



American Finance Association

Hostility in Takeovers: In the Eyes of the Beholder?

Author(s): G. William Schwert

Source: *The Journal of Finance*, Vol. 55, No. 6 (Dec., 2000), pp. 2599-2640

Published by: Blackwell Publishing for the American Finance Association

Stable URL: <http://www.jstor.org/stable/222395>

Accessed: 24/11/2009 12:11

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=black>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



Blackwell Publishing and American Finance Association are collaborating with JSTOR to digitize, preserve and extend access to *The Journal of Finance*.

<http://www.jstor.org>

Hostility in Takeovers: In the Eyes of the Beholder?

G. WILLIAM SCHWERT*

ABSTRACT

This paper examines whether hostile takeovers can be distinguished from friendly takeovers, empirically, based on accounting and stock performance data. Much has been made of this distinction in both the popular and the academic literature, where gains from hostile takeovers result from replacing incumbent managers and gains from friendly takeovers result from strategic synergies. Alternatively, hostility could reflect strategic choices made by the bidder or the target. Empirical tests show that most deals described as hostile in the press are not distinguishable from friendly deals in economic terms, except that hostile transactions involve publicity as part of the bargaining process.

THE PERCEPTION OF HOSTILITY in American takeovers has had important connotations in both the popular and the academic literature. Unwelcome bids are often perceived to threaten at least some of the stakeholders in target corporations, leading to extensive defensive reactions by the management of the target firm. In contrast, friendly takeovers are often seen to create synergies that make both the bidder and the target firm better off (see, for example, Mørck, Shleifer, and Vishny (1988, 1989)).

The distinction between hostile and friendly takeovers is also important if removing an inefficient target management team creates the gains from hostile takeovers. Manne (1965) refers to this as part of the market for corporate control. Several papers have shown that management turnover increases following hostile takeovers, including Shivdasani (1993). Although these theoretical polar cases seem intuitive, in practice most transactions contain elements of both friendly and hostile deals. That is, some stakeholders are likely to be disadvantaged by the transaction and there are likely

* Distinguished University Professor of Finance and Statistics, William E. Simon Graduate School of Business Administration, University of Rochester and Research Associate, National Bureau of Economic Research. I am indebted to Bob Comment for many discussions on this topic and for the use of his database. Comments from seminar participants at Columbia, Emory, Harvard, NYU, Yale, and the NBER Corporate Finance Conference are gratefully acknowledged. I also benefited from the suggestions of David Blackwell, Jarrad Harford, Paul Healy, Randall Mørck, René Stulz, Jerold Zimmerman, and an anonymous referee. The views expressed here are those of the author and do not necessarily reflect the views of the National Bureau of Economic Research. The Bradley Policy Research Center at the Simon School provided support for this research.

to be some economic gains from combining the operations of the bidder and target. Stulz (1988) discusses the relation between strategic and entrenchment motives for resistance by target management in response to a takeover offer.

Some laws and contracts depend on the distinction between hostile and friendly takeover attempts. For example, the *Wall Street Journal* (16 May 1996) reports that Aon Corp. began selling "Hostile Takeover Defense Insurance," designed to reimburse companies for the costs associated with warding off a hostile takeover bid or a proxy fight with dissident shareholders. Likewise, Mitchell and Netter (1989) argue that a proposed tax bill that would have discouraged hostile takeovers contributed to the 1987 stock market crash.

Hostility is usually perceived when an offer is made public that is aggressively rejected by the target firm. Consequently, perceptions of hostility are closely linked with takeover negotiations that are far from completion. Often firms engage in confidential negotiations before there is a public announcement of a bid or an intention to bid. In some cases, the first public announcement is of a successfully completed negotiation, which would be perceived to be friendly, even if the early stage private negotiations would have seemed hostile if they had been revealed to the public. In other cases, private negotiations break down and one of the parties decides that public information about the potential bid would enhance its bargaining position. For example, bidders might choose to reveal their intentions to put stockholder pressure on target managers. Likewise, targets might reveal a takeover attempt to attract alternative bidders.

Because public announcements of takeover attempts are part of negotiating strategies, the problem of distinguishing between hostile and friendly transactions is complex. Moreover, as with any negotiation, the mood of the process can change over time as circumstances change. Many transactions that seem hostile initially result in friendly negotiated settlements.

This paper analyzes 2,346 takeover contests for exchange-listed target firms from 1975 to 1996 to see whether there are identifiable differences between offers that are characterized as hostile and those that are not. Some takeover contests involve multiple offers, sometimes from multiple bidders. A contest ends when either the target firm is acquired and delisted (for successful offers) or when more than 12 months pass since the most recent offer (for unsuccessful offers). Hostility is measured based on (1) the characterization of takeovers by the *Wall Street Journal* (WSJ) or *Dow Jones News Retrieval* (DJNR), (2) the characterization of takeovers by Securities Data Company (SDC), (3) the use of unnegotiated tender offers, and (4) pre-bid takeover speculation. To determine whether there is economic substance to perceptions of hostility, I examine pre- and post-bid stock price and accounting performance of the target and bidder firms. I also consider the type of offer that is made, the mode of payment offered to target stockholders, and whether the bidding firm is also publicly traded. The differences seen in the data are consistent with the view that the distinction between hostile and friendly offers is largely a reflection of negotiation strategy.

I use a variety of accounting and stock price performance measures to analyze the performance of target firms. The issue of nonrandom data availability, or sample selection bias, affects this study, as well as most other studies like this one. Analysis of the sample selection problem shows that, on average, target firms with data available on many accounting measures of performance are larger and more prosperous, and hostility seems to occur more frequently.

Section I describes the data sources and the practical definitions of hostility that will be tested. It also shows descriptive statistics across time and various types of deals. Section II contains estimates of probit models that use stock-price and accounting performance measures to predict whether a deal is characterized as hostile. Section III shows estimates of the relation between perceived hostility and the success rate of offers, the premiums paid to target shareholders, and the frequency of multiple bidder auctions. Section IV analyzes the behavior of the stock returns for bidders that choose to make hostile offers. Section V contains concluding remarks.

I. Measuring Hostility and Performance

A. Definitions of Hostility

I use five definitions of hostility, which are not mutually exclusive:

Host(WSJ): If the *WSJ Index* or *DJNR* characterized a bid as hostile (at any time from 1975 to 1998, including retrospective descriptions of the deal).

Host(SDC): If SDC characterized a bid as hostile (which they describe as an unsolicited offer that is resisted by target management). This variable is available for 1,389 contests that I was able to match in the SDC database since 1980.

Host(Uns): If there is either an unnegotiated tender offer for control of the target firm or a merger proposal that specifies a price (a "bear hug").

Host(Pre): If during the 12 months before an initial bid, a 13D statement is filed in which the buyer discloses an intent to seek control, or there are significant merger rumors about the target firm (suggesting an effort to put the firm in play).

Host(Factor): If the first factor or principal component is from the set of three hostility variables with complete data (Host(WSJ), Host(Uns), and Host(Pre)). This is a continuous variable that is scaled to be between 0 and 1.

Table I contains summary statistics for the different measures of hostility and bivariate tests of whether the measures of hostility are similar in Panel A. Panel B contains summary statistics for a variety of characteristics of the transaction, including whether the target firm adopted a poison pill, whether there were multiple bidders (an auction), whether the target firm was even-

Table I

Summary Statistics for Takeover Characteristics and Measures of Hostility, 1975–1996

Average values of prior accounting and stock market performance, and the proportions of firms in various takeover categories for successful and unsuccessful takeover bids for exchange-listed target firms, 1975 to 1996. The estimates in columns (4)–(7) are differences in means from the full sample of 2,346 cases, with a *t*-statistic testing whether the difference is reliably different from zero using White's (1980) heteroskedasticity-consistent standard errors. These tests are designed to show whether the variable in question is related to each of the measures of hostility. Host(WSJ) is based on descriptions in the *Wall Street Journal Index* or *Dow Jones News Retrieval* (DJNR), Host(SDC) is based on whether the target firm resisted an unsolicited offer as determined by the Securities Data Company (SDC), Host(Uns) is based on whether the initial or winning bid is unsolicited, and Host(Pre) is based on whether the target firm is in play (someone has filed a 13D form with the SEC showing an accumulation of shares within the past 12 months) or the subject of a takeover rumor reported in *DJNR*. Host(Factor) is the first factor or principal component from the set of three hostility variables with complete data (Host(WSJ), Host(Uns), and Host(Pre)). Deal characteristics show the proportions of the full sample in which the target firm has a poison pill in place (Pill), whether there is a multiple bidder auction (Auction), whether the target firm is taken over without more than a one year hiatus between bids (Success), whether there is an all-cash payment to target shareholders (Cash), whether there is an all-equity payment to target shareholders (Equity), whether the deal is a tender offer (Tender Offer), and whether the bidder is an exchange-listed company (Public Bidder). Performance statistics show how the target firm was performing before the takeover bid. ROE is earnings divided by average stockholder's (book) equity and Sales Growth is the growth in sales over the fiscal year before the first bid. Liquidity is the ratio of net liquid assets to total assets, D/E is the long-term debt to book equity, M/B is the ratio of market to book value of stockholder's equity, P/E is the ratio of stock price to the earnings for the last fiscal year, and Size is the logarithm of the market value of common stock, all measured at the end of the fiscal year before the first bid. Target stock-price behavior shows the cumulative abnormal stock returns measured relative to a CRSP value-weighted market model regression estimated using a year of prior data for several periods. Runup is the cumulative abnormal return to the target firm's stock for trading days (–63, –1) before the first bid, Markup is the cumulative abnormal return for trading days (0, 126), and Premium is the cumulative abnormal return for trading days (–63, 126) (market model estimates from days (–316, –64)).

tually taken over (success), whether the final bid was in the form of all-cash or all-equity and whether it was a tender offer, and whether the first or winning bidder were NYSE- or AMEX-listed firms. It also shows whether these deal characteristics are correlated with the different measures of hostility. Panel C contains summary statistics for several accounting characteristics of the target firm, including ROE, Sales Growth, Liquidity, D/E, M/B, P/E, and Size (the log of equity capitalization), along with tests of whether these target performance characteristics are correlated with the different measures of hostility. Finally, Panel D contains summary statistics for the stock-price behavior of the target firm before (runup) and after (markup) the announcement of the first bid for this target firm, along with tests of whether the target stock performance is correlated with the different measures of hostility.

Table I provides a condensed summary description of the many variables that will be analyzed in more detail in the remainder of the paper. It also shows whether these variables are related to the different measures of hostility by showing *t*-statistics for the equality of means between the full sample of takeover contests and the hostile subsets. In some cases the bivariate analyses of the relation between measures of hostility and the economic characteristics of the transaction foreshadow the results of the more sophisticated multivariate tests in the later tables. At a minimum, these summary statistics provide a benchmark for understanding the data that are used in this paper. I will refer back to Table I repeatedly when moving to new hypotheses and tests.

B. Characteristics of Hostile Offers

As seen in Table I, of the 2,346 successful and unsuccessful takeover bids for exchange-listed firms from 1975 to 1996, 174 were characterized as hostile by *DJNR*, 300 were characterized as hostile by SDC, 990 were hostile based on unnegotiated bids, and 1,043 were hostile based on pre-bid events.

There is some overlap in the transactions that are characterized as hostile by these measures of hostility. For each of the four hostility indicator variables, columns (4)–(7) of Table I report differences in mean value within a subset as compared to the full sample, where subsets are defined by the hostility variables. For example, the value reported in the first row under column (5) is the mean value of *Host*(*WSJ*) among cases that are classified as hostile according to *Host*(*SDC*), less the mean value of *Host*(*WSJ*) among all cases (*Diff.* = 0.342). Thus, a takeover is more likely to be characterized as hostile by the *WSJ* if it is also characterized as hostile by SDC. The significance test (*t*-statistic = 12.32) is equivalent to a test of whether the mean of the observations in the subset (deals called hostile by SDC) equals the mean of the observations not in the subset (deals not called hostile by SDC).

The first three measures of hostility are strongly related, with weaker links to deals with pre-bid activity. For example, the *t*-statistic between *Host*(*WSJ*) and *Host*(*SDC*) is 25.19 using cases based on *Host*(*WSJ*) and

Table II

Relations Among Different Measures of Hostility, 1975–1996

Host(WSJ) is based on descriptions in the *Wall Street Journal Index* or *Dow Jones News Retrieval (DJNR)*. Host(SDC) is based on whether the target firm resisted an unsolicited offer as determined by the Securities Data Company (SDC). Host(Uns) is based on whether the initial or winning bid is unsolicited. Host(Pre) is based on whether the target firm is in play (someone has filed a 13D form with the SEC showing an accumulation of shares within the past 12 months) or the subject of a takeover rumor reported in DJNR. Asymptotic standard errors for the correlation coefficients are between 0.021 and 0.027 under the hypothesis of no correlation. Host(Factor) is the first factor or principal component from the set of three hostility variables with complete data (Host(WSJ), Host(Uns), and Host(Pre)). The cross-tabulations in Panel B show the frequency and types of disagreements among the four hostility measures.

Panel A: Correlation Coefficients Among Hostility Measures				
	Host(SDC)	Host(Uns)	Host(Pre)	Host(Factor)
Host(WSJ)	0.502	0.272	0.152	0.737
Host(SDC)		0.457	0.181	0.578
Host(Uns)			0.208	0.753
Host(Pre)				0.560

Panel B: Cross-Tabulations Among Separate Hostility Measures				
	Host(SDC) = 1	Host(SDC) = 0	Host(Uns) = 1	Host(Uns) = 0
Host(WSJ) = 1	106	12	156	18
Host(WSJ) = 0	194	1077	834	1338
	Host(Uns) = 1	Host(Uns) = 0	Host(Pre) = 1	Host(Pre) = 0
Host(SDC) = 1	263	37	198	102
Host(SDC) = 0	354	735	493	596
	Host(WSJ) = 1	Host(WSJ) = 0	Host(Uns) = 1	Host(Uns) = 0
Host(Pre) = 1	111	932	523	520
Host(Pre) = 0	63	1240	467	836

12.32 using cases based on Host(SDC). There are similar strong relations for both *WSJ* and SDC measures of hostility with unsolicited offers (Host(Uns)). The *t*-statistics relating pre-bid events with other measures of hostility are between 5.16 and 7.02, which reflect weaker, but highly significant relations.

Table II shows the correlation coefficients among the four measures of hostility. It also shows the correlation of the hostility measures with a composite measure of hostility created from the first factor or principal component, Host(Factor), created from the three hostility measures with complete data, (Host(WSJ), Host(Uns), and Host(Pre)).

The correlation between the *WSJ/DJNR* measure of hostility and the SDC measure is strongest, at 0.502. The correlations between the pre-bid measure of hostility Host(Pre) and the other measures are the smallest, between 0.152 and 0.208. Thus, although the four alternative measures of hostility

are positively associated, they are not highly correlated. The correlations with the hostility factor are larger, between 0.560 and 0.753, suggesting that this construct may help identify what we mean by hostility better than the individual variables.

Panel B of Table II shows the 2×2 contingency tables for various measures of hostility. All of the hostility variables are strongly associated, so I do not show the χ^2 statistics to test for association. These contingency tables make clear that almost all of the contests characterized as hostile by the *WSJ* are also characterized as hostile by SDC. Similarly, a preponderance of contests that the *WSJ* or SDC call hostile include at least one unsolicited bid.

These pair-wise comparisons show significant association, but the correlations are not as high as one would expect to find among alternative measures of a characteristic of corporate control transactions that is concrete, fundamental, exogenously determined, and self-evident. Yet, hostility is treated in much this way in both the popular press and most academic research. For example, many academic articles that study hostile takeovers are vague about the basis for identifying hostile offers. I use all four measures plus the composite factor in the tests below to determine whether the relations with other variables, such as takeover premiums, success rates, or auctions, help us identify economic distinctions among these measures of hostility.

C. Time Series Behavior of Hostile Offers

Figure 1a shows the total of the number of merger and tender offers for exchange-listed target firms each year from 1976 to 1996, along with the annual number of transactions characterized as hostile, using the four definitions. Figure 1b shows the proportion of hostile transactions, using the four definitions, from 1976 to 1996. The information on merger and acquisition announcements comes from Robert Comment's mergers & acquisitions (M&A) database, which covers all exchange-listed target firms in the period 1975 to 1996. These announcements were obtained through various keyword searches of the *DJNR* database, inspection of the *WSJ Index*, and from Commerce Clearing House's *Capital Changes Reporter* (the original source for Center for Research in Security Prices (CRSP) delisting codes). In this study, I use the subset of records covering merger proposals, merger agreements, and interfirm tender offers. Merger proposals are distinguished from merger talks by a public disclosure of terms of purchase. An announcement qualifies as the initial one if there has been no other qualifying announcement in the prior year. In Figure 1, the dating of the merger and tender offers is based on the date of the initial offer. The proportion of deals characterized as hostile by SDC is based on the subset of 1,389 offers that I identified on the SDC database.

About 7 percent of takeover contests involve at least one offer that is characterized as hostile by *WSJ/DJNR*, with high rates of hostility from 1978 to 1980, 1986 to 1989, and 1995 to 1996. The SDC database begins about 1980.

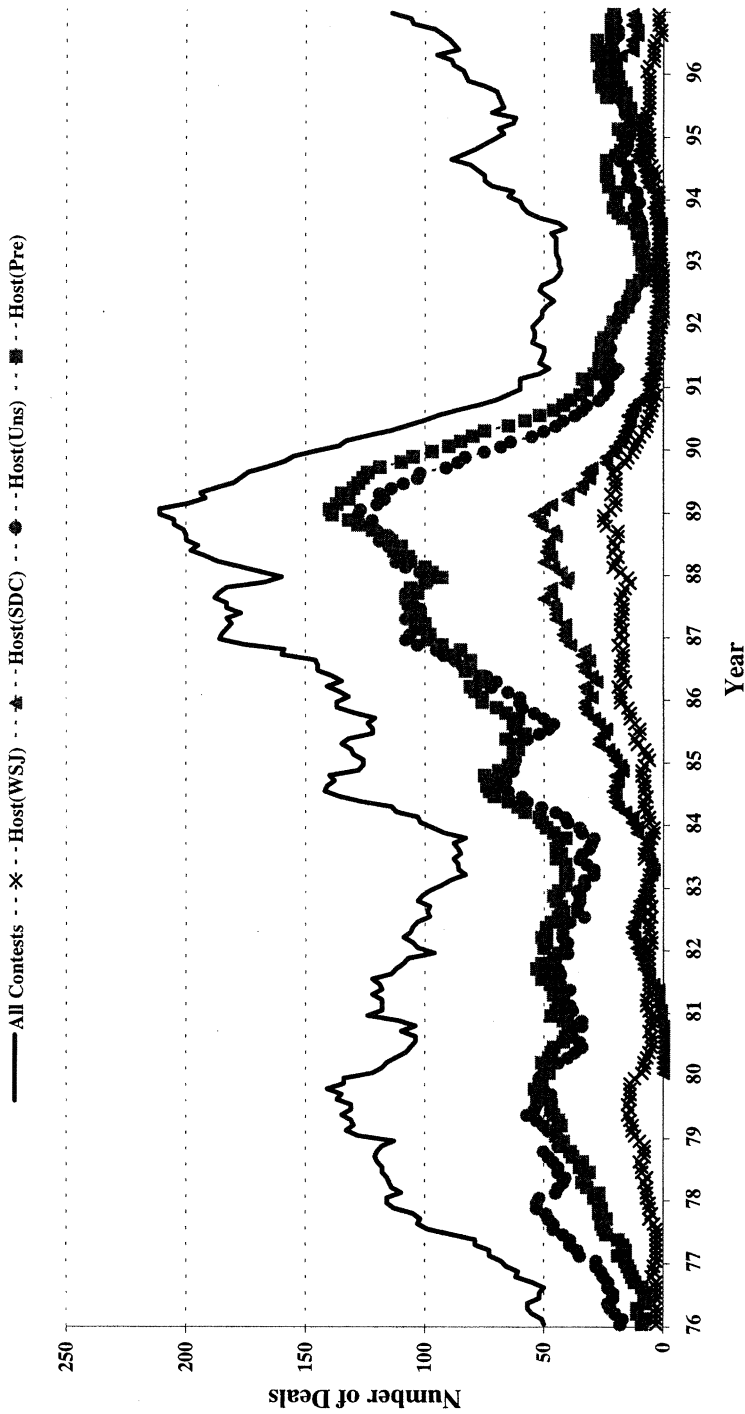


Figure 1a. Merger and tender offers for exchange-listed targets, and hostile offers, 1976-1996 (cumulative totals for the past 12 months). All initial merger or tender offers for exchange-listed target firms in the period 1975 to 1996, and the subsets that are perceived as hostile using four measures of hostility. The four measures of hostility are: offers that were ever characterized as hostile in a *Wall Street Journal* or *Dow Jones News Retrieval* story, offers that were ever characterized as hostile by Securities Data Company, offers where the initial or the winning bid is unsolicited, and offers where there was an initial Form 13D filing or a *WSJ* or *DJNR* story about takeover rumors during the prior year.

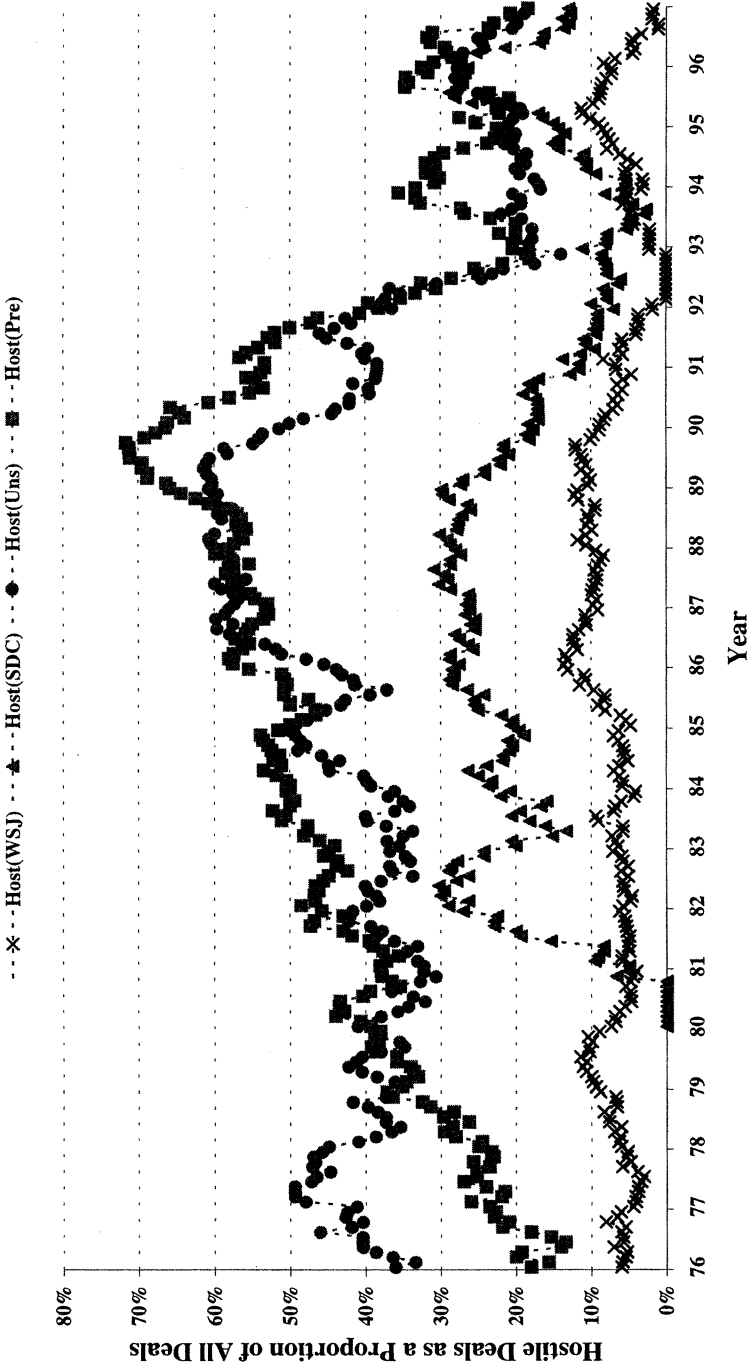


Figure 1b. Hostile offers for exchange-listed targets as a proportion of all offers, 1976-1996 (cumulative totals for the past 12 months). Proportion of all merger or tender offers that are perceived as hostile, by year and by four measures of hostility, for exchange-listed target firms in the period 1975 to 1996. The four measures of hostility are: offers that were ever characterized as hostile in a *Wall Street Journal* or *Dow Jones News Retrieval* story, offers that were ever characterized as hostile by SDC, offers where the initial or the winning bid is unsolicited, and offers where there was an initial Form 13D filing or a *WSJ* or *DJNR* story about takeover rumors during the prior year.

SDC characterizes about 21 percent of takeover contests as hostile, with the highest rates of hostile offers from 1982 to 1989 and 1995 to 1996. About 42 percent of takeover contests involve at least one unsolicited offer, with a noticeable drop since 1992. The rate of pre-bid activity also drops after 1992 to a level about half as high as during the 1980s. The rate of pre-bid activity showed relatively low levels from 1976 to 1979, but this probably reflects measurement error as the *WSJ Index* did not cover rumors and 13D filings in as much detail as does the *DJNR*, the wire service with records available only since 1979. Although the time series patterns of the alternate measures of hostility are similar, remember that the correlations among these measures are not large.

Figure 2 shows how the use of the word hostile has grown over time. Using *DJNR*, the solid line (plotted on the left axis) shows the number of stories containing the term "hostile takeover" for each year from November 1979 through June 1997, which grows from less than 50 stories in 1982 to more than 300 in recent years. To control for the growth in coverage by *DJNR*, the dashed line (plotted on the right axis) shows the proportion of takeover stories that included the adjective hostile. This varies in the range from 3–13 percent since 1981. Thus, at least since the early 1980s, the term hostile has been a common term in the business press in relation to takeover strategy.

Table III shows the number of takeover bids by year from 1975 to 1996 and tests, year by year, for whether the frequency of hostile bids within the population of exchange-listed firms differs from the frequency of all bids of any kind within this population, and does so separately for each of the four measures of hostility. The formal statistical tests support the impressions gained from Figures 1a and 1b. After 1991, there was a statistically significant shift away from hostility comparable in magnitude to the shift towards hostility seen in the early 1980s.¹

D. Characteristics of Takeover Deals

Table I also shows several characteristics of takeover deals, including whether the target was successfully taken over (without more than a one year interval between bids), whether the target firm has a poison pill in place during the takeover contest (Pill), whether other formal bids are made for this target firm (Auctions), whether the payment to target shareholders is all in the form of cash (Cash), whether the payment to target shareholders is all in the form of equity (Equity), whether the deal is a tender offer (Tender Offer), and whether the first or winning bidder is an exchange-listed company (Public Bidder). Poison pill information is from annual compilations contained in *Corporate Control Alert*, from various *DJNR* keyword searches, from the *Capital Changes Reporter*, and from *Moody's Manuals*.

¹ This probably reflects the effects of antitakeover devices, such as poison pills and state antitakeover laws. In contrast, Comment and Schwert (1995) were unable to identify a statistically significant decline in hostile offers based on an analysis of transactions through 1991.

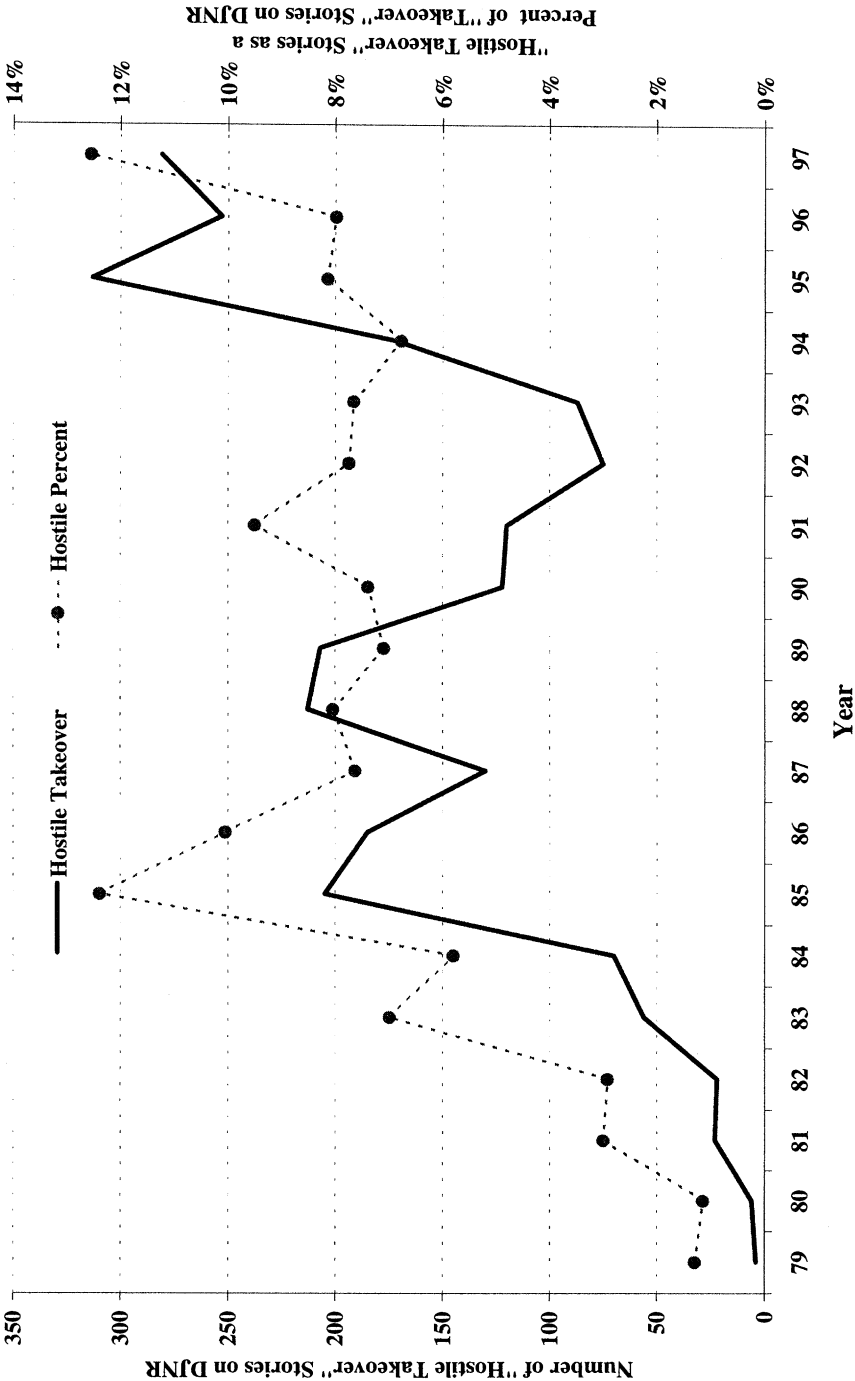


Figure 2. The number of *Dow Jones News Retrieval* stories containing the adjective "Hostile" modifying the noun "Takeover" in the period November 1979 to June 1997. Also, the proportion of "Takeover" stories containing "Hostile."

Table III
Frequency of Hostile Transactions by Year for Different Measures of Hostility, 1975–1996

The proportions of successful and unsuccessful takeover bids for exchange-listed target firms for each year from 1975 to 1996. The estimates in columns (4)–(7) are differences in means from the full sample of 2,346 cases, with a *t*-statistic testing whether the difference is reliably different from zero using White's (1980) heteroskedasticity-consistent standard errors. Host(WSJ) is based on descriptions in the *Wall Street Journal Index* or *Dow Jones News Retrieval*, Host(SDC) is based on whether the target firm resisted an unsolicited offer as determined by the Securities Data Company (SDC), Host(Uns) is based on whether the initial or winning bid is unsolicited, and Host(Pre) is based on whether the target firm is in play (someone has filed a 13D form with the SEC showing an accumulation of shares within the past 12 months) or the subject of a takeover rumor reported in *DJNR*.

Year	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	Cases	Full Sample	Mean	Std. Error	Diff.	t-statistic	Diff.	t-statistic	Diff.	t-statistic	Diff.	t-statistic	Diff.	t-statistic
1975	49		0.021	0.003	-0.010	-1.17					-0.010	-1.72	-0.022	-3.96
1976	66		0.028	0.003	-0.006	-0.47					0.000	0.04	-0.025	-3.80
1977	116		0.049	0.004	-0.016	-1.11	-0.001	-1.00			0.007	0.77	-0.042	-4.96
1978	113		0.048	0.004	0.010	0.55	0.009	1.19			-0.010	-1.13	-0.014	-1.62
1979	134		0.057	0.005	0.013	0.65	-0.001	-0.32			-0.008	-0.83	-0.015	-1.56
1980	124		0.053	0.005	-0.026	-1.92	-0.014	-2.73			-0.022	-2.38	-0.014	-1.53
1981	96		0.041	0.004	-0.007	-0.48	0.009	0.75			-0.001	-0.11	0.002	0.28
1982	98		0.042	0.004	-0.002	-0.11	0.004	0.36			-0.009	-1.14	0.001	0.09
1983	97		0.041	0.004	-0.020	-1.63	-0.002	-0.15			-0.010	-1.27	0.010	1.21
1984	126		0.054	0.005	-0.008	-0.50	-0.008	-0.51			0.017	1.78	0.016	1.63
1985	137		0.058	0.005	0.049	2.06	0.034	1.71			0.004	0.39	0.026	2.62
1986	186		0.079	0.006	0.020	0.86	0.030	1.38			0.052	4.39	0.028	2.47
1987	160		0.068	0.005	0.019	0.89	0.039	1.80			0.048	4.36	0.038	3.52
1988	211		0.090	0.006	0.058	2.13	0.063	2.62			0.068	5.45	0.078	6.35
1989	146		0.062	0.005	0.013	0.65	-0.020	-1.17			0.023	2.26	0.055	5.31
1990	60		0.026	0.003	-0.003	-0.24	-0.021	-2.11			-0.004	-0.62	0.009	1.38
1991	55		0.023	0.003	-0.019	-2.88	-0.027	-3.30			-0.006	-0.90	-0.006	-0.96
1992	44		0.019	0.003	-0.014	-2.17	-0.016	-1.92			-0.018	-3.54	-0.018	-3.43
1993	60		0.026	0.003	-0.015	-1.73	-0.035	-4.11			-0.027	-4.44	-0.012	-1.80
1994	71		0.030	0.004	0.005	0.32	-0.020	-1.65			-0.026	-3.93	-0.027	-3.98
1995	83		0.035	0.004	-0.001	-0.07	0.015	0.95			-0.021	-2.86	-0.017	-2.29
1996	114		0.049	0.004	-0.040	-4.28	-0.037	-2.61			-0.047	-5.74	-0.051	-6.13

For many of the deal characteristics in Table I, the qualitative results are similar for different measures of hostility. For example, all types of hostility are positively associated with the use of a poison pill by target firms, with t -statistics between 6.47 and 10.44. On average, 9.3 percent of targets have pills in the full sample, whereas deals labeled as hostile by SDC have targets with pills 36.0 percent of the time ($0.093 + 0.267$). It is difficult to assign causality here because the possibility of a hostile offer could lead firms to adopt defensive measures, but the existence of a poison pill could indicate entrenched management in the target firm, or a tough negotiating stance.

Multiple-bidder auctions are more likely to be perceived as hostile, with t -statistics between 7.59 and 15.05. Again, it is difficult to assign causality, as a hostile bid could cause target management to seek a friendlier competing bidder (a “white knight”), or it might reflect the desire to improve the terms of the deal through competition. Bidders are more likely to be perceived as hostile when they use tender offers rather than merger proposals, with t -statistics between 3.34 and 12.22. Because multiple-bidder auctions tend to involve tender offers, however, it is unclear from these statistics whether these two factors have distinct contributions to perceptions of hostility (although the correlation between auctions and tender offers is only 0.202).

Cash is more likely to be offered as a means of payment in hostile offers, although this relation is weak for the measure of hostility based on pre-bid events, where the t -statistic is only 1.69. In parallel with the use of cash, hostile bidders are less likely to offer only equity as compensation in hostile offers, with t -statistics between -6.97 and -15.47 .

The bidder is less likely to be an exchange-listed public firm if the deal is hostile using the SDC, unsolicited, or pre-bid events measures, with t -statistics of -2.73 , -12.53 , and -5.71 , but slightly more likely to be a public firm if the offer is described as hostile by *WSJ/DJNR*, with a t -statistic of 1.88. This difference suggests that public bidders are less willing than are private bidders to engage in pre-bid activity and post-bid publicity that is perceived as hostile. The distinction between public bidders and private or foreign bidders could also reflect other important variables, such as the size of the target firm that is being sought, so any conclusions based on a simple comparison of means would be premature.

Finally, hostile offers are less likely to result in a successful takeover, even by another competing bidder. This effect is strongest for the unnegotiated deals, with a t -statistic of -15.14 . This presumably reflects both the resistance by target management and the fact that negotiated transactions that are first announced as successful transactions are less likely to fail.

Figure 3a shows the rolling 12-month total of the number of merger and tender offers for exchange-listed target firms from 1976 to 1996, along with the number of tender offers, the number of successful takeovers, the number of offers made by exchange-listed bidders, and the number of target firms with poison pills. Figure 3b shows the proportion of all offers that were tender offers, successful, had exchange-listed bidders, and where the target

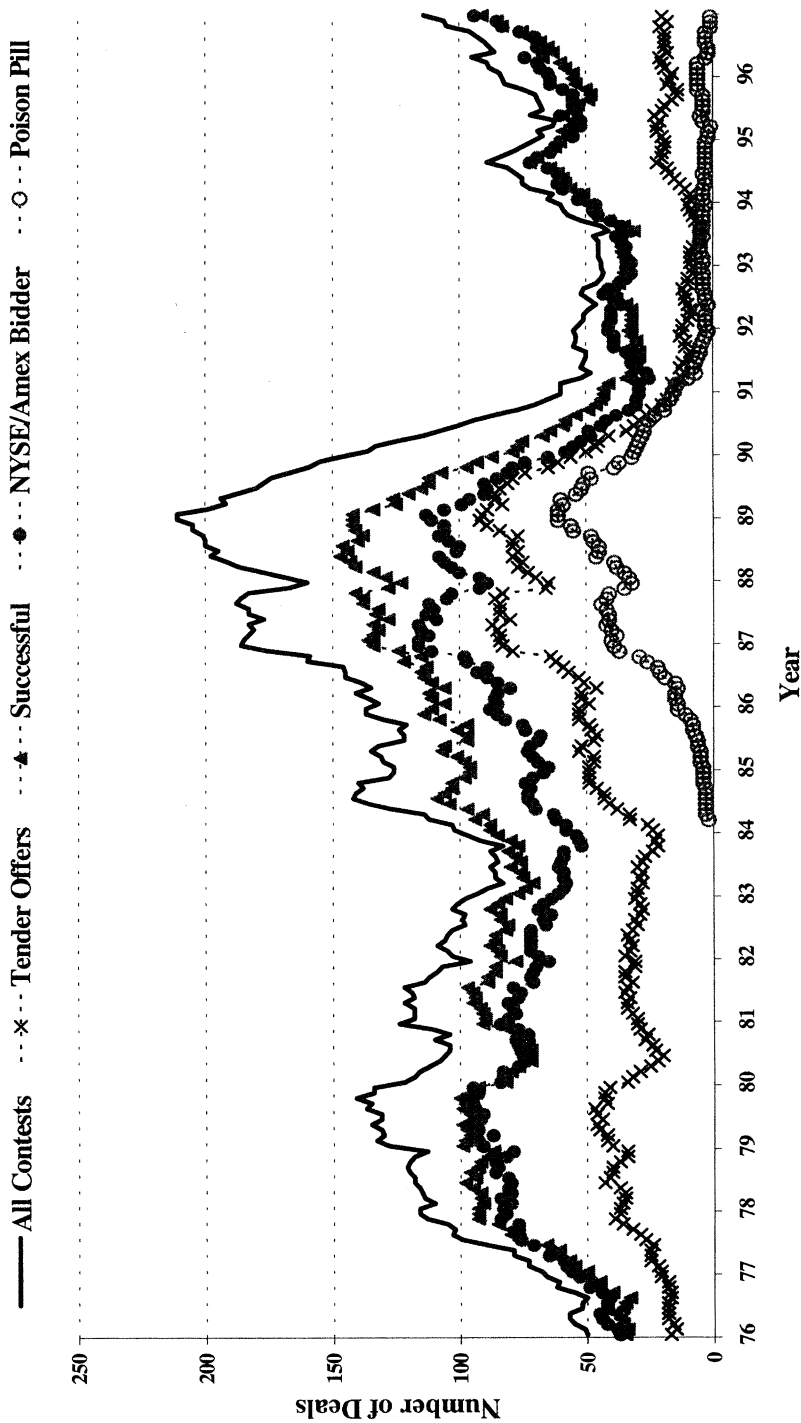


Figure 3a. Number of merger or tender offers that were (1) tender offers, (2) successful, (3) made by an exchange-listed public firm (NYSE or AMEX bidder), and (4) for target firms that had a poison pill as an antitakeover measure, by year for exchange-listed target firms in the period 1975–1996. Successful offers are ones where some buyer acquired the target firm within one year of the offer.

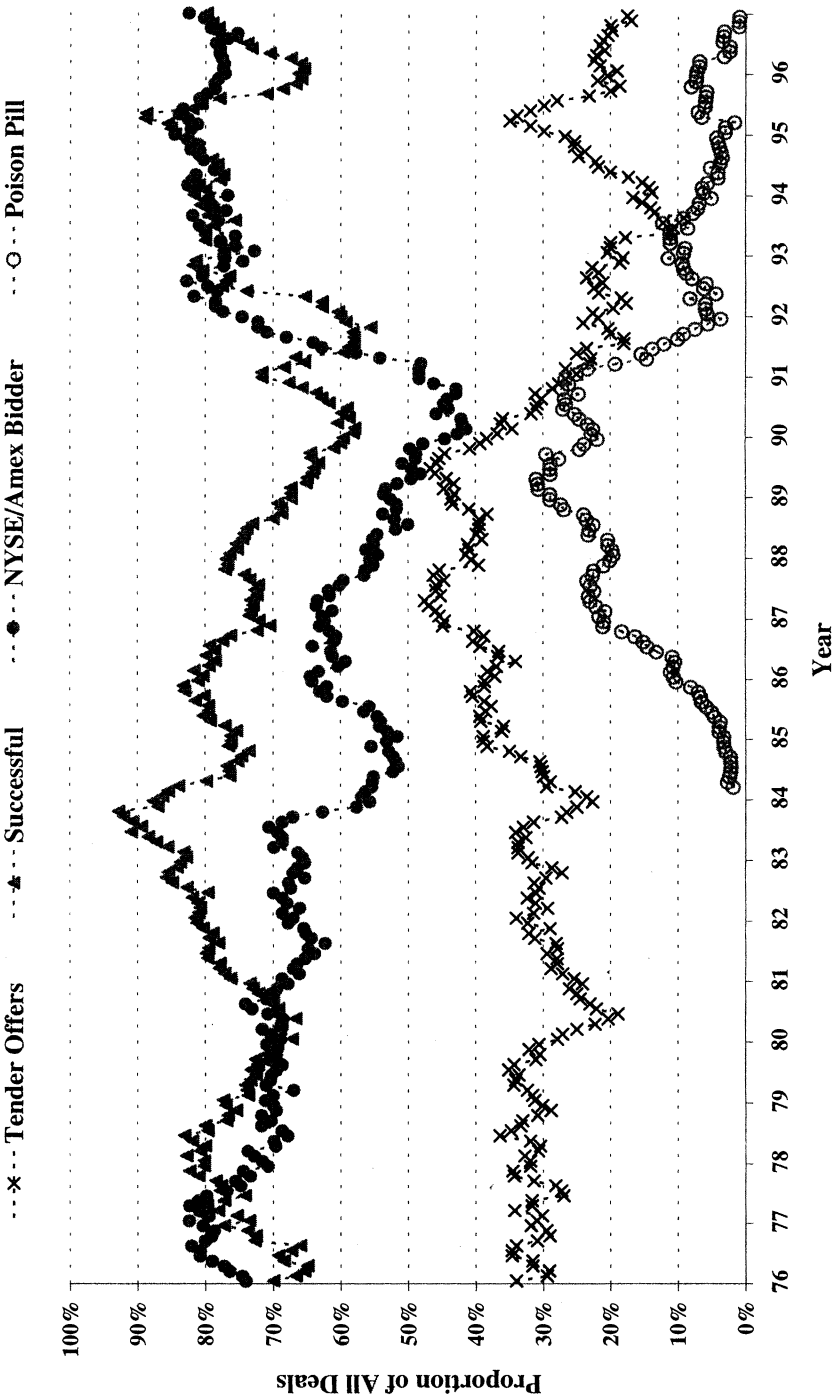


Figure 3b. Proportion of merger or tender offers that were (1) tender offers, (2) successful, (3) made by an exchange-listed public firm (NYSE or AMEX bidder), and (4) for target firms that had a poison pill as an antitakeover measure, by year for exchange-listed target firms in the period 1975-1996. Successful offers are ones where some buyer acquired the target firm within one year of the offer.

firms had poison pills. The rate of tender offers declined from 1989 through mid-1993 before returning to pre-1984 levels. The rise since 1990 in the proportion of bidders that are public companies corresponds to the well-documented decline in LBO transactions, but could also show that the resources of large public bidders are more frequently necessary to combat evolving takeover defenses, as reflected in the rise in poison pills.

E. Accounting Performance of Target Firms

Table I also shows the average accounting performance for target firms in the fiscal year before the first bid for the set of firms with data available on COMPUSTAT and CRSP (about 70 percent of the sample).² The variables used are:

Return on equity (ROE), measured as the ratio of earnings to average equity for the prior fiscal year ($COMPUSTAT\ items\ 20/(60 + 60(t - 1))$),

Sales growth, measured as the proportional change in sales over the prior fiscal year ($\ln(COMPUSTAT\ item\ 12/12(t - 1))$),

Liquidity, measured as the ratio of net liquid assets to total assets for the prior fiscal year ($COMPUSTAT\ items\ (4 - 5)/6$),

Debt/equity (D/E), measured as the ratio of debt to equity for the prior fiscal year ($COMPUSTAT\ items\ 9/60$),

Market/book (M/B), measured as the ratio of the year-end market value of common stock to the book value of equity for the prior fiscal year ($COMPUSTAT\ items\ 24 \cdot 25/60$),

Price/earnings (P/E), measured as the ratio of the year-end stock price to earnings per share for the prior fiscal year ($COMPUSTAT\ items\ 24/58$), and

Size, measured as the log of equity capitalization (in thousands of dollars) at the start of the runup period, three months before the first bid ($price \times shares\ outstanding\ from\ CRSP$).

Extreme outliers, such as market/book, price/earnings, or debt/equity ratios greater than 100, are omitted from the sample. These variables have been used to analyze the characteristics of target firms in many studies, including Palepu (1986) and Comment and Schwert (1995).

As a check on the robustness of the results, I also calculated alternative measures of accounting performance for target firms using variables suggested by Healy, Palepu, and Ruback (1992). These variables had more miss-

² Chan, Jegadeesh, and Lakonishok (1995) examine the reasons that firms are difficult to identify on COMPUSTAT using CUSIP numbers from the CRSP database and the effects, if any, of the resulting sample selection bias from analyzing only the firms on COMPUSTAT. Table IV, below, analyzes some of the effects of requiring full data in estimating the probit and regression models used in Tables V through IX later in this paper.

ing data on COMPUSTAT than the variables shown above, so the results were qualitatively similar, but weaker. Details are available from the author on request.

Firms that are large, as measured by market capitalization, are more likely to be the target of hostile offers, with *t*-statistics between 1.84 and 11.81. Deals that are characterized as hostile by *DJNR*, for instance, have an average target equity capitalization of \$434 million ($\exp(11.512 + 1.468)$), compared to \$100 million ($\exp(11.512)$) for the full sample. This could reflect a greater tendency for management entrenchment, and a correspondingly greater benefit to managers from resistance, at large firms. Alternately, it could reflect relative weakness in the bargaining position of bidders when targets are large.

The only other performance measure that yields consistent results across the different measures of hostility is sales growth, with lower sales growth for targets that are the subject of hostile offers, ranging from 2.0 percent to 4.0 percent lower growth (compared with the average of 7.8 percent for the full sample), but the *t*-statistics are relatively small, between -1.42 and -3.49 . For hostile deals identified by *DJNR* and SDC, debt/equity and market/book ratios are lower than for the full sample, with *t*-statistics between -2.87 and -4.09 , but these differences are not repeated for the other measures of hostility. Return on equity is lower for unnegotiated deals compared with the full sample, with a *t*-statistic of -3.66 , but this difference is not apparent for the other measures of hostility. Liquidity is lower for hostile deals with pre-bid events, with a *t*-statistic of -2.60 , but this difference is not apparent for the other measures of hostility. Finally, the price/earnings ratio is lower for hostile deals identified by *DJNR* than for the full sample, with a *t*-statistic of -2.55 , but this difference is not repeated for the other measures of hostility.

Some of the differences in performance shown in Table I are consistent with the notion that targets of hostile offers suffer disproportionately from entrenched management. For example, low values of the market/book ratio have been identified with poor use of the firm's assets (Lang, Stulz, and Walkling (1989)). Low sales growth and ROE could also reflect inefficient use of corporate assets. On the other hand, firms with poor performance measures probably have a greater benefit to stockholders from resistance to allow market participants to learn about the value of the assets of an undervalued target firm.³

Jensen (1986) argues that poorly run target firms are likely to have too little debt, but there is no systematic relation between hostile takeover bids and the debt/equity ratio of the target firm. Similarly, Jensen also argues that poorly run firms are likely to have too many liquid assets (liquidity). The evidence in Table V (and in Table I, Panel C), however, is inconsistent with this prediction. Harford (1999) and Opler et al. (1999) argue that it is important to measure deviations from "normal" cash balances when making comparisons across firms and time. Harford (1999) finds that firms with

³ I thank Paul Healy for suggesting this interpretation.

abnormally high cash balances are less likely to become takeover targets. Thus, at least for the liquidity variable, measurement issues could affect the results in Table V.

F. Stock Price Performance of Target Firms

There are 2,296 target firms with sufficient stock return data available on the CRSP database to measure the takeover premium realized by target stockholders associated with the takeover offers. I break the overall takeover premium into two parts, “runup” and “markup.” The runup is measured as the market-adjusted return to the target’s stock in the three months before the first bid (trading days $(-63, -1)$ relative to the first bid),

$$\text{Runup}_i = \sum_{t=-63}^{-1} R_{it} - \alpha_i - \beta_i R_{mt}, \quad (1)$$

where R_{it} is the continuously compounded return to target firm i on trading day t relative to the announcement date of the initial takeover bid (day 0), R_{mt} is the continuously compounded return to the CRSP NYSE/AMEX/Nasdaq value-weighted portfolio⁴ on day t , and the market model regression parameters, α_i and β_i , are estimated using data for the 253 trading days ending at day -64 ,

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}, \quad t = -316, \dots, -64. \quad (2)$$

The markup is measured as the market-adjusted return to the target’s stock in the six months after the first bid (trading days $(0, 126)$ relative to the first bid), and the premium is the sum of the runup and the markup.⁵

The runup return is 4.7 percent higher than average (t -statistic of 4.56) for hostile offers identified by pre-bid events, which is not surprising, as these pre-bid events foreshadow a possible bid. On the other hand, the runup return is 2.2 percent lower than average (t -statistic of -2.17) for unnegotiated bids, which could reflect leakage of information associated with some negotiated takeover bids. There is no reliable difference in runup return for hostile deals identified by *DJNR* or *SDC*.

The markup return is 8.1 percent lower than average (t -statistic of -6.02) for deals with pre-bid events, but it is 12.2 percent and 5.1 percent higher than average (t -statistics of 5.40 and 2.36) for deals identified by *DJNR* and *SDC*, respectively. The net effect is that the total premium, runup plus markup,

⁴ Results using the CRSP value-weighted index of only NYSE- and AMEX-listed stocks were virtually identical.

⁵ Schwert (1996) analyzes the relation between runups and markups for a large sample of exchange-listed takeover attempts. As a robustness check, I also calculate markups and premiums using a markup period of 10 trading days after the initial bid date. None of the results change substantially, so these results are not reported in detail.

is 11.5 percent and 6.7 percent higher (t -statistics of 4.46 and 2.53) for deals identified by *DJNR* and SDC, but it is not reliably different from the full sample for the other measures of hostility.

G. Sample Selection Bias

Later sections analyze the relation between hostility and success rates, the likelihood of an auction, and the size of the runup and premium, controlling for the effects of prior target performance. Where appropriate, the tests also control for the characteristics of the deal. These conditional tests allow for a better understanding of the role that hostility plays in takeovers. The probit and regression models, however, require full data on the explanatory variables. As shown in Table I, the data sources do not have complete information on accounting and stock-price performance for many firms. In fact, only 593 of the 2,346 (25.3 percent) possible cases have data on all six measures of accounting performance (ROE, Sales Growth, Liquidity, D/E, M/B, and P/E) available from COMPUSTAT along with data on target stock-price behavior (Runup, Markup, Premium, and Size) available from CRSP. Omitting the SDC measure of hostility, which can only be observed in 1,389 (59.2 percent) of the cases, there are 1,096 cases with full data available.

Table IV shows a comparison of means between the sample with full data available for each of the variables in Tables I and II (probit sample) and the sample where one or more of the other variables has missing data (incomplete data sample), along with heteroskedasticity-consistent t -statistics. Among the hostility variables, the deals identified as hostile by *DJNR* and based on pre-bid events occur more frequently in the sample with complete data (t -statistics of 2.93 and 3.94). This is not surprising, because *DJNR* devotes more coverage to large and more prominent firms. Because the composite hostility factor, Host(Factor), is a linear combination of Host(WSJ), Host(Uns), and Host(Pre), it is not surprising that it is also larger in the sample with full data. The deals identified as hostile by SDC are also more likely in the probit sample than in the unconditional sample (t -statistic of 3.11).

Cash offers and tender offers also occur more frequently in the sample with complete data (t -statistics of 2.48 and 3.77). Return on equity (ROE), sales growth, and P/E ratios are higher for the sample with complete data (t -statistics of 8.70, 4.17, and 7.17), implying that these target firms have had better recent performance than the firms with some missing data. Likewise, firms with complete data are larger and have lower D/E ratios (t -statistics of 13.57 and -4.23). Finally, average runups are lower and markups are higher for the firms with complete data (t -statistics of -2.32 and 1.94).

The proportion of target firms with complete data is lower than for the full sample in Table II between 1976 and 1981 (t -statistics between -4.66 and -11.15). This is largely because of the lack of SDC data before 1980.

The results in Table IV suggest caution in interpreting the subsequent tests that condition takeover events on accounting or stock market performance. The sample of firms that have complete data available for analysis is

Table IV
Tests for Sample Selection Bias Based on Availability
of COMPUSTAT and CRSP Data

Column (1) shows the means for the different measures of hostility (Host(WSJ), Host(SDC), Host(Uns), Host(Pre), and Host(Factor)), deal characteristics (Pill, Auction, Success, Cash, Equity, Tender Offer, and Public Bidder), target performance statistics (ROE, Sales Growth, Liquidity, D/E, M/B, P/E, and Size), and target stock-price behavior (Runup, Markup, and Premium) defined in Table I for the sample of firms with complete data (593 observations) available from COMPUSTAT and CRSP for analysis of the probit and regression models in Tables V through IX. Columns (2) and (3) show estimates of the means in the sample of cases where data are missing for some other variable so they are not included in the probit analysis, with a *t*-statistic testing whether the difference from the probit sample is reliably different from zero using White's (1980) heteroskedasticity-consistent standard errors. Column (4) shows the proportion of successful and unsuccessful takeover bids for exchange-listed target firms for each year from 1975 to 1996 for the cases with complete data available. Columns (5) and (6) show the proportion of observations for each year from 1975 to 1996 where data are missing for some other variable so they are not included in the probit analysis, with a *t*-statistic testing whether the difference from the probit sample is reliably different from zero.

Variable	(1)	(2)	(3)	Year	(4)	(5)	(6)
	Probit Sample (<i>N</i> = 593) Mean	Incomplete Data Sample Mean	<i>t</i> -statistic for Difference		Probit Sample (<i>N</i> = 593) Percent	Incomplete Data Sample Percent	<i>t</i> -statistic for Difference
Host(WSJ)	0.105	0.064	2.93	1975	0.000	0.028	-7.10
Host(SDC)	0.256	0.186	3.11	1976	0.000	0.038	-8.28
Host(Uns)	0.444	0.415	1.22	1977	0.000	0.066	-11.15
Host(Pre)	0.514	0.421	3.94	1978	0.020	0.057	-4.66
Host(Factor)	0.282	0.234	3.69	1979	0.005	0.075	-10.06
Pill	0.155	0.072	5.17	1980	0.019	0.065	-5.69
Auction	0.216	0.186	1.55	1981	0.034	0.044	-1.09
Success	0.739	0.749	-0.50	1982	0.025	0.047	-2.69
Cash	0.624	0.567	2.48	1983	0.049	0.039	1.01
Equity	0.233	0.239	-0.28	1984	0.094	0.039	4.23
Tender Offer	0.390	0.304	3.77	1985	0.099	0.044	4.15
Public Bidder	0.619	0.604	0.64	1986	0.115	0.068	3.29
ROE	0.123	0.072	8.70	1987	0.081	0.064	1.35
Sales Growth	0.105	0.063	4.17	1988	0.105	0.085	1.38
Liquidity	0.247	0.246	0.06	1989	0.074	0.058	1.32
D/E	0.561	1.252	-4.23	1990	0.037	0.022	1.81
M/B	1.706	1.648	0.37	1991	0.017	0.026	-1.36
P/E	16.243	11.622	7.17	1992	0.022	0.018	0.62
Size	12.297	11.240	13.57	1993	0.027	0.025	0.25
Runup	0.106	0.131	-2.32	1994	0.040	0.026	1.52
Markup	0.117	0.089	1.94	1995	0.059	0.027	3.03
Premium	0.223	0.220	0.16	1996	0.078	0.039	3.26

systematically different from the target firms without complete data. On average, target firms are larger and more prosperous, and hostility seems to occur more frequently. At a minimum, we should be cautious in extrapolating the findings to smaller, less prosperous target firms.

II. Is Hostility Related to Prior Performance?

Many papers have sought a relation between the prior performance of target firms and the likelihood that they receive a takeover bid (e.g., Hasbrouck (1985), Palepu (1986), Mørck et al. (1988), Mikkelson and Partch (1989), Shivdasani (1993), and Comment and Schwert (1995)).

A. Previous Studies of Takeover Probabilities

Hasbrouck (1985) uses a logit model to predict takeovers for a sample of 86 targets and a sample of 344 time-, size-, and industry-matched nontargets, and finds that larger market/book ratios and larger size reduce the likelihood of a takeover, but that liquidity and leverage are unimportant. Palepu (1986) provides logit estimates based on a sample of 163 target and 256 nontarget firms in the period 1971 to 1979 using accounting and stock-based predictors similar to those described in Section I. He obtains negative coefficient estimates for sales growth, leverage, and size, so these reduce the likelihood of a takeover. Market/book, price/earnings, and liquidity do not affect the likelihood of a takeover.

Mørck et al. (1988) estimate a probit model using 1980 data for 454 Fortune-500 firms, of which 82 were takeover targets between 1981 and 1985, and find that larger size and market/book ratios deter hostile takeovers, but not friendly ones. Mikkelson and Partch (1989) use a logit model and pool data as of 1973, 1978, and 1983 for 240 exchange-listed firms. They find that larger size and affiliate-firm cross-holdings deter acquisitions, but that leverage and managerial stockholdings do not affect the likelihood of a successful takeover. Shivdasani (1993) estimates a logit model using data on 193 hostile targets and 194 nontarget firms from 1980 to 1988 and finds that size, managerial stockholdings, and affiliate-firm cross-holdings deter hostile takeovers, but that earnings growth and board composition do not matter.

Comment and Schwert (1995) estimate a probit model using 21,887 firm-years of data for all exchange-listed firms with the requisite CRSP and COMPUSTAT data from 1976 to 1991. Their sample includes 669 successful takeovers. They find size is negatively related to takeover probability, but that none of the other performance variables are reliable predictors. Thus, size is the only predictor that is consistently successful in these studies, whereas mixed success has been achieved with sales growth, leverage, market/book, and certain ownership variables.

B. Probit Models for Hostility

Although there has been substantial literature on the factors related to takeover deals, there has been less work on the factors related to hostile offers. Conditional on an offer being received by a target firm, what is the probability that it will be hostile? Table V shows estimates of probit models that predict whether a takeover offer is characterized as hostile by *DJNR*,

Table V
Hostility Prediction Models, 1975-1996

Probit models predicting whether successful and unsuccessful takeover bids for exchange-listed target firms from 1975 to 1996 are hostile, using four measures of hostility. The dependent variables are dummy variables that equal one when a hostile bid is made for a target firm, and zero otherwise. Host(WSJ) is based on descriptions in the *Wall Street Journal Index* or *Dow Jones News Retrieval*. Host(SDC) is based on whether the target firm resisted an unsolicited offer as determined by the Securities Data Company (SDC). Host(Uns) is based on whether the initial or winning bid is unsolicited, and Host(Pre) is based on whether the target firm is in play (someone has filed a 13D form with the SEC showing an accumulation of shares within the past 12 months) or the subject of a takeover rumor reported in *D/N/R*. Several variables measuring the performance of the target firm before the first bid are used in the model. ROE is earnings divided by average stockholder's (book) equity and Sales Growth is the growth in sales over the fiscal year before the first bid. Liquidity is the ratio of net liquid assets to total assets, D/E is the long-term debt to book equity, M/B is the ratio of market to book value of stockholder's equity, P/E is the ratio of stock price to the earnings for the last fiscal year, and Size is the logarithm of the market value of common stock, all measured at the end of the fiscal year before the first bid. Dummy variables are equal to one when the first bid occurs during 1980 to 1984, or 1985 to 1989, or 1990 to 1996, and zero otherwise, allowing for secular variation. The last two columns contain the coefficients and *t*-statistics for a regression of the hostility factor (principal component), Host(Factor), created from the three hostility variables with complete data (Host(WSJ), Host(Uns), and Host(Pre)) on the explanatory variables from the probit model. The marginal effect column transforms the probit coefficient into the marginal effect of the variable on the estimated probability, evaluated at the sample means of the explanatory variables.

Variable	Host(WSJ)			Host(SDC)			Host(Uns)			Host(Pre)			Host(Factor)		
	Coef.	<i>t</i> -statistic	Marginal Effect	Coef.	<i>t</i> -statistic	Marginal Effect	Coef.	<i>t</i> -statistic	Marginal Effect	Coef.	<i>t</i> -statistic	Marginal Effect	Coef.	<i>t</i> -statistic	Marginal Effect
Constant	-4.692	-7.66	-0.638	-3.145	-4.57	-0.882	-0.153	-0.43	-0.056	-1.660	-4.57	-0.603	-0.092	-1.36	-0.603
ROE	-2.413	-2.79	-0.328	-0.104	-0.12	-0.029	-1.192	-2.11	-0.439	-0.483	-0.90	-0.175	-0.321	-3.65	-0.175
Sales Growth	-0.715	-1.83	-0.097	-0.187	-0.54	-0.052	-0.433	-1.89	-0.159	-0.268	-1.19	-0.097	-0.121	-3.29	-0.097
Liquidity	0.386	1.02	0.052	0.236	0.66	0.066	-0.027	-0.12	-0.010	-0.262	-1.13	-0.095	0.003	0.07	-0.095
D/E	-0.243	-1.55	-0.033	-0.082	-0.72	-0.023	0.018	0.32	0.007	0.117	2.24	0.042	0.007	0.93	0.042
M/B	-0.068	-0.82	-0.009	-0.226	-2.83	-0.063	-0.151	-3.01	-0.055	-0.055	-1.48	-0.020	-0.018	-2.59	-0.020
P/E	-0.020	-2.21	-0.003	-0.006	-0.89	-0.002	-0.003	-0.66	-0.001	-0.003	-0.65	-0.001	-0.002	-2.64	-0.001
Size	0.359	7.49	0.049	0.256	5.68	0.072	0.032	1.11	0.012	0.124	4.29	0.045	0.038	6.73	0.045
1980-1984	-0.511	-2.85	-0.069	-0.508	-1.39	-0.142	-0.114	-1.05	-0.042	0.363	3.30	0.132	-0.018	-0.94	0.132
1985-1989	-0.188	-1.11	-0.026	-0.016	-0.04	-0.004	0.402	3.59	0.148	0.687	6.07	0.250	0.088	4.14	0.250
1990-1996	-0.675	-2.88	-0.092	-0.457	-1.24	-0.128	-0.356	-2.43	-0.131	-0.134	-0.93	-0.049	-0.096	-3.37	-0.049
<i>R</i> ²		0.108			0.119			0.078			0.099			0.133	
Log-likelihood		-275.6			-304.0			-704.5			-697.0				
Sample size, <i>N</i>		1,096			593			1,096			1,096			1,096	

by SDC, is unnegotiated, or is preceded by events that imply that the target firm is in play. It also shows a regression model that predicts the continuous composite hostility variable. The variables included in the probit and regression models include the performance variables in Table I (ROE, Sales Growth, Liquidity, D/E, M/B, P/E, and Size). To allow for secular variation in the behavior of the takeover market that is not captured by the other variables, dummy variables for the years 1980 to 1984, 1985 to 1989, and 1990 to 1996 are included that equal one if the deal is announced in these years, and zero otherwise (so that 1975 to 1979 is the base comparison period reflected in the intercept of the model). Note that the sample size for Host(SDC) is much smaller (593) than for the other hostility variables (1,096).

Table V reports maximum likelihood estimates of the probit coefficients and t -statistics based on large sample standard errors. Because probit coefficients are difficult to interpret, Table V also reports the marginal effect of a change in each predictor variable calculated at its sample mean (i.e., similar to the least squares coefficient in a linear probability model).⁶

Consistent with the results in Table I, the size of the target firm is positively related to the likelihood that an offer will be hostile, with t -statistics of 7.49, 5.68, 1.11, 4.29, and 6.73 for the five measures of hostility. An increase of \$25.6 million in equity capitalization, which averages \$112.9 million in this sample, increases the probability of an offer being characterized as hostile by *DJNR* by 1 percent. As a specification check, I also estimate this model measuring the size of the target firm relative to the size of the median NYSE- or AMEX-listed firm in the same year. The results are qualitatively similar, so they are not reported.

The other variables do not have a consistent and reliable effect across measures of hostility. For example, M/B is negatively related to hostility based on SDC identification and unnegotiated offers, with t -statistics of -2.83 and -3.01 , but the estimated effect for *DJNR*-identified hostile offers and for offers with pre-bid events have t -statistics of only -0.82 and -1.48 . An increase of M/B of 0.18 from its mean of 1.43 in this sample decreases the probability of an unnegotiated offer by 1 percent. For the composite hostility measure, the t -statistic of M/B is -2.59 . This is consistent with the prior evidence of Mørck et al. (1988), which could reflect poor management by target management. It could also reflect, however, a greater benefit from resistance to allow market participants to learn about the value of the assets of an undervalued target firm.

ROE is negatively related to all of the measures of hostility, but only deals characterized as hostile by *DJNR*, unnegotiated offers, and the composite hostility measure have reliably negative t -statistics of -2.79 , -2.11 , and -3.65 . An increase in ROE of 0.030 from its mean of 0.129 in this sample decreases the probability of an offer being characterized as hostile by *DJNR* by 1 percent.

⁶ See, for example, Greene (1993, p. 639) for a description of this calculation.

Table III provides some evidence of shifts over time in the frequency of hostile offers, which appears to fall in the period 1990 to 1996 to levels observed in the period 1976 to 1979. In Table V, the dummy variables for 1980 to 1984, 1985 to 1989, and 1990 to 1996 are negative for *DJNR*-identified offers, with *t*-statistics of -2.85 , -1.11 , and -2.88 . Thus, for the *DJNR*-identified hostile offers, controlling for performance factors that influence the likelihood that an offer will be hostile, the 1975 to 1979 period had the highest frequency of hostile offers.

In contrast, for hostile offers identified by pre-bid events, 1975 to 1979 was the period of least hostility, controlling for performance factors. The dummy variables for 1980 to 1984 and 1985 to 1989 are positive for *Host*-(Pre), with *t*-statistics of 3.30 and 6.07 . The relatively low frequency of hostile offers based on pre-bid events from 1975 to 1979 may only reflect the reporting practices of the *Wall Street Journal*, which did not seem to report 13D filings with the same frequency as *DJNR* has done since late 1979.

Secular variation in the frequency of unnegotiated offers is also significant. The pattern of intercept shifts is not as simple, however. Compared with the 1975 to 1979 base period, unnegotiated offers were lower in the period 1980 to 1984, higher in the 1985 to 1989 period, and lower in the 1990 to 1996 period, with *t*-statistics of -1.05 , 3.59 , and -2.43 , respectively. A similar pattern occurs for the composite hostility variable, with *t*-statistics of -0.94 , 4.14 , and -3.37 , respectively.

The results are somewhat stronger using the composite measure of hostility. This model is estimated as a linear regression, rather than a probit, because *Host*(Factor) is a continuous variable scaled to be between 0 and 1. Target firms that have performed poorly as reflected in low ROE, low sales growth, and a low stock price (relative to book value or earnings), are more likely to be the target of a hostile takeover attempt, with *t*-statistics between -2.59 and -3.65 . As before, larger targets are also more likely to be subject to hostile takeover attempts. Compared with the 1975 to 1979 base period, hostile takeover attempts were more frequent from 1985 to 1989 and less frequent from 1990 to 1996, controlling for the performance of the target firm. About 13 percent of the variation in the composite hostility variable is explained by this regression.

Thus, the results in Table V are consistent with some of the earlier results of Mørck et al. (1988), in that higher M/B ratios lower the likelihood that a takeover bid will be hostile. On the other hand, larger target firm size increases the likelihood that a takeover bid will be hostile, which seems opposite of their results. In addition, there is weak evidence that target firms with higher ROE and sales growth have a lower likelihood of receiving a hostile offer. An additional important factor that can be seen (from the long time series available here) is that the frequency of hostile offers varies substantially over time for reasons that do not seem to be related to the performance of the target firms. This secular variation probably reflects changes in takeover technology that favor the relative bargaining positions of bidder and target firms, such as the availability of takeover-related financing and

the nature of antitakeover devices, such as poison pills and state antitakeover laws. In terms of the explanatory power, the variables in Table V that might reflect poor target management, M/B ratios and ROE, contribute little. The variables in Table V that probably reflect the bargaining power of the target firm, such as firm size and the secular dummy variables, contribute the most explanatory power.

III. Does Hostility Affect Success, the Premium, or the Likelihood of an Auction?

From the perspective of the target firm, a hostile offer is one that it chooses to refuse publicly, often aggressively. If the goal is to avoid being acquired, this reaction should decrease the likelihood of a successful takeover. If the goal is to bargain for a better offer, this reaction should lead to a higher premium paid to target shareholders. Hard bargaining in pursuit of a higher premium could also lead to lower success rates, however, so the net of these effects must be used to judge whether target resistance benefits shareholders. One way to increase the expected premium is to initiate a multiple-bidder auction. Thus, it is also interesting to know whether auctions are any more likely when bids are hostile.

From the bidder's perspective, a hostile offer is necessary when a private negotiation is unlikely to succeed. It could be used to put pressure on entrenched managers by making target shareholders aware of their explicit options. It could also be used to move negotiations forward in a public arena where target managers' perceptions of the value of their company to other possible bidders can be resolved through a competitive process. This is analogous to litigation that proceeds to trial instead of settling through negotiation—the public process is necessary to resolve the differences of opinion between the bidder and the target.

A. Hostility and Success Rates

Table VI shows estimates of a probit model that predicts whether a takeover offer is successful. The dependent variable is a dummy variable that equals one when a bid leads to an acquisition of a target firm (even if a different bidder is the acquirer) and zero otherwise. The explanatory variables are the same performance variables used to predict hostility in Table V. These models are estimated with and without the SDC measure of hostility, because a substantial number of observations are lost by requiring SDC data. The estimates in the last three columns use the composite measure of hostility.

Of the four hostility variables, unnegotiated offers have the largest adverse effect on success rates, with t -statistics of -8.34 and -9.62 . Given the other characteristics of the target firm and the other measures of hostility, success is 33.8 percent less likely when the bid is unnegotiated. Deals with pre-bid events are less likely to be successful, with t -statistics of -1.85 and

Table VI
How Does Hostility Affect the Probability of Success?

A probit model predicts whether takeover bids for exchange-listed target firms from 1975 to 1996 will be successful. The dependent variable is a dummy variable that equals one when a bid leads to an acquisition of a target firm (even if a different bidder is the acquirer), and zero otherwise. Several variables measuring the performance of the target firm before the first bid are used in the model. ROE is earnings divided by average stockholder's (book) equity and Sales Growth is the growth in sales over the fiscal year before the first bid. Liquidity is the ratio of net liquid assets to total assets, D/E is the long-term debt to book equity, M/B is the ratio of market to book value of stockholder's equity, P/E is the ratio of stock price to the earnings for the last fiscal year, and Size is the logarithm of the market value of common stock, all measured at the end of the fiscal year before the first bid. Host(WSJ) is based on descriptions in the *Wall Street Journal Index* or *Dow Jones News Retrieval*, Host(SDC) is based on whether the target firm resisted an unsolicited offer as determined by the Securities Data Company (SDC), Host(Uns) is based on whether the initial or winning bid is unsolicited, and Host(Pre) is based on whether the target firm is in play (someone has filed a 13D form with the SEC showing an accumulation of shares within the past 12 months) or the subject of a takeover rumor reported in *DJNR*. Host(Factor) is the factor (principal component) created from the three hostility variables with complete data (Host(WSJ), Host(Uns), and Host(Pre)). Dummy variables are equal to one when the first bid occurs during 1980 to 1984, or 1985 to 1989, or 1990 to 1996, and zero otherwise, allowing for secular variation. The marginal effect column transforms the probit coefficient into the marginal effect of the variable on the estimated probability, evaluated at the sample means of the explanatory variables.

Variable	Coefficient	t-statistic	Marginal Effect	Coefficient	t-statistic	Marginal Effect	Coefficient	t-statistic	Marginal Effect
Constant	1.676	2.28	0.449	0.818	2.03	0.232	0.249	0.65	0.073
ROE	-0.519	-0.64	-0.139	-0.622	-0.99	-0.176	-0.641	-1.03	-0.189
Sales growth	-0.566	-1.69	-0.152	-0.425	-1.70	-0.120	-0.420	-1.71	-0.124
Liquidity	0.649	1.81	0.174	0.316	1.22	0.089	0.364	1.44	0.107
D/E	-0.151	-1.77	-0.041	-0.186	-3.23	-0.053	-0.201	-3.53	-0.059
M/B	0.099	1.68	0.026	0.118	2.40	0.033	0.136	2.71	0.040
P/E	-0.001	-0.25	0.000	-0.005	-1.25	-0.002	-0.006	-1.51	-0.002
Size	0.020	0.43	0.005	0.041	1.25	0.012	0.074	2.34	0.022
Host(WSJ)	-0.393	-1.85	-0.105	0.019	0.12	0.005			
Host(SDC)	0.362	2.12	0.097						
Host(Uns)	-1.260	-8.34	-0.338	-0.896	-9.62	-0.254			
Host(Pre)	-0.239	-1.85	-0.064	-0.464	-5.08	-0.132			
Host(Factor)							-1.536	-8.98	-0.452
1980-1984	-0.555	-1.31	-0.149	0.252	2.01	0.071	0.182	1.49	0.053
1985-1989	-0.522	-1.27	-0.140	0.066	0.52	0.019	-0.066	-0.55	-0.020
1990-1996	-0.907	-2.13	-0.243	-0.171	-1.07	-0.048	-0.194	-1.24	-0.057
R ²		0.196			0.156			0.107	
Log-likelihood		-282.3			-551.0			-574.0	
Sample size, N		593			1,096			1,096	

-5.08. Deals identified as hostile by SDC are more likely to be successful, given the other characteristics of the target firm and the other measures of hostility, with a t -statistic of 2.12. The composite hostility factor has a t -statistic of -8.98.

Among the performance variables, targets with lower debt/equity ratios are more likely to be successfully taken over, with t -statistics of -1.77 and -3.23. A decrease in D/E of 0.244 from its mean of 0.561 in this sample increases the probability that an offer will be successful by 1 percent. The D/E effect is weak, but it is consistent with the ample anecdotal evidence that targets can avoid takeover by adding debt (e.g., through a leveraged recapitalization).

Similarly, target firms with higher market/book ratios are more likely to be successfully taken over, with t -statistics of 1.68 and 2.40. An increase in M/B of 0.385 from its mean of 1.706 increases the probability that an offer will be successful by 1 percent, which also seems like a weak effect.

The weak effect for predicting success should not be surprising. There is a general problem with modeling success rates, because this is really modeling mistakes. If the initial bidder was certain that a bid would fail, it is unlikely that the offer would be made.

Table VI shows evidence consistent with Figure 3 that success rates were lower from 1990 to 1996 than in the earlier periods. The t -statistics for the 1990 to 1996 dummy variable are -2.13, -1.07, and -1.24, with 24.3 percent, 4.8 percent, and 5.7 percent lower success probabilities, given the other variables in the model.

Thus, the estimates in Table VI show that unnegotiated offers are less likely to result in a successful takeover. Similarly, offers that are preceded by rumors or 13D filings are less likely to result in a successful takeover. Whether this is because of entrenched target management or a tough bargaining stance cannot be inferred from this evidence.

B. Hostility and Pre-Bid Runups

If hostility is a reflection of either the bidder's or the target's bargaining strategy, then the behavior of the target's stock price in the period before the first offer is announced is likely to be related to whether an offer is perceived to be hostile. For example, unnegotiated deals are likely to be kept secret longer than negotiated transactions, so stock price runups should be lower. On the other hand, offers that are preceded by events that put the target firm in play are likely to have larger runups as investors anticipate a corporate control transaction.

Table VII shows estimates of a regression model that predicts the runup in the target's stock price in the 63 trading days before successful and unsuccessful takeover bids adjusted for market movements. These models are estimated with and without the SDC measure of hostility. The estimates in the last two columns use the composite measure of hostility.

Table VII

Is the Pre-Bid Stock-Price Runup Related to Hostility?

A regression model is used to explain the pre-bid stock-price runup (the cumulative abnormal return to the target firm's stock for trading days $(-63, -1)$ relative to the date of the first bid) for successful and unsuccessful takeover bids for exchange-listed target firms, 1975 to 1996. Several variables measuring the performance of the target firm before the first bid are used in the model. ROE is earnings divided by average stockholder's (book) equity and Sales Growth is the growth in sales over the fiscal year before the first bid. Liquidity is the ratio of net liquid assets to total assets, D/E is the long-term debt to book equity, M/B is the ratio of market to book value of stockholder's equity, P/E is the ratio of stock price to the earnings for the last fiscal year, and Size is the logarithm of the market value of common stock, all measured at the end of the fiscal year before the first bid. Host(WSJ) is based on descriptions in the *Wall Street Journal Index* or *Dow Jones News Retrieval*, Host(SDC) is based on whether the target firm resisted an unsolicited offer as determined by the Securities Data Company (SDC), Host(Uns) is based on whether the initial or winning bid is unsolicited, and Host(Pre) is based on whether the target firm is in play (someone has filed a 13D form with the SEC showing an accumulation of shares within the past 12 months) or the subject of a takeover rumor reported in *DJNR*. Host(Factor) is the factor (principal component) created from the three hostility variables with complete data (Host(WSJ), Host(Uns), and Host(Pre)). Dummy variables are equal to one when the first bid occurs during 1980 to 1984, or 1985 to 1989, or 1990 to 1996, and zero otherwise, allowing for secular variation. t -statistics use White's (1980) heteroskedasticity-consistent covariance matrix. $S(u)$ is the standard error of the regression.

Variable	Coefficient	t -statistic	Coefficient	t -statistic	Coefficient	t -statistic
Constant	0.356	3.27	0.392	6.05	0.361	5.62
ROE	0.011	0.10	-0.100	-1.07	-0.093	-0.97
Sales growth	-0.018	-0.39	-0.031	-0.83	-0.031	-0.79
Liquidity	-0.098	-2.06	-0.094	-2.55	-0.098	-2.65
D/E	0.023	2.31	0.003	0.30	0.005	0.54
M/B	-0.015	-2.88	-0.007	-1.04	-0.006	-0.96
P/E	-0.001	-1.62	-0.001	-1.89	-0.001	-1.91
Size	-0.011	-1.57	-0.009	-1.78	-0.006	-1.21
Host(WSJ)	-0.048	-1.82	-0.007	-0.40		
Host(SDC)	0.065	2.89				
Host(Uns)	-0.095	-4.40	-0.052	-3.75		
Host(Pre)	0.081	4.53	0.055	4.13		
Host(Factor)					-0.034	-1.53
1980-1984	-0.032	-0.53	-0.079	-4.45	-0.070	-3.89
1985-1989	-0.077	-1.31	-0.113	-6.00	-0.104	-5.54
1990-1996	-0.120	-1.93	-0.160	-6.66	-0.158	-6.46
R^2		0.133		0.119		0.094
$S(u)$		0.201		0.208		0.211
Sample size, N		579		1,095		1,095

The performance variables used to predict hostility in Table V (ROE, Sales Growth, Liquidity, D/E, M/B, P/E, and Size) are not reliably related to the runup, except that target firms with more liquidity seem to experience lower runups (t -statistics of -2.06 , -2.55 , and -2.65). As noted by Schwert (1996), average runups were higher from 1975 to 1979 than in later periods, as shown by the negative estimates for the coefficients of the time period dummy variables (t -statistics of -4.45 , -6.00 , and -6.66 in the larger sample omitting SDC).

Given the other variables in the model, deals identified as hostile by *DJNR* do not have reliably different runups. Deals identified as hostile by *SDC* have runups that are 6.5 percent higher on average (t -statistic of 2.89). As predicted, however, unnegotiated deals have lower runups by 9.5 percent or 5.2 percent on average, with t -statistics of -4.40 and -3.75 . To the extent that unnegotiated deals can be kept secret longer, the lower runups are not surprising. Deals with pre-bid events that put the target in play have runups that are 8.1 percent or 5.5 percent higher on average, with t -statistics of 4.53 and 4.13. This result is also expected because the pre-bid events reveal information to the public as part of the bidder's or the target's bargaining strategy.

Because the effects of pre-bid publicity and unsolicited offers are opposite, the composite measure of hostility is not related to the size of the pre-bid runup, with a t -statistic of -1.53 .

C. Hostility and Takeover Premiums

Table VIII shows estimates of a regression model that predicts the premium received by target shareholders in successful and unsuccessful takeover bids, where the premium is measured as the cumulative abnormal return to the target firm's stock for trading days ($-63, 126$) relative to the date of the first bid (the sum of the runup and the markup). The performance variables used to predict hostility in Table V (ROE, Sales Growth, Liquidity, D/E, M/B, P/E, and Size) are included along with the five measures of hostility, and dummy variables to allow for secular variation in the periods 1980 to 1984, 1985 to 1989, or 1990 to 1996.

Columns (3), (7), and (11) show regressions that include four deal characteristics (whether the target firm has a poison pill; whether another bidder enters the competition for the target firm; whether the payment to target shareholders is all in the form of cash; and whether the deal is a tender offer). Unlike the performance and hostility variables, these deal characteristics are generally not known before the first bid is announced, and some are not known until the outcome of the deal has been determined.

There is weak evidence that takeover premiums are negatively related to target firm size, with t -statistics between -1.20 and -2.82 across specifications. In column (1), a decrease of \$57 million in equity capitalization, which averages \$219 million in this sample, increases the premium received by the target by 1 percent. The performance variables are not reliably related to takeover premiums, which is consistent with the results of Comment and Schwert (1995).

DJNR-identified hostile offers are not associated with differential premiums, except in the model in column (5), which excludes the *SDC* measure of hostility and the deal characteristic variables, with a t -statistic of 2.41. In column (5), the average premium is higher by 9.0 percent in *DJNR*-identified hostile offers.

Table VIII
Is the Takeover Premium Related to Hostility?

A regression model is used to explain the takeover premium (the cumulative abnormal return to the target firm's stock for trading days $(-63, 126)$ relative to the date of the first bid) for successful and unsuccessful takeover bids for exchange-listed target firms, 1975 to 1996. Several variables measuring the performance of the target firm before the first bid are used in the model. ROE is earnings divided by average stockholder's (book) equity and Sales Growth is the growth in sales over the fiscal year before the first bid. Liquidity is the ratio of net liquid assets to total assets. D/E is the long-term debt to book equity. M/B is the ratio of market to book value of stockholder's equity. P/E is the ratio of stock price to the earnings for the last fiscal year, and Size is the logarithm of the market value of common stock, all measured at the end of the fiscal year before the first bid. Host(WSJ) is based on descriptions in the *Wall Street Journal Index* or *Dow Jones News Retrieval*. Host(SDC) is based on whether the target firm resisted an unsolicited offer as determined by the Securities Data Company (SDC). Host(Uns) is based on whether the initial or winning bid is unsolicited, and Host(Pre) is based on whether the target firm is in play (someone has filed a 13D form with the SEC showing an accumulation of shares within the past 12 months) or the subject of a takeover rumor reported in *D/JNR*. Host(Factor) is the factor (principal component) created from the three hostility variables with complete data (Host(WSJ), Host(Uns), and Host(Pre)). Dummy variables are equal to one when the first bid occurs during 1980 to 1984, or 1985 to 1989, or 1990 to 1996, and zero otherwise, allowing for secular variation. In addition, in columns (3)–(4), (7)–(8), and (11)–(12), several variables that are only known during the takeover contest are included in the model. Pill equals one if the target firm has a poison pill in place, Auction equals one if there are multiple bidders, Cash equals one if there is an all-cash payment to target shareholders, and Tender Offer equals one if the deal is a tender offer. t -statistics use White's (1980) heteroskedasticity-consistent covariance matrix. S(u) is the standard error of the regression.

Variable	(1) Coefficient	(2) t -statistic	(3) Coefficient	(4) t -statistic	(5) Coefficient	(6) t -statistic	(7) Coefficient	(8) t -statistic	(9) Coefficient	(10) t -statistic	(11) Coefficient	(12) t -statistic
Constant	0.734	3.82	0.564	2.82	0.490	4.67	0.423	3.85	0.450	4.40	0.378	3.45
ROE	0.110	0.52	0.153	0.75	-0.032	-0.19	0.020	0.13	-0.036	-0.22	0.018	0.11
Sales growth	-0.044	-0.44	-0.022	-0.22	-0.083	-1.10	-0.073	-1.00	-0.084	-1.12	-0.073	-1.01
Liquidity	-0.153	-1.69	-0.219	-2.52	-0.096	-1.46	-0.146	-2.29	-0.086	-1.31	-0.140	-2.19
D/E	-0.016	-0.46	-0.013	-0.40	-0.024	-1.16	-0.019	-1.01	-0.027	-1.32	-0.021	-1.12
M/B	-0.001	-0.07	-0.005	-0.35	-0.001	-0.07	-0.004	-0.34	0.000	0.03	-0.003	-0.25
P/E	-0.003	-2.00	-0.002	-1.75	-0.003	-2.29	-0.002	-1.86	-0.003	-2.38	-0.002	-1.94
Size	-0.033	-2.82	-0.028	-2.30	-0.012	-1.41	-0.013	-1.51	-0.010	-1.20	-0.011	-1.22
Host(WSJ)	-0.046	-0.87	-0.070	-1.42	0.090	2.41	0.011	0.30				
Host(SDC)	0.151	3.22	0.061	1.28								
Host(Uns)	-0.098	-2.48	-0.106	-2.72	-0.026	-1.03	-0.079	-3.03				
Host(Pre)	0.008	0.24	-0.013	-0.43	-0.052	-2.16	-0.056	-2.39				
Host(Factor)									-0.005	-0.13	-0.147	-3.21
1980–1984	0.008	0.07	0.026	0.24	0.004	0.14	-0.007	-0.23	-0.007	-0.22	-0.014	-0.46
1985–1989	-0.025	-0.24	-0.043	-0.40	-0.022	-0.68	-0.058	-1.79	-0.039	-1.23	-0.069	-2.13
1990–1996	-0.018	-0.16	0.028	0.25	-0.037	-0.84	-0.019	-0.44	-0.039	-0.89	-0.019	-0.44
Pill			0.035	0.77			0.055	1.28			0.048	1.12
Auction			0.125	3.07			0.086	2.61			0.082	2.51
Cash			0.098	2.64			0.088	3.33			0.086	3.24
Tender offer			0.151	4.62			0.141	5.84			0.148	6.09
R^2		0.048		0.133		0.029		0.097		0.021		0.091
S(u)		0.367		0.351		0.368		0.355		0.369		0.356
Sample size, N		593		593		1,095		1,095		1,095		1,095

SDC-identified hostile offers are associated with higher average premiums of 15.1 percent in column (1), which excludes the deal characteristics. Unnegotiated offers are associated with premiums that are reliably lower than average in columns (1), (3), and (7), but not in column (5), which excludes the SDC measure of hostility and the deal characteristics. This reflects the lower success rates associated with unsolicited offers seen in Table VI.

The dummy variables for 1980 to 1984, 1985 to 1989, and 1990 to 1996 are not reliably different from zero in all specifications. Auctions, cash offers, and tender offers all lead to higher than average premiums, with coefficient estimates between 8.2 percent and 15.1 percent and t -statistics between 2.51 and 6.09. Given these other characteristics, there is no reliable association between poison pills and takeover premiums (although the estimates are positive).

Thus, the evidence on premiums received by target shareholders is mixed. The lower success rates for unnegotiated offers shown in Table VI lead to slightly lower premiums averaged across both successful and unsuccessful transactions. On the other hand, deals that are characterized as hostile by *DJNR* or SDC have slightly higher average premiums. These results are consistent with the view that hostility is the outcome of aggressive bargaining by target managers.

D. Hostility and Auctions

If hostility is a result of target resistance that is intended to seek a better deal, the frequency of multiple bidder auctions should be higher when an offer is hostile. To the extent that target firms simply want to avoid being taken over, there would be no advantage to seeking additional bidders.

Table IX shows estimates of a probit model that predicts whether more than one bidder is competing for a given target firm. The performance variables used to predict hostility in Table V (ROE, Sales Growth, Liquidity, D/E, M/B, P/E, and Size) are included along with the measures of hostility, and dummy variables to allow for secular variation in the periods 1980 to 1984, 1985 to 1989, or 1990 to 1996. These models are estimated with and without the SDC measure of hostility, because a substantial number of observations are lost by requiring SDC data. The estimates in the last three columns use the composite measure of hostility.

All of the measures of hostility have a reliably higher probability of leading to an auction. In columns (1) to (3), given the other characteristics of the target firm, an auction is 15.5 percent more likely when the bid is identified as hostile by SDC (t -statistic of 3.86). An auction is 12.7 percent more likely when the bid is unnegotiated (t -statistic of 3.41). An auction is 9.9 percent more likely when the bid is preceded by takeover-related events (t -statistic of 2.95).

Given the other definitions of hostility, the deals identified as hostile by *DJNR* are not related to the likelihood that an auction will occur. However, when the SDC hostility variable is excluded in columns (4) to (6), the *DJNR*

Table IX
Is Hostility Related to the Probability of an Auction?

A probit model predicts whether takeover bids for exchange-listed target firms from 1975 to 1996 will be lead to competition from other bidders (an auction). The independent variable is a dummy variable that equals one when a bid is followed by a formal bid for the target firm by a different bidder within a year, and zero otherwise. Several variables measuring the performance of the target firm before the first bid are used in the model. ROE is earnings divided by average stockholder's (book) equity and Sales Growth is the growth in sales over the fiscal year before the first bid. Liquidity is the ratio of net liquid assets to total assets, D/E is the long-term debt to book equity, M/B is the ratio of market to book value of stockholder's equity, P/E is the ratio of stock price to the earnings for the last fiscal year, and Size is the logarithm of the market value of common stock, all measured at the end of the fiscal year before the first bid. Host(WSJ) is based on descriptions in the *Wall Street Journal Index* or *Dow Jones News Retrieval*, Host(SDC) is based on whether the target firm resisted an unsolicited offer as determined by the Securities Data Company (SDC), Host(Uns) is based on whether the initial or winning bid is unsolicited, and Host(Pre) is based on whether the target firm is in play (someone has filed a 13D form with the SEC showing an accumulation of shares within the past 12 months) or the subject of a takeover rumor reported in *D/N/R*. Host(Factor) is the factor (principal component) created from the three hostility variables with complete data (Host(WSJ), Host(Uns), and Host(Pre)). Dummy variables are equal to one when the first bid occurs during 1980 to 1984, or 1985 to 1989, or 1990 to 1996, and zero otherwise, allowing for secular variation. The marginal effect column transforms the probit coefficient into the marginal effect of the variable on the estimated probability, evaluated at the sample means of the explanatory variables.

[illegible]

measure of hostility becomes significant, predicting a 13.6 percent greater chance of an auction (with a t -statistic of 3.83). When the composite hostility factor is used in columns (7) to (9), this variable is strongly related to the likelihood of an auction, with a t -statistic of 9.44. None of the performance variables or the pre-bid runup is a reliable predictor of whether an auction will occur.

Thus, there is strong evidence that auctions are related to hostility. Of course, the causality could run in either direction. Hostile bids could cause target managers to seek out competing white-knight bidders that would be less threatening. Alternatively, takeover rumors could reflect the activity of a different bidder simultaneous with the actions of the hostile bidder. Likewise, the existence of a competitor could cause a bidder to pursue an unnegotiated offer to gain bargaining power by publicizing its offer to target shareholders, perhaps giving it a first-mover advantage.

IV. Hostility and Bidder Returns

The decision to make a hostile bid is a strategy choice for the bidder firm (see Herzel and Shepro (1990, Chapter 13), for example). It presumably reflects a judgment that a favorable outcome is more likely from the hostile bid than from private negotiations with the target firm, and that a hostile bid is better than making no bid at all. Alternative views of this process assume less rational decision making by bidders. For example, Roll's (1986) hubris hypothesis asserts that bidders pay too much for target firms in the interest of winning a competitive takeover contest. From the perspective of target shareholders, overpayment by bidders is a desirable outcome.

A. Sample Selection Bias and Public Bidders

There are likely to be systematic differences between public and private bidders. To the extent that agency costs are larger in public firms, the likelihood of hubris or empire-building behavior is larger. On the other hand, public firms are likely to be larger because of their access to capital markets. Table X shows the average values of several variables that might be related to changes in the bidder's stock price when takeover bids are announced and the difference between the subset of 1,286 bids made by public firms and the sample without bidder returns, along with heteroskedasticity-consistent t -statistics (in columns (2) and (3)).

Among the hostility variables, the deals identified as hostile by *DJNR* occur more frequently in the sample with public bidders (t -statistic of 1.86). As mentioned before, this is not surprising because *DJNR* devotes more coverage to large and more prominent firms. On the other hand, deals identified as hostile by *SDC* occur less frequently in the sample with public bidders (t -statistic of -2.64). Unnegotiated offers and offers following pre-bid events that put the target in play are much less frequent (t -statistics of -12.29 and -4.50) for public firms. This could reflect a reluctance of public firms to act

Table X
Tests for Sample Selection Bias Based on Availability
of CRSP Stock Returns for the Bidder Firm

Column (1) shows the means for the different measures of hostility (Host(WSJ), Host(SDC), Host(Uns), Host(Pre), and Host(Factor)), deal characteristics (Pill, Auction, Success, Cash, Equity, and Tender Offer) and characteristics of the target firm (stock-price runup, markup, and premium surrounding the first offer announcement, and the log of equity capitalization for the target firm), defined in Table I for the sample of firms with data available from CRSP for returns to the First Bidder's stock (1,286 observations). Columns (2) and (3) show estimates of the means in the sample of cases without data on bidder returns, with a *t*-statistic testing whether the difference is reliably different from zero using White's (1980) heteroskedasticity-consistent standard errors. Columns (4) and (5) are estimates of the differences in means between sample with complete data available for estimating the regression models in Table XI (726 observations) and the sample where at least one variable has missing data, with a *t*-statistic testing whether the difference is reliably different from zero. Columns (6) and (7) show estimates of the differences in means between the sample with complete data (omitting the SDC measure of hostility; 1,253 observations) and the sample where at least one variable has missing data, with a *t*-statistic testing whether the difference is reliably different from zero.

Variable	(1)	(2)	(3)	(4)		(5)	(6)		(7)
	Sample with Bidder Returns (<i>N</i> = 1,286) Mean	Sample without Bidder Returns Mean	<i>t</i> -statistic for Difference	Regression Sample vs. Full Sample (<i>N</i> = 726)		<i>t</i> -statistic	Regression Sample (no SDC) vs. Full Sample (<i>N</i> = 1,253)		<i>t</i> -statistic
				Diff.			Diff.		
Host(WSJ)	0.083	0.063	1.86	0.028		2.27	0.022		2.09
Host(SDC)	0.189	0.248	-2.64	-0.051		-2.32			
Host(Uns)	0.311	0.557	-12.29	-0.154		-7.27	-0.238		-11.92
Host(Pre)	0.403	0.495	-4.50	-0.008		-0.34	-0.089		-4.35
Host(Factor)	0.211	0.289	-7.46	-0.031		-2.64	-0.074		-7.07
Pill	0.075	0.115	-3.30	0.043		3.09	-0.040		-3.31
Auction	0.152	0.243	-5.49	-0.045		-2.64	-0.088		-5.36
Success	0.782	0.703	4.38	0.098		5.36	0.090		5.01
Cash	0.425	0.771	-18.33	-0.217		-9.92	-0.331		-17.34
Equity	0.366	0.080	18.09	0.215		10.59	0.276		17.12
Tender offer	0.313	0.339	-1.35	0.026		1.22	-0.015		-0.75
Target									
Runup	0.124	0.124	0.01	-0.030		-2.76	-0.001		-0.05
Markup	0.100	0.091	0.63	0.064		4.54	0.009		0.64
Premium	0.224	0.215	0.48	0.034		1.82	0.008		0.46
Size	11.674	11.316	4.98	0.970		12.99	0.338		4.71
First bidder									
Runup	0.013			-0.008		-0.99	0.004		0.13
Markup	-0.023			-0.021		-1.61	0.052		1.35
Premium	-0.010			-0.030		-1.88	0.056		1.05
Size	16.855			0.302		4.85	0.184		1.23

aggressively toward other public firms, perhaps because of a cultural taboo among executives of public firms. It could also reflect the differences in bargaining power that public firms have because of their generally larger

size. Smaller private firms could value the publicity a hostile offer creates as a way of putting pressure on the target firm to consider their offer. The composite hostility measure is reliably smaller in the sample of deals with public bidders (t -statistic of -7.46).

Public firms make offers for targets that have poison pills less frequently than private firms (t -statistic of -3.30) and their offers lead to successful takeovers more frequently (t -statistic of 4.38). Public firms use cash less frequently and equity more frequently (t -statistics of -18.33 and 18.09) than private firms, which is not surprising because the public firms have equity that is traded in a liquid secondary market (some of the bidders have stock that is listed on foreign exchanges, so the distinction between “public” and “private” is not completely descriptive).

The average runup, markup, and premium for the target firm’s stock price are not reliably different for bids made by public firms. Public firms pursue target firms that are larger on average than the average target size in Table I (\$168.0 million versus \$117.5 million, with a t -statistic of 4.98).

Table X also shows the effects of sample selection bias when all of the variables in Table X are required to be available to estimate the regression models in Table XI. These models are estimated with and without the SDC measure of hostility. There are 726 deals with complete data and 1,253 deals with complete data if the SDC hostility variable is omitted. The general tendencies shown in columns (2) and (3) are repeated in the regression samples in columns (4) to (7). The results in Table X suggest that bids made by public firms could be systematically different from those made by private or foreign bidders.

B. Hostility and Bidder Stock Returns

Table XI analyzes the returns to the stocks of publicly traded bidder firms around the time of bid. The dependent variable is the cumulative abnormal return for days $(-63, 126)$ relative to the first bid, analogous to the premium calculated for the target firm’s stock price.

Many papers have shown that bidders tend to have had unusual positive stock-price performance in the year before they bid, which causes abnormal stock returns measured around the time of the bid to drift downward. This is shown in Figure 4, where three measures of abnormal stock price performance are plotted. The solid line represents the cumulative prediction errors from the market model estimated using the CRSP value-weighted portfolio for days $(-316, -64)$, which is the method used to calculate target firms’ abnormal performance in this paper. The second method (shown by $\times$ in Figure 4) is to subtract the CRSP value-weighted return from the bidder’s return, the market-adjusted return, which is equivalent to constraining the market-model estimates in equation (2) so that $\alpha_i = 0$ and $\beta_i = 1$. The third method (shown by $\circ$ in Figure 4) is to subtract the prediction from the estimated market model regression, but to constrain the intercept to equal zero, $\epsilon_{it} = R_{it} - \beta_i R_{mt}$ (Schwert (1996) uses this technique to analyze bid-

Table XI
How Does Hostility Affect the Bidder's Stock Price?

A regression model is used to explain the cumulative abnormal return to the bidder firm's stock for trading days $(-63, 126)$ relative to the date of the first bid for successful and unsuccessful takeover bids for exchange-listed target firms, 1975 to 1996. Host(WSJ) is based on descriptions in the *Wall Street Journal Index* or *Dow Jones News Retrieval*. Host(SDC) is based on whether the target firm resisted an unsolicited offer as determined by the Securities Data Company (SDC). Host(Uns) is based on whether the initial or winning bid is unsolicited, and Host(Pre) is based on whether the target firm is in play (someone has filed a 13D form with the SEC showing an accumulation of shares within the past 12 months) or the subject of a takeover rumor reported in *DJNR*. Host(Factor) is the factor (principal component) created from the three hostility variables with complete data (Host(WSJ), Host(Uns), and Host(Pre)). Target size and Bidder size are the logarithms of the market values of common stocks, all measured at the end of the fiscal year before the first bid. Target runoff is the cumulative abnormal return to the target firm's stock for trading days $(-63, -1)$ before the first bid and Target markup is the cumulative abnormal return to the target firm's stock for trading days $(0, 126)$ based on CRSP value-weighted market model estimates for trading days $(-316, -64)$. Dummy variables are equal to one when the first bid occurs during 1980 to 1984, or 1985 to 1989, or 1990 to 1996, and zero otherwise, allowing for secular variation. In addition, in columns (3) and (7), several variables that may be only known during the takeover contest are included in the model. Pill equals one if the target firm has a poison pill in place, Auction equals one if there are multiple bidders, Cash equals one if there is an all-cash payment to target shareholders, Tender offer equals one if the deal is a tender offer, and Successful equals one if the target firm is taken over by some bidder as a result of a bid that occurs within twelve months of the first bid. t -statistics use White's (1980) heteroskedasticity-consistent covariance matrix. $S(u)$ is the standard error of the regression.

Variable	(1) Coefficient	(2) t -statistic	(3) Coefficient	(4) t -statistic	(5) Coefficient	(6) t -statistic	(7) Coefficient	(8) t -statistic	(9) Coefficient	(10) t -statistic	(11) Coefficient	(12) t -statistic
Constant	-0.804	-2.89	-0.756	-2.48	-0.296	-1.84	-0.257	-1.65	-0.289	-1.86	-0.247	-1.65
Host(WSJ)	0.048	1.08	0.058	1.29	-0.023	-0.74	-0.020	-0.62				
Host(SDC)	-0.025	-0.67	-0.042	-1.16								
Host(Uns)	-0.002	-0.06	0.008	0.26	-0.015	-0.74	-0.007	-0.33				
Host(Pre)	-0.047	-2.12	-0.051	-2.29	-0.039	-2.30	-0.038	-2.23				
Host(Factor)									-0.073	-2.17	-0.063	-1.69
Target size	-0.002	-0.25	-0.005	-0.71	0.001	0.25	0.000	-0.02	0.001	0.21	0.000	-0.06
Bidder size	0.042	2.40	0.041	2.34	0.018	1.90	0.016	1.76	0.017	1.92	0.015	1.76
Target runoff	0.114	1.68	0.104	1.52	0.106	2.35	0.093	2.04	0.096	2.09	0.082	1.76
Target markup	0.104	2.64	0.092	1.96	0.113	4.02	0.102	3.28	0.121	4.39	0.109	3.62
1980-1984	0.109	2.30	0.111	3.15	-0.028	-1.27	-0.031	-1.37	-0.033	-1.48	-0.035	-1.59
1985-1989	0.083	1.83	-0.065	-1.99	-0.030	-1.38	-0.047	-2.10	-0.036	-1.66	-0.054	-2.36
1990-1996	0.056	1.12	-0.010	-0.43	-0.077	-2.70	-0.078	-2.71	-0.079	-2.75	-0.080	-2.76
Pill			0.033	1.25			0.079	2.44			0.076	2.39
Auction			0.026	0.69			-0.084	-3.28			-0.082	-3.18
Cash			0.114	2.46			0.003	0.16			0.006	0.29
Tender offer			0.067	1.49			0.041	2.02			0.043	2.11
Successful			0.057	1.15			0.020	0.79			0.019	0.73
R^2	0.051		0.073		0.042		0.060		0.040		0.057	
$S(u)$	0.279		0.277		0.277		0.275		0.277		0.275	
Sample size, N	726		726		1,253		1,253		1,253		1,253	

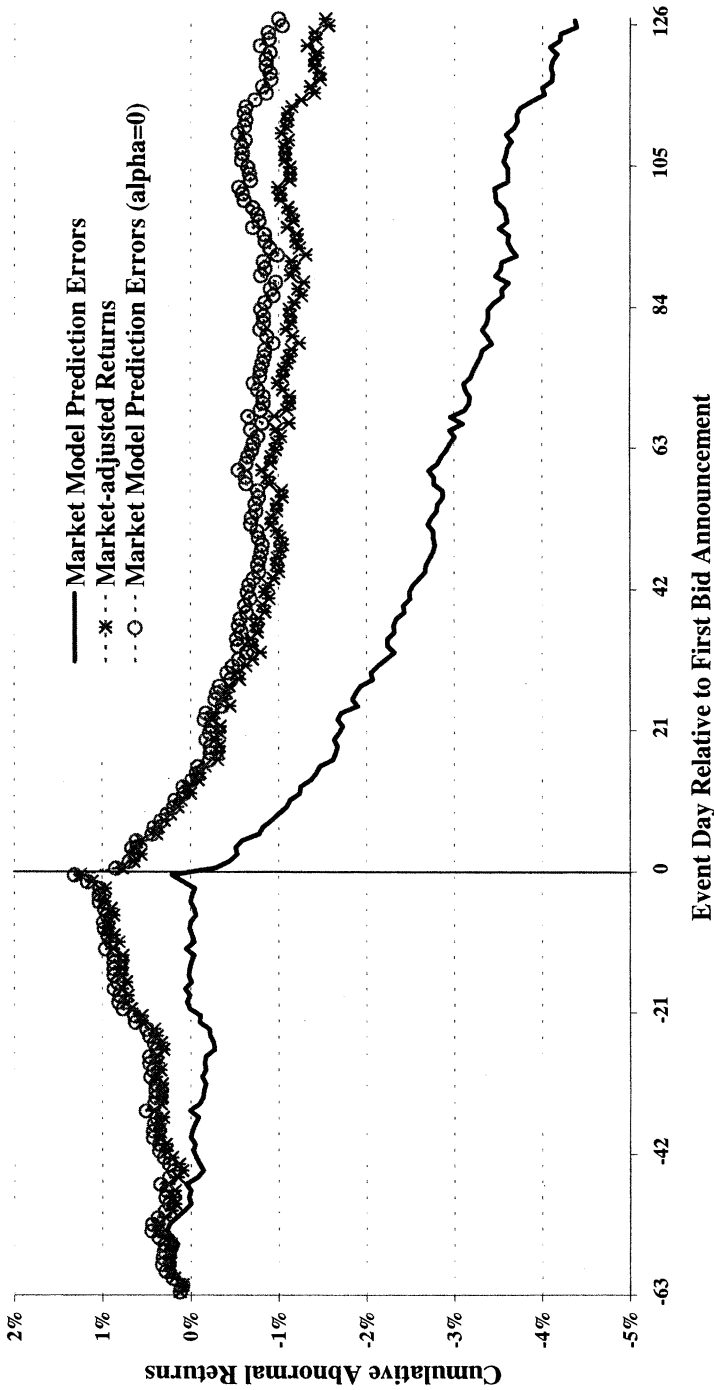


Figure 4. Cumulative abnormal returns to bidders' stocks from day -63 to day 126 relative to the first bid. Abnormal returns are calculated using three methods. The Market Model Prediction Errors use regression estimates from trading days -316 to -64. Market Model Prediction Errors (alpha = 0) subtract the CRSP value-weighted market return times the estimate of beta from the market model regression from the bidder's stock return (i.e., they assume alpha = 0). Market-adjusted returns assume that alpha = 0 and beta = 1. This plot shows that the downward drift in cumulative Market Model Prediction Errors, which are based on actual estimates of alpha, is attributable to unusually high estimates of alpha, representing good stock price performance for bidders before they make takeover offers.

ders' returns around takeover announcements). Figure 4 shows that, at least on average, the problem with using the historical market-model estimates as a benchmark for normal performance for bidders is caused by positive intercept estimates that reflect unusually good prior performance that does not continue during the event period. To correct for this downward drift in average bidder returns, the regressions in Table XI use the third method to measure abnormal bidder returns.

The regressors in Table XI include the five measures of hostility, the sizes (log of equity capitalization) of the target and bidder firms, the runup and markup experienced by the target firm's stock price, and dummy variables for the 1980 to 1984, 1985 to 1989, and 1990 to 1996 periods. Columns (3) and (4) show results for a regression that also includes deal characteristics, some of which are not generally known at the time of the first bid, including whether the target has a poison pill, whether a multiple-bidder auction occurs, whether cash is the only form of compensation offered to target shareholders, and whether the target firm is successfully taken over by some bidder.

The only measure of hostility that is reliably related to bidder stock-price behavior is the variable that measures whether the target is in play before the first bid, with abnormal returns that are 4.7 percent lower in column (1) (t -statistic of -2.12). SDC-identified hostile deals, unnegotiated deals, and deals identified as hostile by *DJNR* do not have reliably different bidder returns. The composite hostility measure used in columns (9) to (12) is also negatively related to bidder returns.

Larger bidder firms are associated with higher bidder returns. This is inconsistent with Roll's hubris hypothesis to the extent that large bidder firms are likely to have more diffused ownership structures that allow management to pursue non-value-maximizing takeover strategies.

Bidder returns are positively related to both the runup and the markup for the target firm, which is inconsistent with the notion that low bidder returns are explained by overpayment for target stock, with t -statistics of 1.68 and 2.64. The 1980 to 1984, 1985 to 1989, and 1990 to 1996 dummy variable coefficient estimates are all positive, with t -statistics of 2.30, 1.83, and 1.12, indicating that bidder returns were lower in 1975 to 1979, given the other variables in the model.

Among the deal characteristics in columns (3) and (4), cash offers are associated with higher than average bidder returns, with a t -statistic of 2.46. This is consistent with the general literature on securities offerings, in that a bidder that chooses to use cash rather than its equity securities to pay for an acquisition conveys positive information to the market about the value of its stock. On the other hand, the size of coefficient on the cash variable is large (11.4 percent incremental return to the bidder's stock in column (3)) compared with literature on seasoned equity offerings. The other deal variables do not add much explanatory power, given the other variables in the regression.

The estimates in columns (5) to (8) omit the SDC measure of hostility and therefore increase the sample size substantially. The main difference in results in these samples is that the time period dummy variables are negative,

implying that bidder returns were higher between 1975 and 1979, given the other variables in the model. Also, in this sample it seems that bidders involved in auctions have returns that are 8.4 percent lower, with a *t*-statistic of -3.28 . This is not surprising, because the occurrence of an auction is likely to be bad news for the first bidder.

Regressions like those in Table XI could fail to explain much of the cross-sectional variation in bidder's stock returns because many of the explanatory variables are choice or strategy variables for the bidder. If the bidder is selecting the value-maximizing strategy at each opportunity, there may be no reliable relation between realized stock returns and the choices that were made. Predictable relations between bidder returns and the chosen strategies must reflect either the private information of the bidder or unforeseen information that the bidder is not pursuing a value-maximizing strategy.

Nevertheless, the lack of a strong relation between hostility and bidders' stock returns suggests that the choice of whether to pursue a hostile offer is ambiguous—it depends on the facts and circumstances of each case. Moreover, the choice made by the bidder is strongly affected by the perceived attitude of the target firm.

V. Summary and Conclusions

One message is clear from the data analysis in this paper: the phrase "hostile takeover" means different things to different people. The correlations among different measures of hostility are positive, but not especially high. Thus, researchers, security analysts, and regulators who attempt to distinguish between hostile and nonhostile takeovers should be careful to understand the ambiguities inherent in this dichotomization.

Taking all of the evidence together, there is support for both target management entrenchment and for bargaining strategy as explanations for the perception of hostility in takeover contests. This is not surprising because these hypotheses are not mutually exclusive. Nevertheless, on balance, hostility in takeover negotiations seems to be most strongly related to strategic bargaining.

One contribution of this paper is to study a long time series of takeover offers. I find that there is much secular variation in the frequency of hostile offers that probably reflects changes in takeover technology that favor the relative bargaining positions of the bidder and target firms, such as the availability of takeover-related financing and the nature of private and public antitakeover devices. When trying to explain the occurrence of hostility in Table V, the variables that are most likely to reflect poor target management, M/B ratios and ROE, contribute little explanatory power. The variables that probably reflect the bargaining power of the target firm, such as firm size and the secular dummy variables, contribute the most explanatory power in Table V.

The bargaining hypothesis predicts that target managers resist hostile offers to improve the terms of a takeover offer. The entrenchment hypothesis predicts that target managers resist hostile offers to avoid being taken over.

Unnegotiated offers have lower success rates in Table VI. This explains the slightly lower premiums for unnegotiated offers averaged across both successful and unsuccessful transactions in Table VIII. On the other hand, deals that are characterized as hostile by *DJNR* or SDC have slightly higher average premiums. These results are consistent with the view that hostility is the outcome of aggressive bargaining by target managers.

There is strong evidence that auctions are related to hostility in Table IX. This could reflect target managers seeking out white-knight bidders who would be less threatening. On the other hand, potential competition could lead a bidder to pursue an unnegotiated offer to gain bargaining power by publicizing its offer to target shareholders, perhaps giving it a first-mover advantage. I am inclined to interpret hostility related to auctions as evidence of bargaining strategy rather than entrenchment.

Finally, there is evidence that offers identified as hostile by pre-bid events are associated with reductions in the bidder's stock price. Other measures of hostility are not related to the bidder's stock returns. I conclude that bidders choose to use hostile offers rationally. The higher premiums paid to target shareholders and the lower success rates associated with unnegotiated offers do not result in lower bidder stock returns in most cases.

In summary, most of the characteristics of takeover offers that are related to hostility seem to reflect strategic choices made by the bidder or the target firm to maximize their respective gains from a potential transaction. There are probably some transactions in this large dataset that exhibit non-value-maximizing target management entrenchment, but they are dominated by cases where strategic bargaining is the motivation for hostility in the sample averages and regression estimates.

REFERENCES

- Chan, Louis K. C., Narasimhan Jegadeesh, and Josef Lakonishok, 1995, Evaluating the performance of value versus glamour stocks: The impact of selection bias, *Journal of Financial Economics* 38, 269–296.
- Comment, Robert, and G. William Schwert, 1995, Poison or placebo? Evidence on the deterrence and wealth effects of modern antitakeover measures, *Journal of Financial Economics* 39, 3–43.
- Greene, William H., 1993, *Econometric analysis*, 2nd ed. (Macmillan, New York).
- Harford, Jarrad, 1999, Corporate cash reserves and acquisitions, *Journal of Finance* 54, 1969–1997.
- Hasbrouck, Joel, 1985, The characteristics of takeover targets, *Journal of Banking and Finance* 9, 351–362.
- Healy, Paul M., Krishna G. Palepu, and Richard S. Ruback, 1992, Does corporate performance improve after mergers? *Journal of Financial Economics* 31, 135–176.
- Herzel, Leo, and Richard W. Shepro, 1990, *Bidders and targets: Mergers and acquisitions in the U.S.* (Blackwell, Cambridge, MA).
- Jensen, Michael C., 1986, Agency costs of free cash flow, corporate finance, and takeovers, *American Economic Review* 76, 323–329.
- Lang, Larry H. P., René M. Stulz, and Ralph A. Walkling, 1989, Managerial performance, Tobin's Q , and the gains from successful tender offers, *Journal of Financial Economics* 24, 137–154.
- Manne, Henry G., 1965, Mergers and the market for corporate control, *Journal of Political Economy* 73, 110–120.

- Mikkelson, Wayne H., and M. Megan Partch, 1989, Managers' voting rights and corporate control, *Journal of Financial Economics* 25, 263–290.
- Mitchell, Mark L., and Jeffrey M. Netter, 1989, Triggering the 1987 stock market crash: Anti-takeover provisions in the proposed House Ways and Means tax bill? *Journal of Financial Economics* 24, 37–68.
- Mørck, Randall, Andrei Shleifer, and Robert W. Vishny, 1988, Characteristics of targets of hostile and friendly takeovers, in Alan J. Auerbach, ed., *Corporate takeovers: Causes and Consequences* (National Bureau of Economic Research, Chicago, IL).
- Mørck, Randall, Andrei Shleifer, and Robert W. Vishny, 1989, Alternative mechanisms for corporate control, *American Economic Review* 89, 842–852.
- Opler, Tim, Lee Pinkowitz, René M. Stulz, and Rohan Williamson, 1999, The determinants and implications of corporate cash holdings, *Journal of Financial Economics* 52, 3–46.
- Palepu, Krishna G., 1986, Predicting takeover targets: A methodological and empirical analysis, *Journal of Accounting and Economics* 8, 3–35.
- Roll, Richard, 1986, The hubris hypothesis of corporate takeovers, *Journal of Business* 59, 197–216.
- Schwert, G. William, 1996, Markup pricing in mergers and acquisitions, *Journal of Financial Economics* 41, 153–192.
- Shivdasani, Anil, 1993, Board composition, ownership structure, and hostile takeovers, *Journal of Accounting and Economics* 16, 167–198.
- Stulz, René M., 1988, Managerial control of voting rights: Financing policies and the market for corporate control, *Journal of Financial Economics* 20, 25–54.
- White, Halbert, 1980, A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity, *Econometrica* 48, 817–838.