if flagEXECOMP==.
gen flagIIRC=1 if gindex==.
replace flagIIRC=0 if flagIIRC==.
tabstat carwindow1 carwindow2 carwindow4 carwindow5 if tdummy==0 & multipleannouncements==1, statistics(mean sd n)
columns(statistics) by(flagEXECOMP) longstub
tabstat carwindow1 carwindow2 carwindow4 carwindow5 if tdummy==1 & multipleannouncements==1, statistics(mean sd n)
columns(statistics) by(flagEXECOMP) longstub
matrix t=0
matrix z=0
matrix p=0
matrix chi=0
for XY in any carwindow1 carwindow2 carwindow4 carwindow5: ttest XY if multipleannouncements==1 & tdummy==0,
by(flagEXECOMP)\matrix t=(t,r(t))\ranksum XY if multipleannouncements==1 & tdummy==0, by(flagEXECOMP)\matrix z=(z,r(z))\ksmirnov XY if multipleannouncements==1 & tdummy==0, by(flagEXECOMP)\matrix p=(p, r(p))\kwallis XY if multipleannouncements==1 & tdummy==0, by(flagEXECOMP)\matrix chi=(chi, r(chi2_adj))
matrix final=(t', z', p', chi')
matrix list final
matrix t=0
matrix z=0
matrix p=0
matrix chi=0
for XY in any carwindow1 carwindow2 carwindow4 carwindow5: ttest XY if multipleannouncements==1 & tdummy==1,
by(flagEXECOMP)\matrix t=(t,r(t))\ranksum XY if multipleannouncements==1 & tdummy==1, by(flagEXECOMP)\matrix z=(z,r(z))\ksmirnov XY if multipleannouncements==1 & tdummy==1, by(flagEXECOMP)\matrix p=(p, r(p))\kwallis XY if multipleannouncements==1 & tdummy==1, by(flagEXECOMP)\matrix chi=(chi, r(chi2_adj))
matrix final=(t', z', p', chi')
matrix list final
matrix t=0
matrix z=0
matrix p=0
matrix chi=0

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```
tabstat carwindow1 carwindow2 carwindow4 carwindow5 if tdummy==0 & multipleannouncements==1, statistics(mean sd n) columns(statistics) by(flagiRRC)
tabstat carwindow1 carwindow2 carwindow4 carwindow5 if tdummy==1 & multipleannouncements==1, statistics(mean sd n) columns(statistics) by(flagiRRC)
matrix t=0
matrix z=0
matrix p=0
matrix chi=0
for XY in any carwindow1 carwindow2 carwindow4 carwindow5: ttest XY if multipleannouncements==1 & tdummy==0, by(flagiRRC)
  matrix t=(t, r(t))
ranksum XY if multipleannouncements==1 & tdummy==0, by(flagiRRC)
  matrix z=(z, r(z))
ksmirnov XY if multipleannouncements==1 & tdummy==0, by(flagiRRC)
  matrix p=(p, r(p))
kwallis XY if multipleannouncements==1 & tdummy==0, by(flagiRRC)
  matrix chi=(chi, r(chi2_adj))
matrix final=(t', z', p', chi')
matrix list final
matrix t=0
matrix z=0
matrix p=0
matrix chi=0
for XY in any carwindow1 carwindow2 carwindow4 carwindow5: ttest XY if multipleannouncements==1 & tdummy==1, by(flagiRRC)
  matrix t=(t, r(t))
ranksum XY if multipleannouncements==1 & tdummy==1, by(flagiRRC)
  matrix z=(z, r(z))
ksmirnov XY if multipleannouncements==1 & tdummy==1, by(flagiRRC)
  matrix p=(p, r(p))
kwallis XY if multipleannouncements==1 & tdummy==1, by(flagiRRC)
  matrix chi=(chi, r(chi2_adj))
matrix final=(t', z', p', chi')
matrix list final
drop flagEXECOMP
drop flagiRRC
drop if pa==. & pt==.
```
gen flagIRRC.EXECOMP=1 if meanpercompfromstockop==. | meanretirementyears==. | CEOequity==. | gindex==.
replace flagIRRC.EXECOMP=0 if flagIRRC.EXECOMP==.

desstring valueoftransactionmil, gen(dealvalue) force
gen relvalue= dealvalue/(sharesoutstanding*priceclose)
tabstat dealvalue allequity if acquirordummy==1, by(flagIRRC.EXECOMP) statistics (mean sd n)
test dealvalue if acquirordummy, by(flagIRRC.EXECOMP)
tabstat dealvalue allequity if targetdummy==1, by(flagIRRC.EXECOMP) statistics (mean sd n)

gen lambdaA=normden(-pa)/(1-norm(-pa))
gen lambdaT=normden(-pt)/(1-norm(-pt))

cd C:\Basak\Mergers\March2006\Tables
!acquirers!
regress carwindow2 lambdaA allequity if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity using "June13regressionsRobustExecompiRRC.txt", replace bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy if acquirordummy==1 &
multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using "June13regressionsRobustExecompiRRC.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity sameindustry samestate publicdummy if acquirordummy==1 &
multipleannouncements==1
outreg lambdaA allequity sameindustry samestate publicdummy using "June13regressionsRobustExecompiRRC.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate
publicdummy if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "June13regressionsRobustExecompiRRC.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)

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regress carwindow2 allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy if e(sample)
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy using "June13regressionsRobustExecompRRC.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
tabstat lambdaA if e(sample), stats(mean sd p25 p50 p75 n)
!economic significance = 48 to 51 basis points!

!targets!

regress carwindow2 lambdaT allequity if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity using "June13regressionsRobustExecompRRC.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using "June13regressionsRobustExecompRRC.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity sameindustry sameestate publicdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity sameindustry sameestate publicdummy using "June13regressionsRobustExecompRRC.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy using "June13regressionsRobustExecompRRC.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy using e(sample)
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy using "June13regressionsRobustExecompRRC.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
tabstat lambdaT if e(sample), stats(mean sd p25 p50 p75 n)
!standard errors! 
!acquirers!

regress carwindow2 lambdaA allequity if acquirordummy==1 & multipleannouncements==1 
outreg lambdaA allequity using "June13regressionsRobustExecompiRRCl.txt", replace bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy if acquirordummy==1 & multipleannouncements==1 
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using "June13regressionsRobustExecompiRRCl.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity sameindustry samestate publicdummy if acquirordummy==1 & multipleannouncements==1 
outreg lambdaA allequity sameindustry samestate publicdummy using "June13regressionsRobustExecompiRRCl.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if e(sample) 
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "June13regressionsRobustExecompiRRCl.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
tabstat lambdaA if e(sample), stats(mean sd p25 p50 p75 n) 
!economic significance = 48 to 51 basis points!

!targets!

regress carwindow2 lambdaT allequity if targetdummy==1 & multipleannouncements==1 
outreg lambdaT allequity using "June13regressionsRobustExecompiRRCl.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using
"June13regressionsRobustExecompiRRCl.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity sameindustry samestate publicdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity sameindustry samestate publicdummy using "June13regressionsRobustExecompiRRCl.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "June13regressionsRobustExecompiRRCl.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if e(sample)
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "June13regressionsRobustExecompiRRCl.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
tabstat lambdaT if e(sample), stats(mean sd p25 p50 p75 n)
regress carwindow2 lambdaT allequity if targetdummy==1 & multipleannouncements==1
gen flag1=1 if e(sample)
regress carwindow2 lambdaA allequity if acquirordummy==1 & multipleannouncements==1
replace flag1=1 if e(sample)
tabstat sameindustry samestate publicdummy defensedummy HotileorUnsolAttitude targetbankruptdummy if flag1==1,stats(mean sd p25 p50 p75 n) longstub columns(statistics)
drop flag1

! File 7 !
! Robustness, industry fixed effects, Section 7.1.3!

use "C:\Basak\Mergers\March2006\Data\December20COMPUSTATCRSPSDCmerged.dta", clear
save "C:\Basak\Mergers\March2006\Data\April14COMPUSTATCRSPSDCmerged.dta", replace

!I need unique gvkey yearquarterind. However I have firms making bids and receiving bids with same gvkey in the same quarter!
bysort yearquarterind gvkey: egen multipleanngvkeyinquarter=count(_n)
tab multipleanngvkeyinquarter tdummy
!42 bidders and 31 targets, 23 nonmerging!
list gvkey cusip fyr yearquarterind netsales coname if multipleanngvkeyinquarter==2 & tdummy==2, nodisplay
!Drop the firms which make and receive bids in the same quarter for now. Think about it later!
drop if multipleanngvkeyinquarter==2

tab tdummy
!8092 bidders, 3855 targets, 550,711 no merger firm quarters!

append using C:\Basak\Mergers\March2006\Data\SDCunmatchedfirmsMay52006.dta

!17681 bidders, 18079 targets, 550,711 no merger firm quarters!

keep SDCsic cusip gvkey dnum fyr fiscalyear fiscalquarter fqenddt fqbegdt coname tdummy dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6 dateannounced1 dateannounced2 dateannounced3 multipleannouncementsbytdummy1 multipleannouncementsbytdummy2 multipleannouncementsbytdummy3 multipleannouncementsbytdummy4 multipleannouncementsbytdummy5 multipleannouncementsbytdummy6 name statementmatchmonth year month dealnumber1 dealnumber2 dealnumber3 dealnumber4 dealnumber5 dealnumber6 dateannounced
gen newyear=year(fqenddt)
gen newquarter=quarter(fqenddt)
replace newquarter=quarter(dateannounced)-1 if newquarter==.
replace newyear=year(dateannounced) if newyear==.
replace newyear=year(dateannounced)-1 if newyear==. & newquarter==0
replace newquarter=4 if newquarter==0

newquarter-=0
replace newyear=year(dateannounced)-1 if newyear==.
newquarter=0
replace newquarter=4 if newquarter==0

tabmiss SDCsic if tdummy==0 | tdummy==1
! all nonmissing!
tabmiss dnum if tdummy==2
! all nonmissing!

replace SDCsic="9999" if SDCsic=="999D" | SDCsic=="999E"
replace SDCsic="499" if SDCsic=="499A"

destring SDCsic, replace
gen flag=0 if SDCsic==dnum & SDCsic==., & dnum==.
replace flag=1 if SDCsic==dnum & SDCsic==., & dnum==.
tab flag
! 6231 disagreement!
drop flag
replace SDCsic=SDCsic*10 if SDCsic<1000
replace dnum=dnum*10 if dnum<1000
gen SDCsic2=int(SDCsic/100)
gen CRSPsic2=int(dnum/100)
gen flag=0 if SDCsic2==CRSPsic2 & SDCsic2==. & CRSPsic2==.
replace flag=1 if SDCsic2==CRSPsic2 & SDCsic2==. & CRSPsic2==.
tab flag
!2494 disagreement, 9466 agreed, 20.88% disagree!
drop flag
gen finalsic=CRSPsic2 if tdummy==2
replace finalsic=SDCsic2 if tdummy==2
bysort newyear newquarter finalsic: egen numberoffirms=count(_n)
replace finalsic=int(finalsic/10)*10 if numberoffirms<5
drop numberoffirms
replace finalsic=99 if finalsic==90
bysort newyear newquarter finalsic: egen numberoffirms=count(_n)
tab numberoffirms
drop numberoffirms

! lets look at years!
tab tdummy newyear if newyear<1990
drop if newyear<1977
tab tdummy newyear if newyear>1989
drop if newyear==2005
drop if newyear==1977 & (newquarter==1|newquarter==2)
egen yearquarterind=group(newyear newquarter)
tab newyear newquarter if yearquarterind==1 | yearquarterind==110
!1 (1977/1) to 112 (2004/4)
tab yearquarterind tdummy if yearquarterind<20 | yearquarterind>105
!until yearquarterind=12, less than bidders and targets in each quarter and in yearquarterind==110, only 9 bidders!
! Pool quarters 1-4 (77-3 to 78-2), 5-8 (78-3 to 79-2), 9-12 (79-3 to 80-2) into one pool. Pool the 4th quarter of 2004 into 3rd quarter
since there are only 9 bidders and no targets!
egen yearquarterindadj=group(newyear newquarter)if yearquarterind>9
replace yearquarterindadj=. if yearquarterindadj==1 | yearquarterindadj==2 |yearquarterindadj==3
replace yearquarterindadj=1 if yearquarterindadj==. & (yearquarterind==1 | yearquarterind==2 | yearquarterind==3 | yearquarterind==4)
replace yearquarterindadj=2 if yearquarterindadj==. & (yearquarterind==5 | yearquarterind==6 | yearquarterind==7 | yearquarterind==8)
replace yearquarterindadj=3 if yearquarterindadj==. & (yearquarterind==9 | yearquarterind==10 | yearquarterind==11 | yearquarterind==12)
replace yearquarterindadj=100 if yearquarterindadj==101
tab newyear newquarter if yearquarterindadj<5 | yearquarterindadj>99
save "C:\Basak\Mergers\March2006\Data\May52006COMPUSTATCRSPSDCmerged.dta", replace

tab finalsic, gen(inddummy)

cd C:\Basak\Mergers\March2006\Tables
set more off
gen acquirordummy=0
replace acquirordummy=1 if tdummy==0
gen targetdummy=0
replace targetdummy=1 if tdummy==1

!acquiror!
quietly probit acquirordummy inddummy1-inndummy57 if yearquarterindadj==1
quietly predict pa if e(sample)
quietly predict xbA if e(sample), xb
quietly outreg using "May5Robust3A.txt", replace bracket ctitle("1") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)
quietly mfx compute, at(zero) nose

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quietly matrix bA1=e(Xmfx_dydx)'
quietly matrix medianA1=e(Xmfx_X)'
for XY in num 2/100: quietly probit acquirordummy inddummy1-inddummy57 if yearquarterindadj==XY\quietly predict patemp if e(sample)\quietly replace pa=patemp if yearquarterindadj==XY & pa=. \drop patemp\quietly predict xbAtemp if e(sample), xb\quietly replace xbA=xbAtemp if yearquarterindadj==XY & xbA=. \drop xbAtemp\quietly outreg using "May5Robust3A.txt", append bracket ctitle("XY") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2) quietly mfx compute, at(zero) nose\quietly matrix bAXY=e(Xmfx_dydx)'
quietly matrix medianAXY=e(Xmfx_X)'

!target!
probit targetdummy inddummy1-inddummy57 if yearquarterindadj==5
quietly predict pt if e(sample) 
quietly predict xbT if e(sample), xb
quietly outreg using "May5Robust3T.txt", replace bracket ctitle("4") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2)
quietly mfx compute, at(zero) nose 
quietly matrix bT1=e(Xmfx_dydx)'
quietly matrix medianT1=e(Xmfx_X)'
for XY in num 2/100: quietly probit targetdummy inddummy1-inddummy57 if yearquarterindadj==XY\quietly predict pttemp if e(sample)\quietly replace pt=pttemp if yearquarterindadj==XY & pt==. \drop pttemp\quietly predict xbTtemp if e(sample), xb\quietly replace xbT=xbTtemp if yearquarterindadj==XY & xbT==. \drop xbTtemp\quietly outreg using "May5Robust3T.txt", append bracket ctitle("XY") bdec(4) noaster addstat("Pseudo R squared", e(r2_p), "X2", e(chi2), "df", e(df_m)) tdec(2) quietly mfx compute, at(zero) nose\quietly matrix bTXY=e(Xmfx_dydx)'
quietly matrix medianTXY=e(Xmfx_X)'
tabstat pa pt, by(tdummy) stats(mean sd p5 p25 p50 p75 p95 n) columns(statistics) longstub
save "C:\Basak\Mergers\March2006\Data\May52006COMPUSTATCRSPSDCmerged.dta", replace

drop if tdummy==2

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keep cusip gvkey dateannounced1
for num 1/100: svmat bAX, name(aperiodX)
for num 1/100: svmat bTX, name(TperiodX)
for num 1/100: rename aperiodX1 aperiodX
for num 1/100: rename TperiodX1 TperiodX
keep aperiod1-aperiod100 Tperiod1-Tperiod100

save "C:\Basak\Mergers\March2006\Data\INDROBUSTNESSmarginalcoefficients.dta", replace
outsheet aperiod1-aperiod100 Tperiod1-Tperiod100 using "C:\Basak\Mergers\March2006\Data\INDROBUSTNESSmarginalcoefficients.txt", replace

use "E:\May52006COMPUSTATCRSPSDCmerged.dta", clear

tab tdummy if pa -=.
tab tdummy if pt -=.
!17,681 acquirers, 18,079 targets 436463 nonmerging!
!SIC disagreement!
gen SICsameflag=1 if SDCsic2==CRSPsic2 & tdummy-=2 & (SDCsic2-=. & CRSPsic2-=.)
replace SICsameflag=0 if SDCsic2-=CRSPsic2 & tdummy-=2 & (SDCsic2-=. & CRSPsic2-=.)
tab SICsameflag
!2494 not matching, 9453 matching!
sort yearquarterind cusip tdummy
save "C:\Basak\Mergers\March2006\Data\IndRobustnessData.dta", replace

drop if tdummy==2
tab tdummy
!17,681 acquirers, 18,079 targets!
!we have multiple announcements in data in the same quarter!
drop inddummy1-inddummy58
tabmiss dateannounced dateannounced1 dateannounced2 dateannounced3
count if dateannounced==. & dateannounced1==. & dateannounced2==. & dateannounced3==.
!0!
gen yeara=year(dateannounced)
for any dateannounced1 dateannounced2 dateannounced3: replace yeara=year(X) if yeara==.
gen montha=month(dateannounced)
for any dateannounced1 dateannounced2 dateannounced3: replace montha=month(X) if montha==.
keep cusip gvkey dnum coname fiscalyear fiscalquarter fqenddt fqbegdt tdummy name statementmatchmonth SDCsic2 CRSPsic2
finalsic yearquarterind yearquarterindadj acquireordummy targetdummy pa xbA pt xbT yeara montha
rename cusip cusip6
gen length=length(cusip6)
gen str8 cusip=cusip6
replace cusip="000"+cusip6 if length==3
replace cusip="00"+cusip6 if length==4
replace cusip="0"+cusip6 if length==5
replace cusip=cusip6+"10"
sort yeara montha cusip
save "C:\Basak\Mergers\March2006\Data\IndRobustnessDatamerge.dta", replace
insheet using "C:\Basak\Mergers\March2006\Data\EventusOutApril202006.txt", clear
tabmiss cusip
!11,325 bidders and targets, 12174-11325=849 missing!
gen str6 cusip6=substr(cusip,1,6)
gen yeara=int(eventdat/10000)
gen montha=int(eventdat/100)-yeara*100
sort yeara montha cusip
merge yea montha cusip using "C:\Basak\Mergers\March2006\Data\IndRobustnessDatamerge.dta"

tab _merge

!1043 unmatched from EVENTUS, 10,282 matched!

keep if _merge==3

drop _merge

drop weight1 weight2 weight3 weight4 weight5 weight6 length

sort eventdat tdummy

save "C:\Basak\Mergers\March2006\Data\IndRobustnessDatamerge.dta", replace

in

insheet using "C:\Basak\Mergers\March2006\Data\Dec122005outputSDC.txt", clear
tabmiss dealnumber dateannounced
drop if dateannounced=="

tabmiss dealnumber dateannounced

!18,325 deals!
gen str1 onedigitsica=substr(acquirorprimarysic,1,1)
gen str1 onedigitsict=substr(targetprimarysic,1,1)
drop if onedigitsica=="6"
drop if onedigitsict=="6"
drop onedigitsict onedigitsica
tabmiss dealnumber dateannounced

!18272 deals!
gen dateannounced1=date(dateannounced, "mdy")
format dateannounced1 %dN/D/Y
gen dateeffective1=date(dateeffective, "mdy")
format dateeffective1 %dN/D/Y
gen datewithdrawn1=date(datewithdrawn, "mdy")
format datewithdrawn1 %dN/D/Y
drop dateannounced datew withdrawn dateeffectiveename dateannounced1 dateannounced
rename dateeffective1 dateeffective
rename datewithdrawn1 datew withdrawn
gen sameacquirortargetcusip=match(acquirorcusip,targetcusip)
tab sameacquirortargetcusip
!check if acquiror and target cusip same, 41 with same!
list targetname acquirorname dealnumber if sameacquirortargetcusip==1
!checked names, acquiror and target names and cusips same, hence drop these deals!
drop if sameacquirortargetcusip==1
drop sameacquirortargetcusip
tabmiss dealnumber
!18,231 deals!
bysort acquirorcusip dateannounced: egen multipleacquirorannouncements=count(_n)
bysort targetcusip dateannounced: egen multipletargetannouncements=count(_n)
tab multipleacquirorannouncements
!multiple acquiror announcements 249 firms with 2 ann. (249*2=498 double counts), 22 with 3, 6 with 4, 3 with 5, 2 with 6!
tab multipletargetannouncements
!multiple target announcements 54 firms with 2 (54*2=108 multiples), 1 with 3, 3 with 4!
drop multipleacquirorannouncements multipletargetannouncements
gen sameindustry=match( acquirorprimarysiccode, targetprimarysiccode)
tab sameindustry

!make a long list of acquirers and targets with identifier tdummy=0 if acquirer and tdummy=1 if target!
rename targetname name1
rename acquirorname name0
rename acquirorcusip cusip0
rename targetcusip cusip1
rename acqtickersymbol tickerO
rename targettickersymbol ticker1
rename acquirorprimarysiccode siccode0
rename targetprimarysiccode siccode1
rename targetpublicstatus publicstatus1
rename acqpublicstatus publicstatus0
rename acqclosingprice1daypriortoann price1daypriortoann0
rename targetclosingprice1daypriortoann price1daypriortoann1
rename acqclosingprice1wkpriortoann price1wkpriortoann0
rename targetclosingprice1wkpriortoann price1wkpriortoann1
rename acquirorclosingprice1dayafterann price1dayafterann0
rename targetclosingprice1dayafterann price1dayafterann1
rename acquirorclosingprice1weekafterann price1weekafterann0
rename targetclosingprice1weekafterann price1weekafterann1
rename acquirorclosingpriceatann priceatann0
rename targetclosingpriceatann priceatann1

reshape long name cusip ticker siccode publicstatus price1daypriortoann price1wkpriortoann price1dayafterann price1weekafterann priceatann, i(dealnumber) j(tdummy)
tabmiss dealnumber
tab tdummy
!36,462 bidders and targets; 18231 each!
gen year1=year(dateannounced)
gen month1=month(dateannounced)
gen day1=day(dateannounced)
gen str2 months=string(month1)
gen length=length(months)
replace months="0"+months if length==1
drop length
gen str2 days=string(day1)
gen length=length(days)
replace days="0"+days if length==1
drop length
/gen str4 years=string(year1)
gen str8 eventdat=years+months+days
drop year1 month1 day1 years months days
destring eventdat, replace force
/sort eventdat tdummy
merge eventda tdummy using "C:\Basak\Mergers\March2006\Data\IndRobustnessDatamerge.dta"
tab _merge
!12,035 1 (master unmatched) and 24,427 matched, EXACT!
drop if _merge==1
drop_merge
save "C:\Basak\Mergers\March2006\Data\IndRobustnessDatamerge.dta", replace

!VARIABLES!
gen defendedummy=0
replace defendedummy=1 if defense=="Yes"
gen HotileorUnsolAttitude=0
replace HotileorUnsolAttitude=1 if attitude=="Hostile" | attitude=="Unsolic."
gen targetbankruptdummy=0
replace targetbankruptdummy=1 if targetbankrupt=="Yes"
gen allequity=0
replace allequity=1 if ofstock==100
!FIT!
gen publicdumy=0
replace publicdummy=1 if publicstatus=="Public"
gen samestate=0
replace samestate=1 if intrastate=="Yes"
sort dealnumber
save "C:\Basak\Mergers\March2006\Data\IndRobustnessDatamerge.dta", replace

gen lambdaA=normden(-pa)/(1-norm(-pa))
gen lambdaT=normden(-pt)/(1-norm(-pt))

bysort cusip tdummy dateannounced: egen multipleannouncements=count(_n)
egen medianpa=median(pa) if multipleannouncements==1 & lambdaA-=& tdummy==0
gen anticipateda50=0 if pa<medianpa & multipleannouncements==1 & lambdaA-=& tdummy==0
replace anticipateda50=1 if pa>medianpa & multipleannouncements==1 & lambdaA-=& tdummy==0
drop medianpa
tabstat carwindow1 carwindow2 carwindow3 carwindow4 carwindow5 if multipleannouncements==1 & lambdaA-=& tdummy==0,
stats(mean sd p25 p50 p75 n) columns(statistics) longstub by(anticipateda50)

!acquirers!
cd C:\Basak\Mergers\March2006\Tables

regress carwindow2 lambdaA allequity if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity using "INDrobustnessregressionsJune13.txt", replace bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using "INDrobustnessregressionsJune13.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity sameindustry samestate publicdummy if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity sameindustry samestate publicdummy using "INDrobustnessregressionsJune13.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if acquiredummy==1 & multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "INDrobustnessregressionsJune13.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if e(sample)
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "INDrobustnessregressionsJune13.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
tabstat lambdaA if e(sample), stats(mean sd p25 p50 p75 n)

!targets!

regress carwindow2 lambdaT allequity if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity using "INDrobustnessregressionsJune13.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using "INDrobustnessregressionsJune13.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity sameindustry samestate publicdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity sameindustry samestate publicdummy using "INDrobustnessregressionsJune13.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if targetdummy==1 & multipleannouncements==1
regress carwindow2 allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if e(sample)
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using
"INDrobustnessregressionsJune13.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
tabstat lambdaT if e(sample), stats(mean sd p25 p50 p75 n)

!se!
!acquirers!
cd C:\Basak\Mergers\March2006\Tables
regress carwindow2 lambdaA allequity if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity using "INDrobustnessregressionsJune13_1.txt", replace bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using
"INDrobustnessregressionsJune13_1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity sameindustry samestate publicdummy if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity sameindustry samestate publicdummy using "INDrobustnessregressionsJune13_1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using
"INDrobustnessregressionsJune13_1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if e(sample)
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using
"INDrobustnessregressionsJune13_1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
tabstat lambdaA if e(sample), stats(mean sd p25 p50 p75 n)

!targets!

regress carwindow2 lambdaT allequity if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity using "INDrobustnessregressionsJune13_1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy using "INDrobustnessregressionsJune13_1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity sameindustry samestate publicdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity sameindustry samestate publicdummy using "INDrobustnessregressionsJune13_1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
regress carwindow2 allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if e(sample)
outreg allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "INDrobustnessregressionsJune13_1.txt", append bracket rdec(4) se bdec(4) 3aster tdec(2)
tabstat lambdaT if e(sample), stats(mean sd p25 p50 p75 n)

! File 8!

! Robustness, Alternative event windows, Section 7.2.1!

use "C:\Basak\Mergers\March2006\Data\April20secondstage.dta", clear
cd C:\Basak\Mergers\March2006\Tables

gen lambdaA=normden(-pa)/(1-norm(-pa))
gen lambdaT=normden(-pt)/(1-norm(-pt))

regress carwindow1 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy using "June13regressionsRobCAR.txt", replace bracket bdec(4) 3aster rdec(4) tdec(2)
tabstat lambdaA if e(sample), stats(sd)

for any carwindow2 carwindow4 carwindow5: regress X lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy if acquirordummy==1 & multipleannouncements==1\tabstat lambdaA if e(sample), stats(sd)\outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy using "June13regressionsRobCAR.txt", append bracket bdec(4) 3aster rdec(4) tdec(2)

for any carwindow1 carwindow2 carwindow4 carwindow5: regress X lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy if targetdummy==1 & multipleannouncements==1\tabstat lambdaT if e(sample), stats(sd)\outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy using "June13regressionsRobCAR.txt", append bracket bdec(4) 3aster rdec(4) tdec(2)

for any carwindow1 carwindow2 carwindow4 carwindow5: regress X lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy if acquirordummy==1 & multipleannouncements==1\tabstat lambdaA if e(sample), stats(sd)
for any carwindow1 carwindow2 carwindow4 carwindow5: regress X lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy if targetdummy==1 & multipleannouncements==1\tabstat lambdaT if e(sample), stats(sd)

!Robustness for multiple announcements, Section 7.2.2!

use "C:\Basak\Mergers\March2006\Data\April20secondstage.dta", clear

373
gen lambdaA = normden(-pa)/(1-norm(-pa))
gen lambdaT = normden(-pt)/(1-norm(-pt))
drop flag
replace flag = 0 if flag == .
tab multipleannouncements tdummy
gen multipleannouncementsdummy = 0 if multipleannouncements == 1
replace multipleannouncementsdummy = 1 if multipleannouncements > 1

longstub by(multipleannouncementsdummy)
tabstat carwindow1 carwindow2 carwindow4 carwindow5 if tdummy == 0 & flag == 1, stats(mean sd p25 p50 p75 n) columns(statistics)
longstub by(multipleannouncementsdummy)
tabstat carwindow1 carwindow2 carwindow4 carwindow5 if tdummy == 1 & flag == 1, stats(mean sd p25 p50 p75 n) columns(statistics)
longstub by(multipleannouncementsdummy)
matrix z = 0
matrix p = 0
matrix chi = 0
for any carwindow2 carwindow2 carwindow4 carwindow5:
ranksum X if flag == 1 & tdummy == 0,
by(multipleannouncementsdummy)
matrix z = (z, r(z))
ksmirnov X if flag == 1 & tdummy == 0,
by(multipleannouncementsdummy)
matrix p = (p, r(p))
kwallis X if flag == 1 & tdummy == 0,
by(multipleannouncementsdummy)
matrix chi = (chi, r(chi2_adj))
test X if flag == 1 & tdummy == 0,
by(multipleannouncementsdummy)
matrix pt = (pt, r(p))
matrix final = (z', p', chi', pt')
matrix list final
matrix z = 0
matrix p = 0
matrix chi=0
matrix pt=0
for any carwindow2 carwindow4 carwindow5: ranksum X if flag==1 & tdummy==1,
by(multipleannouncementsdummy)
matrix z=(z, r(z))
ksmirmov X if flag==1 & tdummy==1,
by(multipleannouncementsdummy)
matrix p=(p, r(p))
wallis X if flag==1 & tdummy==1, by(multipleannouncementsdummy)
matrix chi=(chi, r(chi2_adj))
ttest X if flag==1 & tdummy==1, by(multipleannouncementsdummy)
matrix pt=(pt, r(p))
matrix final=(z', p', chi', pt')
matrix list final
for any carwindow2 carwindow3 carwindow5: ttest X=0 if multipleannouncements==1 & tdummy==0
for any carwindow2 carwindow3 carwindow4 carwindow5: ttest X=0 if multipleannouncements==1 & tdummy==1
for any carwindow2 carwindow3 carwindow4 carwindow5: ranksum X if multipleannouncements==1 & flag==1,
by(tdummy)ksmirmov X if multipleannouncements==1 & flag==1, by(tdummy)
wallis X if multipleannouncements==1 & flag==1, by(tdummy)

cd C:\Basak\Mergers\March2006\Tables
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if acquirordummy==1 & multipleannouncementsdummy==0
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "June13regressionsMultAnn.txt", replace bracket rdec(4) bdec(4) 3aster tdec(2)
tabstat lambdaA if e(sample), stats(sd)
gen bidderflag=0 if e(sample)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if acquirordummy==1 & multipleannouncementsdummy==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "June13regressionsMultAnn.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
tabstat lambdaA if e(sample), stats(sd)
replace bidderflag=1 if e(sample)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if acquirordummy==1
tabstat lambdaA if e(sample), stats(sd)
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "June13regressionsMultAnn.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if targetdummy==1 & multipleannouncementsdummy==0
tabstat lambdaT if e(sample), stats(sd)
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "June13regressionsMultAnn.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
gen targetflag=0 if e(sample)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if targetdummy==1 & multipleannouncementsdummy==1
tabstat lambdaT if e(sample), stats(sd)
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "June13regressionsMultAnn.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
replace targetflag=1 if e(sample)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if targetdummy==1
tabstat lambdaT if e(sample), stats(sd)
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "June13regressionsMultAnn.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
ttest pa if tdummy==0 & flag==1, by(bidderflag)
ttest pt if tdummy==1 & flag==1, by(targetflag)
ttest carwindow2 if tdummy==0 & flag==1, by(bidderflag)
ttest carwindow2 if tdummy==1 & flag==1, by(targetflag)
Robustness for multiple announcements, Section 7.2.3!

use "C:\Basak\Mergers\March2006\Data\April20secondstage.dta", clear

gen lambdaA=normden(-pa)/(1-norm(-pa))
gen lambdaT=normden(-pt)/(1-norm(-pt))
gen index=index(valueoftransactionmil, 11

gen str30 dealvalue=valueoftransactionmil if index==0
replace dealvalue=substr(valueoftransactionmil,1,index-1)+substr(valueoftransactionmil,index+1,.), if index==0
destring dealvalue, replace
replace dealvalue=dealvalue/1000

gen relvalue=dealvalue*1000/(priceclose*sharesoutstanding)

cd C:\Basak\Mergers\March2006\Tables

!acquirers!

regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity & defensedummy & HotileorUnsolAttitude & targetbankruptdummy & sameindustry & samestate & publicdummy using "june13regressionsRELVALUE.txt", replace bracket rdec(4) bdec(4) 3aster tdec(2)
tabstat lambdaA if e(sample), stats(mean sd p25 p50 p75 n)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy dealvalue relvalue if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity & defensedummy & HotileorUnsolAttitude & targetbankruptdummy & sameindustry & samestate & publicdummy & dealvalue & relvalue using "june13regressionsRELVALUE.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
tabstat lambdaA if e(sample), stats(mean sd p25 p50 p75 n)
economic significance \( 0.13 \times 3.66 \) to \( 3.83 \) = 48 to 51 basis points!

!targets!

regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy using "june13regressionsRELVALUE.txt", append bracket rdec(4) bdec(4) tdec(2)
tabstat lambdaT if e(sample), stats(mean sd p25 p50 p75 n)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy dealvalue relvalue if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry sameestate publicdummy dealvalue relvalue using "june13regressionsRELVALUE.txt", append bracket rdec(4) bdec(4) tdec(2)
tabstat lambdaT if e(sample), stats(mean sd p25 p50 p75 n)

!Robustness, Identification Strategy, Section 7.3!

use "C:\Basak\Mergers\March2006\Data\April20secondstage.dta", clear
gen lambdaA=normden(-pa)/(1-norm(-pa))
gen lambdaT=normden(-pt)/(1-norm(-pt))
gen index=index( valueoftransactionmil, ")")
gen str30 dealvalue=valueOfTransactionmil if index==0
replace dealvalue=substr(valueoftransactionmil,1,index-1)+substr(valueoftransactionmil,index+1,.) if index==0
destring dealvalue, replace
replace dealvalue=dealvalue/1000
ngen relvalue=dealvalue*1000/(priceclose*sharesoutstanding)
cd C:\Basak\Mergers\March2006\Tables

!acquirers!

regress carwindow2  lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy using "June13regressionsIDENTIFICATION.txt", replace bracket rdec(4) bdec(4) 3aster tdec(2)
for any previousmergers logassets cashratio mergerintensityalt1: regress carwindow2  lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy X if acquirordummy==1 &
multipleannouncements==1 outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy X using "June13regressionsIDENTIFICATION.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
corr lambdaA previousmergers logassets cashratio mergerintensityalt1 allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy if e(sample)

regress carwindow2  lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy dealvalue relvalue if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy dealvalue relvalue using "June13regressionsIDENTIFICATION.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
for any previousmergers logassets cashratio mergerintensityalt1: regress carwindow2  lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy X dealvalue relvalue if acquirordummy==1 &
multipleannouncements==1 outreg lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy X dealvalue relvalue using "June13regressionsIDENTIFICATION.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaA allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy dealvalue relvalue previousmergers logassets if acquirordummy==1 & multipleannouncements==1
outreg lambdaA allequity defense dummy HotileorUnsolAttitude target bankrupt dummy same industry same state public dummy deal value rel value previous mergers log assets using "June13 regressions IDENTIFICATION.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)

!targets!

regress car window2 lambdaT allequity defense dummy HotileorUnsolAttitude target bankrupt dummy same industry same state public dummy if targeted dummy==1 & multiple announcements==1
outreg lambdaT allequity defense dummy HotileorUnsol Attitude target bankrupt dummy same industry same state public dummy using "June13 regressions IDENTIFICATION.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
for any previous mergers log assets cash ratio merger intensity alt1: regress car window2 lambdaT allequity defense dummy HotileorUnsol Attitude target bankrupt dummy same industry same state public dummy X if targeted dummy==1 & multiple announcements==1\outreg lambdaT allequity defense dummy HotileorUnsol Attitude target bankrupt dummy same industry same state public dummy X using "June13 regressions IDENTIFICATION.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)

corr lambdaT previous mergers log assets cash ratio merger intensity alt1 allequity defense dummy HotileorUnsol Attitude target bankrupt dummy same industry same state public dummy if e(sample)

regress car window2 lambdaT allequity defense dummy HotileorUnsol Attitude target bankrupt dummy same industry same state public dummy deal value rel value if targeted dummy==1 & multiple announcements==1
outreg lambdaT allequity defense dummy HotileorUnsol Attitude target bankrupt dummy same industry same state public dummy deal value rel value using "June13 regressions IDENTIFICATION.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
for any previous mergers log assets cash ratio merger intensity alt1: regress car window2 lambdaT allequity defense dummy HotileorUnsol Attitude target bankrupt dummy same industry same state public dummy X deal value rel value if targeted dummy==1 & multiple announcements==1\outreg lambdaT allequity defense dummy HotileorUnsol Attitude target bankrupt dummy same industry same state public dummy X deal value rel value using "June13 regressions IDENTIFICATION.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)
regress carwindow2 lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy dealvalue relvalue previousmergers logassets if targetdummy==1 & multipleannouncements==1
outreg lambdaT allequity defensedummy HotileorUnsolAttitude targetbankruptdummy sameindustry samestate publicdummy dealvalue relvalue previousmergers logassets using "June13regressionsIDENTIFICATION.txt", append bracket rdec(4) bdec(4) 3aster tdec(2)

!Robustness, Cross-section, Section 7.4!

use "C:\Basak\Mergers\March2006\Data\April20secondstage.dta", clear

gendelaA=normden(-pa)/(1-norm(-pa))
gen lambdaT=normden(-pt)/(1-norm(-pt))

egen percent25a=pctile(pa) if multipleannouncements==1 & tdummy==0,p(25)
egen percent75a=pctile(pa) if multipleannouncements==1 & tdummy==0,p(75)
gen anticipateda25=0 if pa<percent25a & pa-=. & multipleannouncements==1 & tdummy==0
replace anticipateda25=1 if pa>percent75a & pa-=. & multipleannouncements==1 & tdummy==0
egen medianpa=median(pa) if tdummy==0 & multipleannouncements==1

gen anticipateda50=0 if pa<medianpa & pa-=. & multipleannouncements==1 & tdummy==0
replace anticipateda50=1 if pa>medianpa & pa-=. & multipleannouncements==1 & tdummy==0

drop medianpa percent25a percent75a

egen percent25t=pctile(pt) if tdummy==1 & multipleannouncements==1 & p(25)
egen percent75t=pctile(pt) if tdummy==1 & multipleannouncements==1,p(75)
gen anticipatedt25=0 if pt<percent25t & pt-=. & tdummy==1 & multipleannouncements==1
replace anticipatedt25=1 if pt>percent75t & pt-=. & tdummy==1 & multipleannouncements==1

drop medianpt percent25t percent75t

drop medianpt percent25t percent75t

gen index=index( valueoftransactionmil, "," )
gen str30 dealvalue=valueoftransactionmil if index==0
replace dealvalue=strstr(valueoftransactionmil,1,index-1)+strstr(valueoftransactionmil,index+1,.) if index==0
destring dealvalue, replace
replace dealvalue=dealvalue/1000

gen relvalue=dealvalue*1000/(priceclose*sharesoutstanding)
egen mediandealv=median(dealvalue) if dealvalue=.
egen mediandealt=median(dealvalue) if dealvalue=.
gen bigdeala=0 if dealvalue<mediandealv & dealvalue=.
gen bigdealt=0 if dealvalue<mediandealt & dealvalue=.
drop mediandealv

egen mediandealv=median(dealvalue) if dealvalue=.
gen bigdeala=1 if dealvalue>mediandealv & dealvalue=.
replace bigdeala=1 if dealvalue>mediandealv & dealvalue=.

egen mediandealt=median(dealvalue) if dealvalue=.
gen bigdealt=1 if dealvalue>mediandealt & dealvalue=.
replace bigdealt=1 if dealvalue>mediandealt & dealvalue=.

tabstat dealvalue if e(sample)
dealvalue=., stats(mean sd pl0 p25 p50 p75 p90)
!dealvalue
.4408771 2.502438 .00385 .011395 .039579 .165793 .64843!
go bigdeal25=0 if dealvalue<.011395 & e(sample) & dealvalue=.
replace bigdeal25=1 if dealvalue>.165793 & e(sample) & dealvalue=.

equitybigdeals25=1 if bigdeal25=1 & allequity=1
replace equitybigdeals25=0 if equitybigdeals25=.

table allequity anticipateda50 if tdummy==0, contents( mean carwindow2 n carwindow2)
for num 0/1: ttest carwindow2 if tdummy==0 & allequity==X & carwindow2=., by(anticipateda50)
for num 0/1: ttest carwindow2 if tdummy==0 & anticipateda50==X, by(allequity)

table bigdeala anticipateda50 if tdummy==0, contents( mean carwindow2 n carwindow2)
for num 0/1: ttest carwindow2 if tdummy==0 & bigdeala==X & carwindow2-=., by(anticipateda50)
for num 0/1: ttest carwindow2 if tdummy==0 & anticipateda50==X, by(bigdeala)
Appendix D – Command file that downloads CAR data from EVENTUS

Panel A reports the web-query file that downloads CAR data from EVENTUS database. Panel B reports the data-request-summary file that the web-query produces.

Panel A – Web query

Eventus Queries

- Basic Event Study (Daily)
- Basic Event Study (Monthly)
- Fama French Model
- Output for Cross-Sectional Analysis
- Event Parameter

Eventus Query (Version 8.0) - Output for Cross-Sectional Analysis

This Eventus Query will produce a SAS dataset containing the cumulative abnormal return for each firm and specified window for further cross-sectional analysis. Note SAS dataset is the only output format available.

Data Query | Documentation | Eventus Manuals | Retrieve from myWRDS Queries

Step One : Request File & Search

Select identifier used in Request File

Select either PERMNO or CUSIP, in accordance with the identifier used in the request file.

Request File

Note: The saved query was reading from the file 'C:\Basak\Mergers\March2006\Data\Eventus.txt'. You need to use 'Browse' to select the file from your local computer or you can select another file to run the query.

The format of the request file is specific for Eventus. Some Sample Request Files can be found here.

To verify and convert the format of a request file, use the tool Request File Validation.
Approach

<table>
<thead>
<tr>
<th>Code Lookup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group datafile options:</td>
</tr>
<tr>
<td>none</td>
</tr>
</tbody>
</table>

Step Two: Select Market Indices and Benchmark Options

Market Index:

Index or Indices for Market Model Estimation:

- CRSP Equally Weighted

- Exclude Dividends (NODIVIDX)

Benchmark Type:

Step Three: Market Model Estimation

Estimation period:
End Before Event Date (EST)

Select the desired options for market indices and benchmarking.

All values presently on the page are default values.

Select the desired options for the Market Model Estimation

Note: Estimation period inputs must be
**Minimum Estimation Length (MINESTN)** \[30\]  
**Maximum Estimation Length (ESTLEN)** \[255\]  
- **POOL**

<table>
<thead>
<tr>
<th>AUTODEATE</th>
<th>none</th>
</tr>
</thead>
</table>

### Step Four: Event Windows

- **Event Period:**
  - PRE: \[30\]  
  - POST: \[30\]  
- **Allow OVERLAP with estimation period**

<table>
<thead>
<tr>
<th>Windows</th>
<th>Begin</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>-1</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>-3</td>
<td>3</td>
</tr>
</tbody>
</table>

Specify up to six alternative time windows for calculating cumulative returns and test statistics that are to be reported.

Note: all inputs must be integers.
How 'Save Query' works -- Using myWRDS Queries

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### Panel B – Data-request-summary file

<table>
<thead>
<tr>
<th>Data Request ID</th>
<th>021128735</th>
</tr>
</thead>
<tbody>
<tr>
<td>Libraries/Data Sets</td>
<td>evts/query /</td>
</tr>
<tr>
<td>Frequency/Date Range</td>
<td>daily / -</td>
</tr>
<tr>
<td>Search Variable</td>
<td></td>
</tr>
<tr>
<td>Input Codes</td>
<td>12174 item(s)</td>
</tr>
<tr>
<td></td>
<td>29117310 19771116</td>
</tr>
<tr>
<td></td>
<td>54634710 19780126</td>
</tr>
<tr>
<td></td>
<td>27805810 19780626</td>
</tr>
<tr>
<td></td>
<td>58507210 19780417</td>
</tr>
<tr>
<td></td>
<td>71582410 19780605</td>
</tr>
<tr>
<td></td>
<td>etc-</td>
</tr>
<tr>
<td>Conditional Statements</td>
<td>n/a</td>
</tr>
<tr>
<td>Output format/Compression</td>
<td>sas7bdat /</td>
</tr>
<tr>
<td>Variables Selected</td>
<td></td>
</tr>
<tr>
<td>Extra Variables and Parameters Selected</td>
<td></td>
</tr>
</tbody>
</table>

Your output is complete. Click on the link below to open the output file.

[q021128735.sas7bdat](#) (1.7 MB, 11325 observations 323 variables)

**Download instructions**
Netscape users... Shift-click
Internet Explorer users... Right-click and select "Save Target As..."

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Appendix E – Command file that downloads data from EXECOMP

Panel A reports the web-query file that downloads quarterly data from EXECOMP database. Panel B reports the data-request-summary file that the web-query produces.

Panel A – Web query

Annual Updates

- Bank
- Canadian
- Industrial
- Annual

Industrial Quarterly

Prices, Dividends & Earnings

- Segments
- Index Fundamentals

9 Compustat Executive Compensation

Data Query | Documentation | Data Manuals | Retrieve from myWRDS Queries

Step One: Date Range

Select date range of data.

Beginning 1992 Ending 2004

Step Two: Search

Select the variable used to search the database. Enter the companies using 1 of 3 methods.

1. Codes separated by a single space.
   Example: ibm
   msft dell

2. A text file (File
### Conditional Statements (Optional)

Select a Variable

- `>`

AND OR

Select a Variable

- `>`

---

**3. Entire Database**

*COMPUSTAT executive compensation data contains both active and inactive companies*

**Conditional Statements (Optional)**

- Select a Variable

- `>`

**3. All companies**

Active denotes companies that are currently trading. Inactive denotes companies that have been deleted from the active file due to bankruptcy, acquisition or merger, etc.

**Optional**

Build conditional statements using the list of variables, comparison operators, desired values, and logical operators. Most data items are represented in units of millions (see...
Step Three: Variables

<table>
<thead>
<tr>
<th>Company Information</th>
<th>Execution Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Name □</td>
<td>Executive ID Number □</td>
</tr>
<tr>
<td>Ticker Symbol □</td>
<td>Name Prefix □</td>
</tr>
<tr>
<td>Stock Exchange □</td>
<td>First Name □</td>
</tr>
<tr>
<td>Industry Group Description □</td>
<td>Middle Name □</td>
</tr>
<tr>
<td>Industry Group □</td>
<td>Last Name □</td>
</tr>
<tr>
<td>Company □</td>
<td>Age □</td>
</tr>
<tr>
<td>ID Number □</td>
<td>Gender □</td>
</tr>
<tr>
<td>CUSIP and Issue Number □</td>
<td>Most □</td>
</tr>
<tr>
<td>Street Address □</td>
<td>Annual Title □</td>
</tr>
<tr>
<td>City □</td>
<td>Annual CEO Flag □</td>
</tr>
<tr>
<td>State □</td>
<td>Footnote □</td>
</tr>
<tr>
<td>Zip Code □</td>
<td>Text □</td>
</tr>
<tr>
<td>Area Code □</td>
<td>Retirement Years □</td>
</tr>
<tr>
<td>Telephone □</td>
<td>Executive Is Director □</td>
</tr>
<tr>
<td>CUSIP and Issue Number □</td>
<td>Current □</td>
</tr>
<tr>
<td>S&amp;P Index □</td>
<td>CEO □</td>
</tr>
<tr>
<td>SIC Code □</td>
<td>Date Became CEO □</td>
</tr>
<tr>
<td>SIC Code Description □</td>
<td>Date Joined Company □</td>
</tr>
<tr>
<td></td>
<td>Date Rejoined Company □</td>
</tr>
<tr>
<td></td>
<td>Date Left as CEO □</td>
</tr>
<tr>
<td></td>
<td>Date Left Company □</td>
</tr>
</tbody>
</table>

Select variables to be included in the output. You can select multiple data items by holding the control key while clicking.

See documentation for a description of each data item.
<table>
<thead>
<tr>
<th>Date Releft Company</th>
<th>Reason Left Company</th>
<th>Current Rank by Salary + Bonus</th>
</tr>
</thead>
</table>

**Main Compensation**
- Salary ($Thous)
- Bonus ($Thous)
- Other Annual ($Thous)
- Total Current Compensation ($Thous)
- Total Compensation Including Option Grants
- Total Compensation Including Options Exercised
- Long Term Incentive Payouts
- All Other Total
- All Other Paid
- Shares Owned (Excl Options)
- Percentage of Company Stock Held
- Salary Percent Change Year-to-Year
- TCC Percent Change Year-to-Year
- TDC1 Percent Change Year-to-Year
- TDC2 Percent Change Year-to-Year
- Shares Owned Includes Options Flag
- Interlock Flag
- Short-Term Footnote Flag
- Long-Term Footnote Flag
### Director Related Items

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANNDIRE</td>
<td>Annual Director Retainer for Each Director ($)</td>
</tr>
<tr>
<td>DIRMTGFE</td>
<td>Director Meeting Fee Received by Each Director ($)</td>
</tr>
<tr>
<td>NUMMTGS</td>
<td>Number of Board Meetings</td>
</tr>
<tr>
<td>PCOMMFFEE</td>
<td>Director Committee Meeting Fees Flag</td>
</tr>
<tr>
<td>PEXECDFR</td>
<td>Exec Directors Receive Director Fees Flag</td>
</tr>
</tbody>
</table>

### Company Data Items

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SALES</td>
<td>Net Sales</td>
</tr>
<tr>
<td>SALE1CHG</td>
<td>Sales 1 Year Percent Change</td>
</tr>
<tr>
<td>SALE3LS</td>
<td>Sales 3 Year Growth Rate (least squares)</td>
</tr>
<tr>
<td>SALE5LS</td>
<td>Sales 5 Year Growth Rate (least squares)</td>
</tr>
<tr>
<td>OIBD</td>
<td>Operating Income Before Depreciation</td>
</tr>
<tr>
<td>OIBD1CHG</td>
<td>OIBD 1 Year Percent Change</td>
</tr>
</tbody>
</table>

### Step Four: Output

**Output Format**
- [tab-delimited text (*.txt)]

**Compression Type**
- [none]

**E-Mail Address (Optional)**

Select desired format of the output file. For large data requests, select a compression type to expedite downloads. If you enter your email address, you will receive an email...
How 'Save Query' works -- Using myWRDS Queries

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Panel B - Data Request File

Data Request Summary

<table>
<thead>
<tr>
<th>Data Request ID</th>
<th>221219982</th>
</tr>
</thead>
<tbody>
<tr>
<td>Libraries/Data Sets</td>
<td>comp/execcomp /</td>
</tr>
<tr>
<td>Search Variable</td>
<td>GVKEY</td>
</tr>
<tr>
<td>Input Codes</td>
<td>-all-</td>
</tr>
<tr>
<td>Conditional Statements</td>
<td>n/a</td>
</tr>
<tr>
<td>Output Format/Compression</td>
<td>tab /</td>
</tr>
<tr>
<td>Variables Selected</td>
<td>CONAME Ticker CUSIP SIC EXECID P_AGE_2 CEOANN TITLEANN RETYRS EXEC_DIR SALARY BONUS OTHAANN TCC TDC1 LTIP ALLOTHTO ALLOTHPD SHROWN SHROWNPC BLK_VALU SOPTEXSH SHRSOUT FYR</td>
</tr>
<tr>
<td>Extra Variables and</td>
<td></td>
</tr>
<tr>
<td>Parameters Selected</td>
<td></td>
</tr>
</tbody>
</table>

Your output is complete. Click on the link below to open the output file.

221219982.txt (21.2 MB, 153981 observations 27 variables)

Download instructions
Netscape users... Shift-click
Internet Explorer users... Right-click and select "Save Target As..."

Notice:
restrictions that are governed by your institution’s licensing of specific databases. If you have any questions about data licensing and appropriate usage, please contact wrds-support@wharton.upenn.edu.
Appendix F – Command file that downloads data from IRRC

Panel A reports the web-query file that downloads quarterly data from IRRC database. Panel B reports the data-request-summary file that the web-query produces.

Panel A – Web query

10  IRRC Governance Data Request
Data Query | Documentation | Data Manuals

Step One: Date Range

<table>
<thead>
<tr>
<th>Beginning</th>
<th>Ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>2004</td>
</tr>
</tbody>
</table>

Select frequency and range of data.

Step Two: Search

Search By: cn6

Choose 1 Of 3 Methods

1. Company Codes
   - Code Lookup
2. File Containing Company Codes

Select the variable used to search the database.

Enter the companies using 1 of 3 methods.

1. Codes separated by a single space.
   Example: ibm msft dell
2. A text file (File Format) on your local computer with codes entered one per line.
   Example:
Step Three: Variables

Company Information
Select All Clear
☑ Company Name ☑ Ticker Symbol ☑ Cusip
First 6-digits ☑ Stock Exchange ☑ IRRC Page
Number ☑ Year of reincorporation ☑ State of
inclusion ☑ Delaware Incorporation ☑ Dual
Class Stock

☑ Governance Index (Gompers, Ishii, Metrick)

Delay Provisions
Select All Clear
☑ Blank Check ☑ Classified Board ☑ Limits to
Call Special Meeting ☑ Limits for Written Consent
☑ Advance Notice Requirements *

Protection Provisions

Select variables to be included in the output. You can select multiple data items by holding the control key while clicking.

See documentation for a description of each data item.
<table>
<thead>
<tr>
<th>Select All Clear</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔ Compensation Plans ✔ Indemnification</td>
</tr>
<tr>
<td>✔ Contracts ✔ Golden Parachutes ✔ Severance</td>
</tr>
<tr>
<td>✔ Director Indemnification ✔ Director Liability</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compensation Provisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔ Limits to Amend Bylaws ✔ Limits to Amend</td>
</tr>
<tr>
<td>✔ Limits to Amend Charter ✔ Cumulative Voting ✔ Secret Ballot</td>
</tr>
<tr>
<td>✔ Super Majority to Approve Merger ✔ Unequal Voting ✔ Cumulative Voting for Substantial Shareholder *</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Provisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔ Antigreenmail ✔ Director's Duties--Nonfinancial Impact ✔ Fair Price ✔ Pension Parachutes</td>
</tr>
<tr>
<td>✔ Poison Pill ✔ Silver Parachutes</td>
</tr>
</tbody>
</table>
Control Share Acquisition Law (CSA)

Opt in - Opt outs
Select All Clear
- Opt out of BusComb/Freezeout
- Opt in to BusComb/Freezeout (GA)
- Opt out of Fair Price
- Opt in to Fair Price (GA)
- Opt out of Recapture of Profits
- Opt out of Control Share Cashout (PA)
- Opt out of Directors Duties
- Opt out of CSA
- Opt in to CSA (TN)

* Variables not included in the Governance Index.

Step Four: Output

Output Format
- Fixed-width text (*.txt)

Compression Type
- <none>

E-Mail Address (Optional)

Select desired format of the output file. For large data requests, select a compression type to expedite downloads. If you enter your email address, you will receive an email that contains a URL to the output file when the data request is finished processing.

Example:
Panel B - Data Request Summary

<table>
<thead>
<tr>
<th>Data Request ID</th>
<th>221221269</th>
</tr>
</thead>
<tbody>
<tr>
<td>Libraries/Data Sets</td>
<td>irrc/gset</td>
</tr>
<tr>
<td>Frequency/Date Range</td>
<td>ann / 1990 - 2004</td>
</tr>
<tr>
<td>Search Variable</td>
<td>Cn6</td>
</tr>
<tr>
<td>Input Codes all item(s)</td>
<td>-all-</td>
</tr>
<tr>
<td>Conditional Statements</td>
<td>n/a</td>
</tr>
<tr>
<td>Output format/Compression</td>
<td>txt</td>
</tr>
<tr>
<td>Variables Selected</td>
<td>CONAME CN6 GINDEX BLANKCHECK CBOARD LSPMT LWCNST ADVNR COMPPLAN DIRINDC GOLDENPARACHUTE SEVERANCE DIRIND DIRLIAB LABYLW LACHTR CUMVOTE SECRETBALLOT SUPERMAJOR UNEQVOTE CUMVOTESS ANTIGREEN DUTIESNF FAIRPRICE PPARACHUTE PPIIL SPARACHUTE</td>
</tr>
<tr>
<td>Extra Variables and Parameters Selected</td>
<td></td>
</tr>
</tbody>
</table>

Your output is complete. Click on the link below to open the output file.

Warning! Fixed-width files that have many data variables have extra header lines that will cause problems when importing to other programs. If you plan to import this data into Excel for example, please use another file format instead.

221221269.txt (2.4 MB, 12103 observations 28 variables)
Download instructions
Netscape users... Shift-click
Internet Explorer users... Right-click and select "Save Target As..."

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### Panel B – Data-request-summary file

<table>
<thead>
<tr>
<th>Data Request Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Request ID</td>
</tr>
<tr>
<td>Libraries/Data Sets</td>
</tr>
<tr>
<td>Frequency/Date Range</td>
</tr>
<tr>
<td>Search Variable</td>
</tr>
<tr>
<td>Input Codes</td>
</tr>
<tr>
<td>Conditional Statements</td>
</tr>
<tr>
<td>Output format/Compression</td>
</tr>
</tbody>
</table>

#### Variables Selected
NPERMNO NPERMCO LINKTYPE LINKFLAG CNUM CIC SMBL CONAME INCORP STK SPCCYR SPCCQTR STATE DNUM NAICS FYR FQBEGDT FQENDDT DATA1 DATA2 DATA6 DATA8 DATA14 DATA18 DATA20 DATA21 DATA22 DATA24 DATA30 DATA31 DATA36 DATA37 DATA38 DATA44 DATA46 DATA51 DATA54 DATA60 DATA61 DATA69 DATA90 DATA101

#### Extra Variables and Parameters Selected
LC LU LX LD LF LS LN LO

Your output is complete. Click on the link below to open the output file.

021002646.txt (219.6 MB, 726377 observations 45 variables)

**Download instructions**
Netscape users... Shift-click
Internet Explorer users... Right-click and select "Save Target As..."

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