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POISON OR PLACEBO? EVIDENCE ON THE DETERRENT AND WEALTH EFFECTS OF MODERN ANTITAKEOVER MEASURES

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ABSTRACT

This paper provides large-sample evidence that poison pill rights issues, control share statutes, and business combination statutes do not deter takeovers and are unlikely to have caused the demise of the 1980s market for corporate control, even though 87% of all exchange-listed firms are now covered by one or another of these antitakeover measures. We show that poison pills and control share statutes are reliably associated with higher takeover premiums for selling shareholders, both unconditionally and conditional on a successful takeover, and we provide updated event-study evidence for the three-quarters of all poison pills not yet analyzed.

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1. Introduction

The demise of the 1980s market for corporate control could have been caused by improvements in corporate antitakeover methods. More than 1,500 firms adopted shareholder rights plans or poison pills during the second half of the decade. These securities, issued as dividends, serve to create impossibly-burdensome obligations for anyone who acquires a controlling block of shares without management approval.[1] Separately, states finally found several forms of antitakeover statute able to pass constitutional muster: control share statutes that restrict the voting rights of a controlling shareholder and business combination (merger-moratorium or freeze-out) statutes that delay any business combination. In either variant, the prohibitions last for three to five years and apply to the buyer of a controlling block of shares who buys without the approval of incumbent management. New York adopted the first control share statute in 1985 and Ohio adopted the first business combination statute in 1982. The U. S. Supreme Court upheld Indiana's control share statute in April 1987, and an appellate court upheld Wisconsin's business combination statute in June 1988. The appellate court ruled that investors have no constitutional right to receive tender offers and that state law need not leave bidders a meaningful opportunity for success.[2]

Figure 1 shows how close the linkage is over time, using aggregate data, between the spread of these new antitakeover methods and the demise of the 1980s market for corporate control. It plots the percentage of all exchange-listed firms that received initial takeover offers in each month from January 1975 to December 1991, along with the proportion covered by the three kinds of modern antitakeover measure. Data sources are detailed in Section 2 below. Starting at levels below 0.5% per month in 1975, takeover rates increased to a peak of around 1.5% per month during 1987 and 1988. The long, gradual rise in merger activity culminated in a sharp reversal during 1989. By 1990, rates were again below 0.5% per month, where they remained through 1991. In comparison,

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[1] Bruner (1991) provides a detailed review of the mechanics of poison pills.

[2] From Amanda Acquisition Corp. v. Universal Foods Corp., 877 F.2d 496 (7th Cir.).

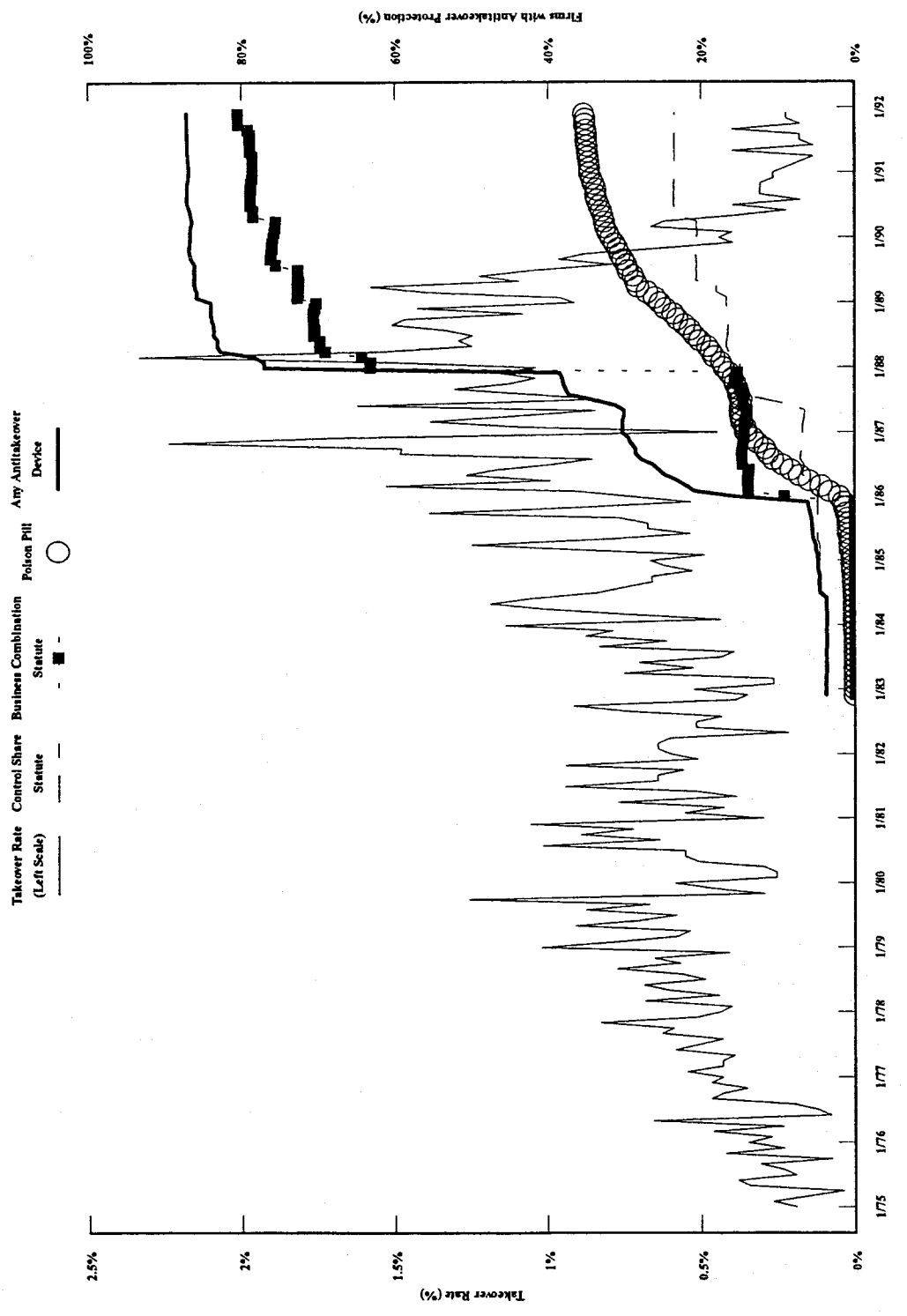

Fig. 1. Monthly time-series plot of the proportion of all exchange-listed firms that are covered by (1) control-share statutes, (2) business-combination statutes, (3) poison-pill rights issues, (4) any of the above, and (5) the proportion of all exchange-listed firms that received initial merger proposals, merger agreements, or inter-firm tender offers each month (left-hand scale).

coverage by business combination statutes jumped from 15% to 63% when Delaware adopted its law in January 1988 (half of all exchange-listed firms are incorporated in Delaware), and reached 80% by 1991. Coverage by control share statutes increased gradually to reach 24% by 1991, and coverage by poison pills, trivial before 1986, increased gradually to reach 35%. By 1991, 87% of exchange-listed firms were covered by a poison pill, a business combination statute, or a control share statute. In sum, figure 1 shows a compelling coincidence between the widespread adoption of antitakeover measures and the demise of the market for corporate control during 1989-90.

This pattern suggests that incumbent managers used their enhanced decision rights to deter takeovers systematically, an interpretation that is consistent with a substantial literature that sees managers as more interested in entrenchment than in maximizing shareholder wealth. If the demise of the 1980s market for corporate control was mainly caused by the legal acceptance and spread of these new antitakeover measures, then even a partial recovery of the market is unlikely as long as these measures remain in place. In fact, it has already refocused the public-policy debate on alternative means of regulating managerial slack, such as management compensation plans and proxy contests. The demise of the takeover market is often cited as a justification for more involvement by institutional investors in corporate decisions and governance. Partly in response to the demands of institutional investors, the Securities and Exchange Commission revised its proxy-statement rules in October 1992 to expand disclosure of management compensation, to ease disclosure rules for communications among investors, and to permit partial slates of nominees to corporate boards.

There is cause for skepticism, however, regarding the impact of these new antitakeover measures on the market for corporate control. As shown by the predominance of negotiated transactions during the first half of the 1980s, incumbent managers wielded considerable influence over takeover outcomes even before modern antitakeover measures. Considering all takeover attempts involving tender offers for exchange-listed firms between 1981-84, Comment and Jarrell (1987) report that half of all bidders obtained a merger agreement before starting an offer, 22% of all transactions started as hostile but were superseded by negotiated bids, while another 12% started

as hostile but ended with no shares purchased by any bidder. Few bids (the remaining 16%) were executed without managements' approval. Besides suggesting that deterrence is not managements' sole interest (eventually two-thirds of all offers were approved), this shows at least some bargaining power before the creation of modern antitakeover measures. Although the added bargaining power available to incumbents from modern antitakeover measures could have tipped the scales, enabling them to "just say no" where they had previously only negotiated over terms of sale, their incentives to do so systematically are debatable. Where there are gains to restructuring, an increase in bargaining power implies an increase in side-payments to incumbent managers (golden parachutes) and a substitution of negotiated for unnegotiated transactions, rather than a reduction in the frequency of restructuring transactions.

The evidence from event studies of the wealth effects of adoptions of antitakeover measures provides additional grounds for skepticism. While stock prices do tend to fall, the size of the decline seems inconsistent with systematic deterrence. The average decline is less than 1% for poison pill adoptions, and between 0% and 9% for state antitakeover statutes. Ryngaert (1988) examines 283 poison pills adopted through 1986 and finds an average two-day return of -0.34% on announcement. Malatesta and Walkling (1988) examine 132 poison pills adopted through March 1986 and find an average two-day return of -0.92%. Karpoff and Malatesta (1989) examine the average stock-price effect for a sample of 1,505 firms that were affected by 40 different instances of an introduction of a statute to a state legislature, in 26 different states, and find a two-day announcement return of -0.29%. Szewczyk and Tsetsekos (1992) estimate an average return of -9.09% for a sample of 56 Pennsylvania firms during the legislative process from October 10, 1989 through April 27, 1990. When cumulated over certain key dates, a methodology comparable to that used by Karpoff and Malatesta, the average return for Pennsylvania firms was -3.33%. While we do not consider antitakeover charter amendments in our study, Jarrell and Poulsen (1987) report an average announcement return of -1.25% for 649 fair-price, classified board and supermajority voting amendments from 1980-1985, and Mahoney (1992) reports an average 55-day return of -1.96% for

pills or other firm-specific actions to block a transaction.

Business combination statutes, which are often adopted in addition to control share statutes, also allow buyers to escape statutory restrictions by winning a shareholder vote, but these elections are triggered by a purchase of shares rather than by a disclosure of intent. This makes conditional tender offers impossible and confronts a buyer with the unlikely prospect of winning a vote by non-tendering shareholders, who can delay closure of a transaction in addition to their traditional right to sue for a better price. In recognition of this added holdout problem, business combination statutes except tender offers that yield 85% or more of the target's stock not controlled by management. Management can try to limit this exception, in turn, by placing shares with cooperative parties — including any employee stock plan that allows beneficiaries to vote the plan's shares. All in all, the loopholes in control share statutes are larger than those in business combination statutes.

Another reason to doubt that antitakeover measures had a big impact on the market for corporate control corresponds to the notion of merger waves. The 1980s restructuring boom could have succumbed to market forces as did earlier booms.[3] (A coincidence between the adoption of antitakeover legislation and the decline in takeover activity can also be explained by market forces, as diminished returns to restructuring would weigh against further investments in the political influence required to stave off antitakeover legislation.) Perhaps the best support for the view that the 1980s merger boom died of natural causes lies in the fact that the National Bureau of Economic Research marks July 1990 as the start of a recession. This argument predicts more than just a substitution of negotiated for unnegotiated transactions or an increase in side payments to incumbents, and it also applies to the secondary transactions that underpin so-called bust-up deals. While William Farley's $1.5 billion tender offer for West Point-Pepperell Inc., a conglomerate, yielded 95% of the target's shares in March 1989, he had to renegotiate his bridge loan at a higher interest rate and delay

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[3] Weston, Chung, and Hoag (1990), Chapter 11, review evidence on the relation between merger waves and business cycles.

the value of their holdings of junk bonds, and bank regulators issued guidelines for highly leveraged transactions (HLTs), including all acquisition loans that either raised liabilities to 75% of assets or doubled the debt ratio while raising it to 50% of assets. In 1990, the National Association of Insurance Commissioners enacted guidelines calling for insurance companies to hold reserves against non-investment grade bonds that are not in default.

The principal focus of our analysis is on whether the development and spread of new antitakeover measures during the second half of the 1980s were likely to have been the main cause of the demise of the 1980s market for corporate control. As noted above, the evidence from existing event studies of antitakeover measures is unconvincing in this regard, and we update the least current of these — the poison pill studies. We also exploit the firm- and time-specific nature of coverage by poison pills and state antitakeover laws to perform a more direct test of deterrence. If the relation is causal in nature, deterrence should be observable in the takeover experience of individual firms. Moreover, the explanatory power of modern antitakeover measures should withstand efforts to control for secular variation in takeover activity. Otherwise, it is likely that the 1980s merger wave was ended by broad-scale political or economic forces, which manifest themselves as secular variation, and not by innovative antitakeover measures adopted by individual states or firms. National legislation could result in secular variation, and Mitchell and Netter (1989) blame the stock market crash of October 1987 on Congress' consideration of takeover-related changes to the tax code, but threats to revise the tax code and the Williams Act (regulating tender offers) to deter takeovers were a staple of the Congressional diet during the second half of the 1980s, and no legislation of an explicitly antitakeover nature was adopted.

The power of our research design depends on dispersion in antitakeover coverage. At each time, we want some firms to be covered while others are not. The fact that half of all exchange-listed firms became covered *en masse*, when Delaware adopted its business combination statute in January 1988, suggests that the deterrent effect of business combination statutes could show up as a post-1987 secular shift in takeover frequency, rather than as a firm- and time-specific

statute (including Texas and California). Our update of the existing event-study evidence of the wealth effects of poison pill adoptions, exploiting a fourfold increase in sample size, closely replicates earlier findings. We interpret a mean wealth effect close to zero as surprisingly weak evidence of deterrence, although we confirm price declines of several percent in certain samples. Finally, we find that poison pills and control share statutes (not business combination statutes) are associated with larger premiums for selling shareholders in successful takeovers. We also find that poison pills increase unconditional premiums (taking deterrence into account).

Section 2 describes the data used throughout the paper. The existing event-study evidence that adoptions of poison pill rights plans tend to reduce stock prices is updated in Section 3. Section 4 discusses and documents a problem with implicit information disclosure that makes it difficult to identify the full deterrent effect of poison pills. In Section 5 we provide ordinary least squares (OLS) and logit estimates of the effect of modern antitakeover measures on the likelihood of takeover, using a model presented by Palepu (1986) as a base. We use our takeover-prediction model again in Section 6 to predict adoptions of poison pills, and again in Section 7 to predict premiums in successful takeovers as well as a variable constructed as the stock-price premium realized by selling shareholders in successful takeovers, and zero otherwise. Section 8 contains brief conclusions.

2. Data Sources and Descriptive Statistics

Our information on merger and acquisition announcements comes from our proprietary mergers & acquisitions (M&A) database, which covers all exchange-listed target firms in the period 1975-91. These announcements were obtained through various keyword searches of the *Dow Jones News/Retrieval (DJNR)* database (from 1979), by inspection of the *Wall Street Journal* Index (through 1984), and from Commerce Clearing House's *Capital Changes Reporter* (the original source for CRSP delisting codes). In this study, we use the subset of records covering merger proposals, merger agreements, and inter-firm tender offers. Merger proposals are distinguished from merger talks by a public disclosure of proposed terms of purchase. We use these data (1) to identify successful

are rare.

For pill adopters, we make use of the information in *Corporate Control Alert* on the identity of the law firm that advised on the adoption. Our big-2 law firms are the market leaders: Wachtel Lipton and Skadden Arps. Wachtel Lipton invented the poison pill and Skadden Arps developed a popular variation. We define the next-7 group of law firms to include, arbitrarily, the next seven most commonly retained to advise on pill adoptions: Fried Frank, Sullivan Cromwell, Cravath Swaine, Paul Weiss, Wilkie Farr, Sherman Sterling, and Jones Day. Figure 2 shows how the market shares of these two groups shifted over time. The big-2 firms advised on about two-thirds of the pills adopted in 1984 and 1985, when poison pills were rare and experimental. The market shares of the two leaders fell continuously as pills became commonplace. The market share of next-7 law firms held fairly steady, amounting to 10% for pills adopted through 1986, and 7% afterwards, so the shift over time was toward the use of in-house counsel and local law firms.

We use a common dataset (and much the same model) to predict takeovers, takeover premiums, and poison pill adoptions. For this, we draw on all the data available on COMPUSTAT for exchange-listed firms (with fiscal years that end December 1976 through December 1990) to generate a sample of 21,887 fiscal-year forecast periods that begin between January 1977 and January 1991. This sample approximates the population, excluding only those fiscal years with less than four prior years of COMPUSTAT data, and a handful of fiscal years after the year of an initial takeover announcement. Merging our information on takeover announcements yields a sample of 669 firm-years with initial announcements that ultimately lead to successful takeovers. Merging our information on poison pill adoptions yields a total of 2,456 firm-years of experience with poison pills, and merging our information on states of incorporation and dates of adoption for various state statutes yields a total of 1,263 firm-years of experience with control share statutes and 3,417 firm-years of experience with business combination statutes. We treat firms-years as covered only when an antitakeover measure is in place at the start of the year, ignoring part-year coverage from midyear adoptions. (The endogeneity problem, or tendency for managers to adopt poison pills shortly before

impending takeover attempts, shown in figure 4 and discussed in Section 4, would likely be worse if we used a narrower measurement interval.)

There is some ambiguity about when coverage by state statute took effect, since these statutes represent a legal innovation. It can be argued that control share statutes took full effect only after the Supreme Court ruled on the Indiana statute in April 1987 and that business combination statutes took full effect only after the Wisconsin ruling in June 1988. (The fact that the S.E.C. filed a friend-of-the-court brief challenging the Wisconsin statute as unconstitutional suggests that some uncertainty remained after the Supreme Court's ruling.) If we redefine coverage to begin after these decisions (for statutes adopted before these decisions), our in-sample experience with coverage drops to 521 firm-years for control share statutes and to 884 firm-years for business combination statutes. While this is a substantial reduction, we are still left with a considerable amount of experience with coverage. We replicate our analysis using these later starting dates. Our estimates of how the likelihood of takeover depends on state statutes (tables 3a & 3b) are essentially unchanged, so we do not report these results. Our estimates for the effect of statute coverage on takeover premiums (table 4) differ somewhat with this alternative formulation, and we report these results. We can safely ignore this issue with poison pill coverage because the important court decisions for pills (e.g., Moran v. Household International) occurred in 1985 before all but a handful of pills were adopted.

We use much the same set of variables to predict takeovers, takeover premiums, and adoptions of poison pills. These include dummy variables equaling one if a state statute or poison pill is in place at the start of a forecast period, and dummy variables equaling one if a firm (with a poison pill) has retained a big-2 or next-7 law firm. We also mimic Palepu (1986), whose study is discussed below, by including eight accounting and stock market predictors. These accounting and stock-return variables are included in our prediction models to account for variation in business conditions — across time and firms — that make takeovers more or less likely. They are each calculated over a four-year period immediately preceding each fiscal-year forecast period, and include:

Table 1

Means and standard deviations of accounting performance variables and takeover characteristics for 21,887 fiscal-years beginning January 1977 through January 1991 for all NYSE and AMEX-listed stocks with necessary data available on COMPUSTAT.

Variable	Full Sample, 21,887 Firm-years		Takeover Sample, 669 Firm-years		T-test for Equal Means
	Mean	Standard Deviation	Mean	Standard Deviation	
Abnormal return (over 4 years)	0.0001	0.0018	0.0003	0.0018	2.06
Sales growth (4-year average)	0.0867	0.1272	0.0768	0.1127	-2.30
Growth-resource mismatch	0.3465	0.4759	0.3782	0.4853	1.72
Liquidity (4-year average)	0.2470	0.2061	0.2767	0.2190	3.57
Debt/equity (4-year average)	0.7410	1.8455	0.6063	0.9939	-3.43
Size	5.6291	1.8596	5.1638	1.4927	-8.12
Market/book (4-year average)	1.4814	1.7316	1.3718	1.0951	-2.57
Price/earnings (4-year average)	11.1357	11.0488	10.6688	10.4521	-1.17
Control share statute	0.0577	0.2332	0.0553	0.2287	-0.28
Business combination statute	0.1561	0.3629	0.1345	0.3415	-1.66
Control share statute	0.0238	0.1524	0.0239	0.1529	0.02
Business combination statute	0.0404	0.1969	0.0389	0.1934	-0.21
Poison pill	0.1122	0.3156	0.0807	0.2726	-3.02
Pill and big-2 law firm	0.0302	0.1710	0.0299	0.1704	-0.04
Pill and next-7 law firm	0.0081	0.0898	0.0075	0.0862	-0.20
1986	0.0632	0.2433	0.0912	0.2881	2.57
1987	0.0611	0.2396	0.0658	0.2481	0.49
1988	0.0589	0.2354	0.0822	0.2749	2.24
1989	0.0562	0.2304	0.0628	0.2427	0.71
1990	0.0495	0.2169	0.0329	0.1785	-2.43
1991	0.0462	0.2100	0.0075	0.0862	-11.00
Successful takeovers (=1)	0.0306	0.1721			
Market-adjusted premiums in	0.0211	0.1155	0.3489	0.3263	
Auction (=1 if multiple bidders)			0.2407	0.4278	
All-Cash (=1)			0.6741	0.4690	
All-Equity (=1)			0.1495	0.3568	
Tender Offer (=1)			0.4499	0.4979	
Trading days during offer period			47.8909	46.8104	

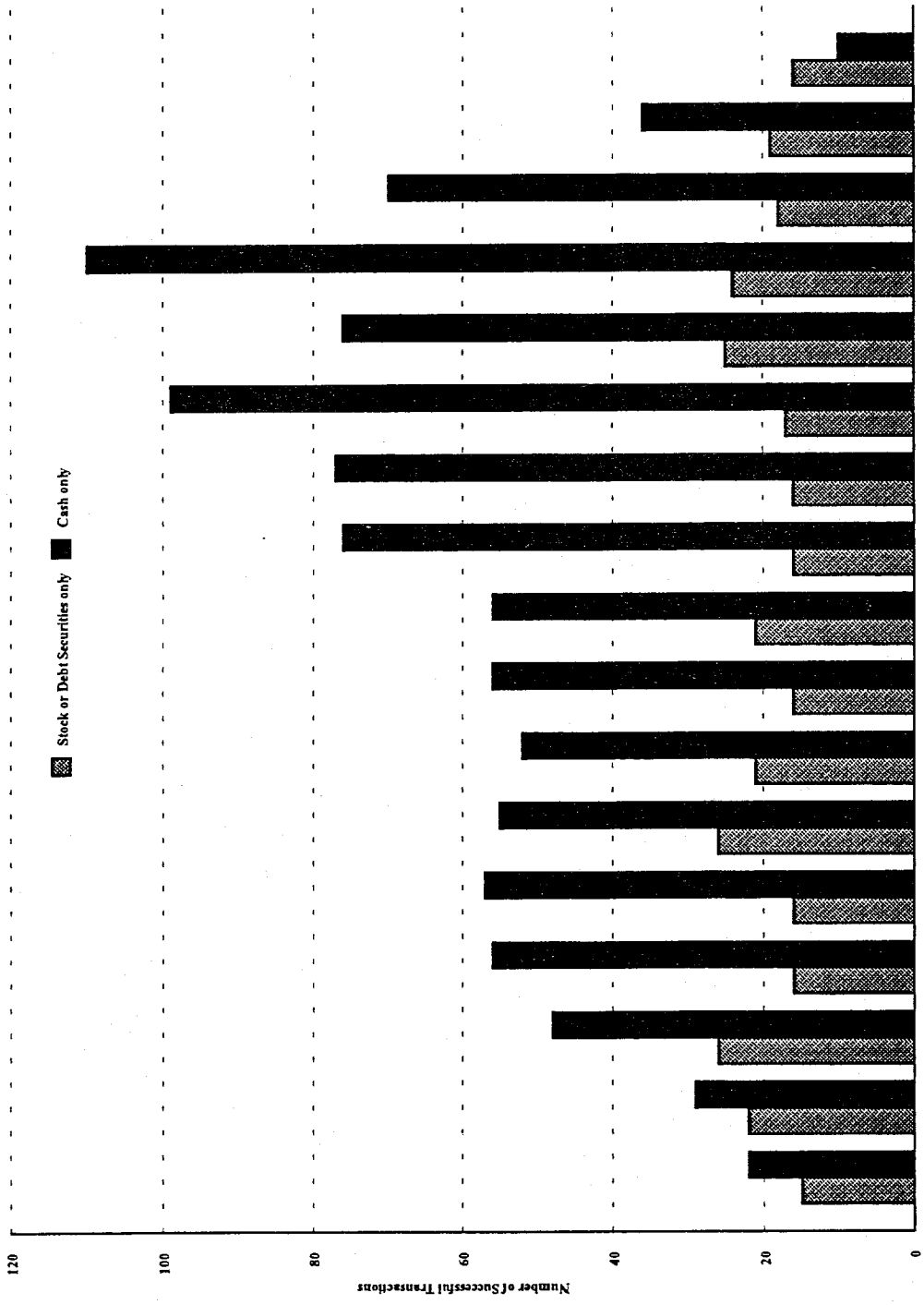

Fig. 3. Number of cash-only and non-cash-only successful takeovers of exchange-listed firms, in the period 1975-91, by year of announcement.

probably understated. This is less of a problem if we look only at pill adoptions made after the market is already aware of a pending merger interest, as in Ryngaert (1988) or Malatesta and Walkling (1988). (It is not a problem at all for adoptions of state antitakeover statutes, which are not adopted at the discretion of management.) We identify 158 control-premium cases where the adoption was preceded within 12 months by a 13D filing or a published story about merger rumors. Our approach is more restrictive than Ryngaert's since we exclude (as inherently confounded) pills announced while a merger proposal, merger agreement or interfirm tender offer is pending, whereas he treats them as control-premium cases. We are more restrictive because, at least for the more recent pills that dominate our sample, the adoption of a pill is essentially preordained by the announcement of a takeover bid. In any event, control-premium cases amount to 15% of his sample and 13% of ours.

Table 2 shows our analysis of the wealth effect of poison pill adoptions. We measure the change in shareholder wealth by the three-day return on the common stock of the issuing firm, centered on the day of the announcement of the pill. If the *DJNR* time-stamp for a story is later than 4:00 P.M., we take the following day to be the announcement day. When we can't find a *DJNR* mention, which happens in 8.5% of the cases without confounding news, we take the announcement date given in the *Wall Street Journal Index* and then *Corporate Control Alert*. The *DJNR* text for the pill announcement often provides information about coincident confounding news items and pending takeover proposals and rumors. We also check the *Wall Street Journal Index* for such items.

Table 2 reports regression results for the full sample, the 158 control-premium cases, and for the remaining 1,006 cases. We adjust for coincident market-wide price changes using cumulative abnormal returns (CRSP value-weighted market model parameters are estimated during the year before each pill adoption). To control for extraneous information imbedded in press releases, we include dummy variables equaling one if the issuer has retained a big-2 or next-7 law firm, and if management disclaims knowledge of a pending offer or merger interest. The law firm dummies could signal management's willingness to incur legal fees in any antitakeover effort. A potential

Table 2

OLS regression showing the average wealth effect of initial poison-pill rights issues announced in the period 1983-91 for NYSE, AMEX and NASDAQ-listed stocks, by whether a 13D filing or rumors of a bid makes it likely that a control premium is built into the issuer's stock price at the time of the announcement. Excludes 371 cases with confounding news releases or ongoing takeover attempts. The dependent variable is measured as the cumulative abnormal return over days -1 to +1 using a market model estimated using the CRSP value-weighted market portfolio during the year prior to the pill announcement. (t-statistics in parentheses)

Variable	Full Sample		Likely Control Premium	Others
Constant	-0.06 (-0.43)	0.27 (1.98)	-1.38 (-0.81)	-0.86 (-0.89)
Dummy=1 for prior control premium		-2.40 (-6.49)		
Dummy=1 for 1987-91			-0.46 (-0.26)	0.72 (0.81)
Dummy=1 for merger-talks disclaimer			-1.19 (-1.43)	0.44 (1.61)
Dummy=1 for control share statute			-0.89 (-0.80)	0.16 (0.50)
Dummy=1 for business combination statute			-0.02 (-0.03)	0.24 (0.87)
Dummy=1 for big-2 legal advisor			0.78 (0.75)	-0.35 (-0.93)
Dummy=1 for next-7 legal advisor			2.59 (1.85)	0.25 (0.46)
3-day CRSP VW market return	-0.05 (-0.56)	-0.06 (-0.73)	-0.24 (-0.98)	-0.02 (-0.21)
Adjusted R-square	.000	.034	.003	.000
Number of Observations	1,164	1,164	158	1,006

Note: Big-2 legal advisors are the market leaders: Wachtel Lipton and Skadden Arps. The next-7 advisors are the next seven law firms most commonly retained to advise on pills as reported by *Corporate Control Alert*.

buyer could be deterred if legal fees incurred by the buyer are positively correlated with legal fees incurred by the target, but legal fees incurred in takeovers may be little related to fees incurred at the pill-adoption stage since firms can switch advisors in case of a takeover attempt. We also include dummy variables for whether the issuing firm is already covered by an antitakeover statute, with the presumption that the added deterrence from a pill will be lower in these cases. Finally, we include the coincident return on the CRSP value-weighted market portfolio to find out if betas differ systematically (from typical historical values) during our 3-day announcement periods.

Pill adoptions have no price effect, on average, in our full sample. Within subgroups, the fourfold increase in sample size serves to reinforce previously reported results. Ryngaert (1988) reports an average return of -1.51% (t-statistic of -2.77) for his control-premium group, whereas we get a differential return of -2.40% (t-statistic of -6.49) in our full-sample regression. Our estimate of the differential is larger than Ryngaert's because stock returns for our post-1986 pills were slightly more negative in the control-premium group and more positive otherwise.

In the control-premium sample, using a next-7 law firm increases prices by 2.59% (t-statistic of 1.85), while big-2 law firms yields a differential abnormal return of 0.78% (t-statistic of 0.75). These estimates have the wrong sign if high-profile law firms are hired as a deterrent, and the effect of law-firm identity is not reliably different from zero in the balance of the sample. The issuance of a disclaimer about pending merger talks deflates stock prices by -1.19% (t-statistic of -1.43) in the control-premium sample, while increasing prices by 0.44% (t-statistic of 1.61) in the balance of the full sample. When prices already reflect a control premium, the disclosure that a national law firm has been retained evidently signals a higher expected control premium (higher expected offer price or higher likelihood of an offer). The same disclosure has little effect absent an imbedded control premium. While a merger-talk disclaimer deflates prices that are already inflated with a control premium, and otherwise yields an (inexplicable) increase in stock price. Our failure to find a reliably positive differential for firms that are already covered by a state antitakeover law is surprising, since there is a reliably positive differential wealth effect from adoption of an

antitakeover state statute when firms already have an antitakeover charter amendment [Szewczyk and Tsetsekos (1992, table 4)]. As a final note, the average net-of-market return is positive at 1.01% for the (excluded) cases with confounding news releases or pending takeover bids.

4. Can Deterrence be Measured for Poison Pills?

Figure 4 shows the size of the implicit-disclosure or endogeneity problem for poison pill adoptions. It plots (in daily event time) the cumulative proportion of all pill adopters that received an initial takeover attempt within one year on either side of their adoption of a poison pill. The sample here consists of all 960 adoptions of original poison pills by exchange-listed firms in the period 1983-90. We exclude pills adopted after 1990 to ensure a full year's worth of M&A data after every adoption. Takeover attempts include the first occurrence of a merger proposal, merger agreement or interfirm tender offer. The plotted value for the n^{th} event day is a count of the total number of takeover announcements in a period starting 250 trading days before a pill adoption and ending with the n^{th} day relative to the adoption. This count is divided by the sample size, so the plotted values represent the cumulative proportion of all pill adopters that have been put into play in a two-year vicinity of adoptions. For comparison purposes, we plot the average proportion of all no-pill firms that are put into play over coincident intervals. For each of the 960 adoptions, we calculate the cumulative proportion of all no-pill firms that are in play as of the n^{th} day relative to that adoption. We average these values across events to produce a series of n (plotted) values that can be interpreted as the proportion of firms expected to be in play as of each event day, given secular variation in takeover frequency and an uneven distribution of pill adoptions over time. No-pill firms are ones that never adopted a pill.

An endogeneity or implicit-disclosure problem will show up in figure 4 as a steeper slope for pill firms (solid line) than for no-pill firms (dotted line) after pill adoptions, and this is what we see. The proportion of pill adopters that are in play increases from 6.9% as of day two to 19.4% as of day 250, a change of 11.5%. The corresponding proportions for no-pill firms are 8.7% on day

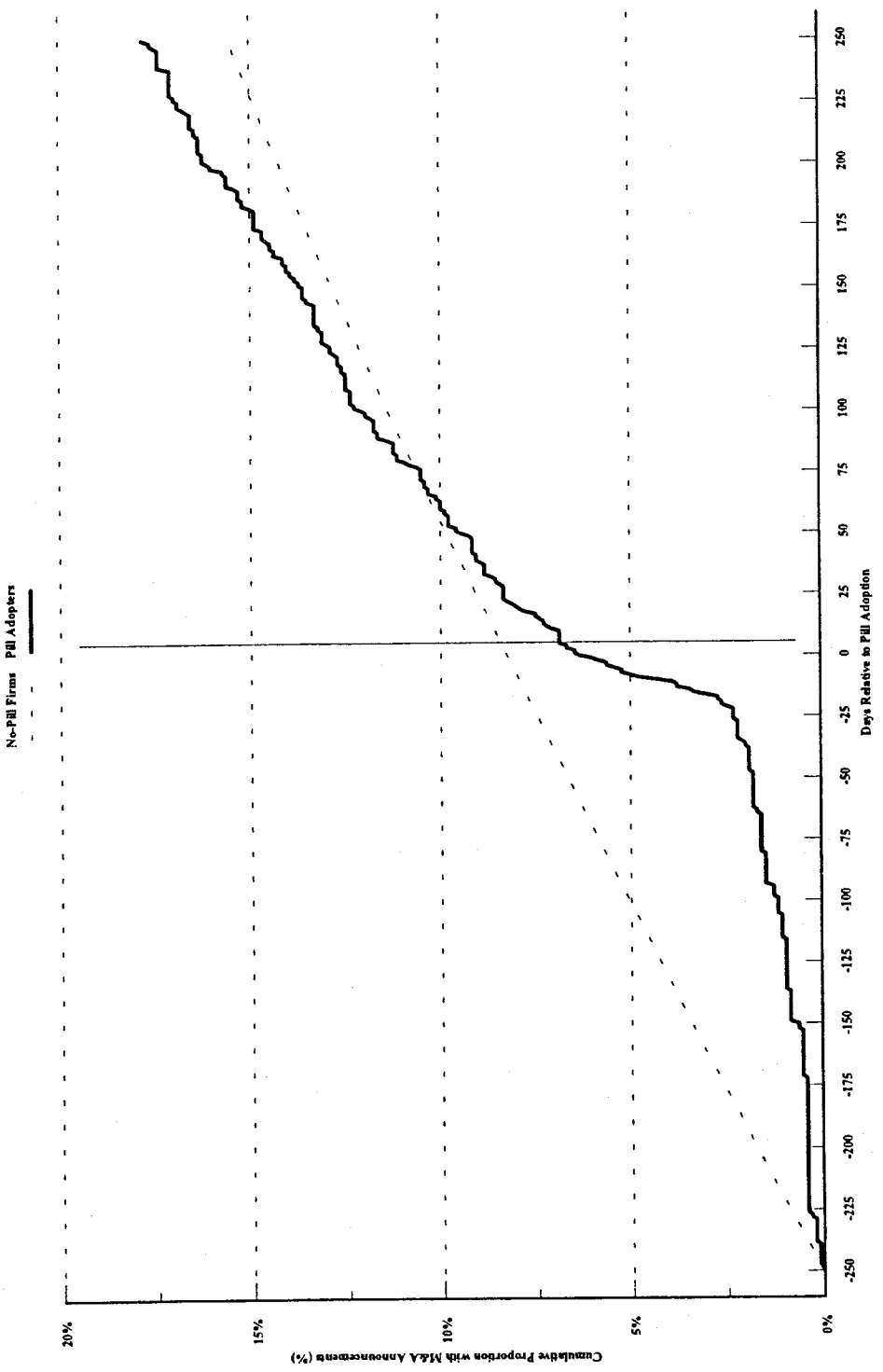

Fig. 4. Event study showing the cumulative Proportion of firms receiving merger and acquisition (M&A) announcements within a year of the date of adoption of an initial poison pill, for 960 exchange-listed firms that adopted pills in the period 1983-90. The dotted line shows the cumulative fraction, over corresponding two-year periods, for exchange-listed firms that never adopted a poison pill. M&A announcements include merger proposals, merger agreements, and inter-firm tender offers, regardless of success.

two and 16.2% on day 250, a change of 7.5%. In percentage terms, the change among pill firms (167%) is twice as large as the change seen among no-pill firms (86%). Looking close in, the change from day two to day 50 is 3.1% for pill firms and 1.6% for no-pill firms. In percentage terms, the change among pill firms (45%) is more than twice as large as the change among no-pill firms (18%). As a final note, figure 4 also shows a curious deficit of merger and acquisition activity before pill adoptions, compared with the coincident experience for no-pill firms. As of day minus 20, only 2.7% of pill firm have been put in play, compared with 8.0% of no-pill firms. This deficit is largely eliminated during the month before adoption, and it is completely eliminated about three months after adoption.

5. Direct Evidence of Deterrence

Many studies have found that antitakeover measures decrease stock prices, and this finding is regularly attributed to takeover deterrence. Pound (1987) provides direct evidence that the frequency of takeover is lower for firms with antitakeover provisions in their corporate charters. He compares the post-adoption takeover experience of a sample of 100 NYSE firms that adopted supermajority and classified-board charter amendments as a package in the period 1973-79, with the takeover experience of a time-matched group of 100 NYSE firms that did not adopt either type of amendment. Over periods that run from adoption date through 1984 (averaging eight years in length) he gets a takeover frequency of 28% for adopters and 38% for non-adopters. Ambrose and Megginson (1992) estimate a multivariate logit model using cross-sectional data on a sample of 117 exchange-listed target firms in the period 1981-86, and a time-matched sample of 214 exchange-listed firms. Their model includes (among other things) dummy variables equaling one if a firm has a classified board, fair-price charter provision, dual-class capitalization, blank-check preferred stock authorization, or poison pill. They find evidence of deterrence only for preferred stock authorizations.

Palepu (1986) provides logit estimates based on a sample of 163 target and 256 non-target

firms in the period 1971-79 using the eight accounting and stock-based predictors described in Section 2, but includes no predictors based on antitakeover measures. He obtains negative coefficient estimates for abnormal return, sales growth, leverage, and size, so these reduce the likelihood of takeover. He obtains a positive coefficient estimate for his growth-resource mismatch dummy, so mismatched firms face a higher likelihood of takeover, while market/book, price/earnings, and liquidity have no reliable effect on the likelihood of takeover. Hasbrouck (1985) also uses a logit model to predict takeovers for a sample of 86 targets and as sample of 344 time-, size- and industry-matched non-targets, and finds that larger market/book ratios and larger size reduce the likelihood of takeover, but that the effects of liquidity and leverage are not reliably different from zero. Mørck, Shleifer and Vishny (1988) estimate a multivariate probit model using 1980 data for 454 Fortune-500 firms, of which 82 were takeover targets between 1981-85, and find that larger size and q-ratio tend to deter hostile takeovers, but not friendly ones.

In these studies, size is the only consistently-successful predictor, while mixed success has been achieved with abnormal return, sales growth, leverage, resource mismatch, and q-ratio or market/book. These inconsistencies suggest a possible problem with stationarity. Figure 5 shows the secular trend in the t-statistics of the coefficient estimates for five of these accounting and stock market predictors of takeovers, obtained from 15 separate yearly logit estimations using these predictors. Only size has a t-statistic that is consistent across years, being less than minus two for most years in the 1977-91 period, but there is little indication of any trend in the predictive power of these five variables.

Drawing on all the data available from COMPUSTAT on exchange-listed firms with fiscal years beginning 1977-91, as detailed in Section 2, we report OLS and logit estimates for a sample of 21,887 firm-years. We predict a dummy variable equaling one if a successful merger proposal, merger agreement, or interfirm tender offer is announced during a fiscal year. The predictors are described in detail in Section 2 and include: dummy variables for coverage by antitakeover measures, dummy variables for big-2 and next-7 law firms, and the eight accounting and stock market

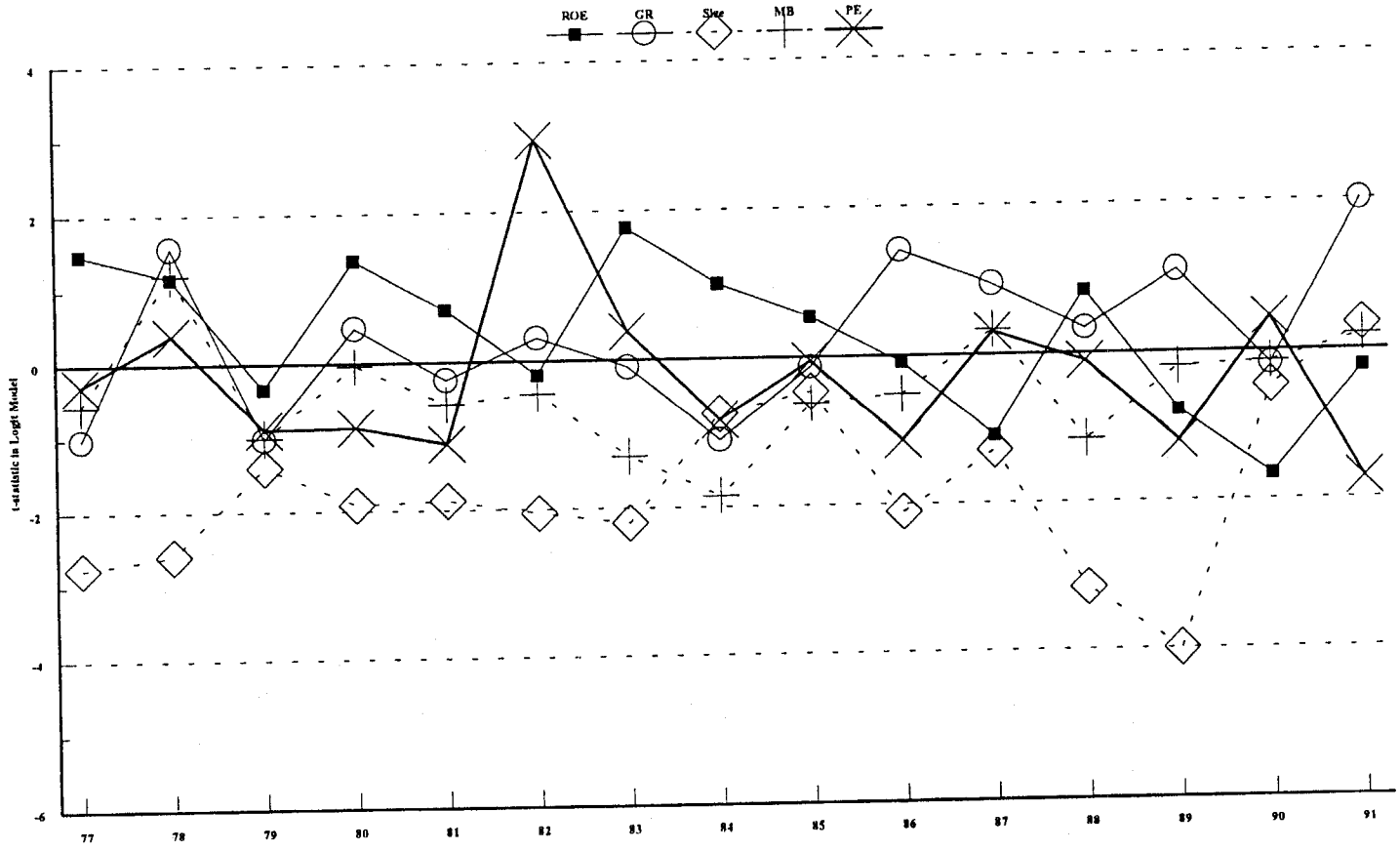

Fig. 5. T-statistics for year-by-year estimates of five coefficients from Palepu's (1986) model of takeover likelihood, for each year from 1977 through 1991. ROE is the average return on equity over the four years before the (one year) prediction period. GR (growth-resource mismatch) is a dummy variable equal to one for a combination of below-average sales growth and leverage and above-average liquidity, or above-average sales growth and leverage and below-average liquidity. Size is the logarithm of the market value of equity just before the prediction period. MB (market/book ratio) is an average of the year-ending ratios of market to book values of equity for the four years before the prediction period.. PE (price/earnings ratio) is an average of the year-ending ratios of stock price to earnings per share for the four years before the prediction period. Yearly samples consist of data for 1,000 to 2,000 exchange-listed firms per year.

predictors. We estimate a second model that adds six year-by-year dummy variables (for the years 1986 through 1991), which are set equal to one if the first month of a fiscal-year forecast period falls into a given year. These serve as controls for secular variation in takeover activity. Besides using an exhaustive sample and more-modern antitakeover measures, our likelihood estimation differs importantly from earlier efforts in that our sample period encompasses the sharp decline in takeovers that occurred after 1988. Also, while our measurement interval is shorter than Pound's, our pooled time-series cross-sectional approach similarly uses takeover experience in all years after the adoption of an antitakeover measure.

Logit estimates of deterrence are reported in the left panel of table 3a and OLS estimates are reported in the left panel of table 3b. Despite the large amount of data we employ, few of the coefficient estimates are reliably different from zero. Size is the one exception to the general failure of the model. Larger firms are less likely to be taken over (logit t-statistic of -5.69) and the economic significance of the estimated coefficient is not trivial. Based on the OLS estimate, a deviation of $12 million from the average equity capitalization (of about $280 million) changes the annual likelihood of takeover by 1%. The coefficient for the four-year average daily abnormal stock return has a logit t-statistic of 1.81 with year-by-year dummies included, but its economic significance is trivial since a deviation in daily return of 0.82% is required to change the annual likelihood of takeover by 1%. Similarly, the coefficient for the four-year average debt/equity ratio has a logit t-statistic of 1.77 with year-by-year dummies included, but a deviation of 12.5 (from a sample mean of 0.74) is required to change the annual likelihood of takeover by 1%.

Our estimated coefficient for coverage by control share statutes is trivially small and not reliably different from zero. Our estimated coefficient for coverage by a business combination statute shows that this antitakeover measure reduces the annual likelihood of takeover by 0.76% (logit t-statistic of -2.20), but this result is undone in the companion estimate that controls for secular variation by including the six year-by-year dummy variables, where the estimate is positive but not reliably different from zero (logit t-statistic of 0.30). Having a poison pill in place at the start of the

Table 3a

Logit estimates of the dependence of takeover likelihood on accounting and stock price data, state antitakeover law, and poison pills (left panel), and the dependence of poison pill adoptions on accounting data and state antitakeover law (right panel), using pooled time-series cross-sectional data for exchange-listed firms and for fiscal-year forecast periods beginning January 1977 through January 1991 (21,887 firm-years). The dependent variable is either a dummy that equals one if a successful tender offer, merger proposal or merger agreement is announced during the forecast period, or a dummy that equals one if a firm adopts an original poison pill during the forecast period. The predictor variables are all defined as of the start of the forecast period.

	Dependent variable							
	Takeover Dummy				Pill-adoption Dummy			
Predictors	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat
Control share statute	-0.059	-0.33	0.061	0.33	1.466	17.65	0.579	7.20
Business combination statute	-0.287	-2.16	0.084	0.48	2.803	46.32	0.737	9.81
Poison pill	0.700	3.65	0.967	4.83				
Pill and big-2 law firm	-0.180	-0.64	-0.364	-1.28				
Pill and next-7 law firm	-0.319	-0.66	-0.442	-0.91				
Abnormal return (over 4 years)	29.419	1.37	39.331	1.81	-31.100	-1.58	-10.281	-0.51
Sales growth (4-year average)	-0.216	-0.69	-0.040	-0.12	-1.614	-6.76	-0.764	-3.24
Growth-resource mismatch	0.076	0.90	0.093	1.10	-0.234	-3.37	-0.071	-0.96
Liquidity (4-year average)	0.136	0.64	0.073	0.34	0.456	2.66	0.812	4.56
Debt/equity (4-year average)	-0.058	-1.39	-0.058	-1.36	-0.025	-1.38	-0.020	-1.00
Size	-0.136	-5.38	-0.145	-5.69	0.416	22.32	0.387	19.74
Market/book (4-year average)	-0.018	-0.53	-0.028	-0.77	0.046	3.22	0.017	0.86
Price/earnings (4-year average)	-0.003	-0.91	-0.004	-1.09	0.014	5.97	0.006	2.41
Constant	-2.682	-15.60	-2.672	-15.38	-6.370	-40.51	-10.465	-22.12
1986			0.491	3.41			3.565	7.20
1987			0.062	0.36			5.869	12.89
1988			0.284	1.56			6.051	13.28
1989			-0.108	-0.48			6.370	13.95
1990			-0.697	-2.47			6.719	14.69
1991			-2.179	-4.45			6.873	15.01
Log-likelihood	-2958.01		-2926.68		-4080.98		-3285.18	
Degrees of freedom	21873		21867		21876		21870	

Table 3b

Least squares (OLS) estimates of the dependence of takeover likelihood on accounting data, state antitakeover law, and poison pills (left panel), and the dependence of poison pill adoptions on accounting data and state antitakeover law (right panel), using pooled time-series cross-sectional data for exchange-listed firms and for fiscal-year forecast periods beginning January 1977 through January 1991 (21,887 firm-years). The dependent variable is either a dummy that equals one if a successful tender offer, merger proposal or merger agreement is announced during the forecast period, or a dummy that equals one if a firm adopts an original poison pill during the forecast period. The predictor variables are all defined as of the start of the forecast period.

	Dependent variable							
	Takeover dummy				Pill-adoption dummy			
Predictors	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat
Control share statute	-0.0015	-0.30	0.0014	0.28	0.1588	12.48	0.0775	6.22
Business combination statute	-0.0076	-2.20	0.0016	0.30	0.3071	37.41	0.1170	9.72
Poison pill	0.0211	2.99	0.0275	3.78				
Pill and big-2 law firm	-0.0071	-0.77	-0.0114	-1.22				
Pill and next-7 law firm	-0.0111	-0.80	-0.0137	-0.98				
Abnormal return (over 4 years)	0.9553	1.45	1.2196	1.87	0.1206	0.17	0.9164	1.26
Sales growth (4-year average)	-0.0090	-1.09	-0.0037	-0.44	-0.0920	-7.18	-0.0558	-4.37
Growth-resource mismatch	0.0025	1.00	0.0029	1.16	-0.0132	-4.23	-0.0063	-2.12
Liquidity (4-year average)	0.0055	0.80	0.0037	0.54	0.0161	1.92	0.0352	4.26
Debt/equity (4-year average)	-0.0008	-1.95	-0.0008	-1.77	-0.0021	-2.18	-0.0016	-1.76
Size	-0.0038	-6.24	-0.0040	-6.53	0.0231	23.71	0.0210	22.43
Market/book (4-year average)	-0.0003	-0.58	-0.0005	-0.97	0.0039	3.15	0.0022	2.03
Price/earnings (4-year average)	-0.0001	-1.04	-0.0001	-1.23	0.0008	4.83	0.0005	3.10
Constant	0.0528	10.53	0.0775	6.22	-0.1107	-16.98	-0.1224	-18.88
1986			0.0165	2.86			-0.0080	-2.12
1987			0.0028	0.54			0.1116	11.40
1988			0.0117	1.87			0.1388	11.43
1989			-0.0006	-0.10			0.1940	12.80
1990			-0.0156	-2.43			0.2758	16.08
1991			-0.0319	-5.88			0.3106	17.22
Adjusted R-square	0.0024		0.0044		0.2526			0.2992
Standard error of regression	0.1719		0.1718		0.2363			0.2288

fiscal year is associated with an added takeover likelihood of 2.1% per fiscal year (logit t-statistic of 2.99). With the year-by-year dummies included, the poison pill estimate is 2.75% (logit t-statistic of 3.78). The positive sign on these estimates shows the opposite of deterrence, consistent with the endogeneity or implicit-information problem depicted in figure 4 and discussed in Section 4. (Figure 4 covers only the first year following pill adoptions whereas the estimates in tables 3a and 3b reflect experience in all fiscal years after adoption.) The estimated coefficients of the big-2 and next-7 law firm dummies show that the use of a national law firm in combination with a poison pill yields no reliable gain in deterrence, although the sign of the coefficients is consistent with added deterrence.

From these results we conclude that modern antitakeover statutes are not responsible for the demise of the 1980s market for corporate control. As detailed in our Introduction, the market for corporate control was probably suppressed during 1989 and 1990 by several developments that were largely unrelated to the introduction and spread of modern antitakeover measures. In fact, the likelihood of takeover falls reliably below the sample-period norm only in the 1990 and 1991 fiscal-year forecast periods (logit t-statistics of -2.47 and -4.45), closely following the bankruptcy of Drexel Burnham Lambert, roughly coincident with the recession and credit crunch, and some time after Delaware's adoption of its business combination statute.

6. Predicting Poison Pill Adoptions

The positive estimate for the poison pill dummy reported in tables 3a and 3b, along with the pattern shown in figure 4, show that our analysis of the deterrent effects of poison pills is afflicted with an endogeneity problem or selection bias. We had hoped to control for differences in the underlying likelihood of takeover by including the eight measures that Palepu (1986) used to predict takeovers, but these predictors turn out to be of little value. As a step toward achieving a better understanding of the endogeneity or selection bias for poison pills, tables 3a and 3b (right-hand side) also provide logit and OLS estimates for models that predict whether a firm has a poison pill.

Do the variables that fail to predict takeovers nevertheless succeed in predicting pills?

It is apparent from figure 1 that there is considerable overlap in coverage by poison pills and state antitakeover statutes, and it turns out that being incorporated in a state with an antitakeover statute in place is the single best predictor of whether a firm has a poison pill. Based on the OLS estimates, a control share statute increases the likelihood of having a pill by 15.9% (logit t-statistic of 17.65). When we control for the secular trend in this type of coverage, the estimate falls to 7.75% (logit t-statistic of 7.20). A business combination statute increases the likelihood of having a pill by 30.7% (logit t-statistic of 46.32), and 11.7% (logit t-statistic of 9.81) when we control for secular variation. The positive sign on this coefficient implies that state statutes and poison pills are more complements than substitutes.

Firm size is another good predictor of whether a firm has a poison pill. While size has the effect of reducing the likelihood of takeover, it increases the likelihood of having a pill (logit t-statistic of 22.32). A deviation from average firm size of $1.5 million increases the likelihood of having a pill by 1%, compared with a deviation of over $12 million needed to change the likelihood of takeover by 1%. Recent sales growth reduces the likelihood of having a poison pill (logit t-statistic of -6.76). A deviation in the annual rate of growth in sales of 11% (or 18% controlling for secular trend) is required to change the likelihood of takeover by 1%. The other predictor variables have coefficient estimates that are of lesser economic significance. For example, a larger price/earnings ratio increases the likelihood of having a pill (logit t-statistic of 5.97), but a deviation of 12.5 (or 20 controlling for secular trend) from the sample average ratio of 11.1 is required to change the likelihood of takeover by 1%.

7. Predicting Takeover Premiums

The change in stock price on the announcement of an antitakeover measure represents the net effect of (1) a change in the likelihood of receiving an offer and (2) a change in the price that shareholders can expect to receive in case of an offer. The latter effect will be positive if

antitakeover measures are used systematically to encourage competition among bidders, given that the firm is to be sold. If it is positive, then the wealth effect of deterrence, *per se*, is larger than event-study results would suggest.

Table 4 provides OLS estimates of the relation between takeover premiums and antitakeover measures, the eight Palepu variables described in detail in Section 5, and certain takeover characteristics that have exhibited explanatory power in past studies. Huang and Walkling (1987) conduct a multivariate OLS regression to identify the determinants of takeover premiums in a sample 204 exchange-listed target firms in the period 1977-82, and find that the form of payment matters (premiums are higher in all-cash transactions) and that tender offer premiums are not reliably higher than straight-merger premiums after controlling for the form of payment. Bradley, Desai and Kim (1988) conduct a multivariate OLS regression to identify the determinants of takeover premiums in a sample of 236 tender offers for exchange-listed firms in the period 1963-84, and find that premiums received by selling shareholders are higher in multiple-bidder contests. Consequently, we include dummy variables defined on whether the transaction is (1) an auction with multiple, publicly-revealed bidders, (2) an all-cash transaction, (3) and all-equity transaction, and (4) a tender offer. We also include the number of days between 20 days before the initial takeover announcement through five days after the announcement of the successful transaction.

The right panel of table 4 reports OLS regressions based on the sample of 669 successful takeover targets — one regression in which coverage by antitakeover statute is defined using original dates and a second in which coverage is assumed to begin only after judicial approval dates (as discussed in Section 2). The effect of coverage by control share and business combination statutes on takeover premiums is not reliably different from zero when coverage is defined using original dates, but control share statutes are associated with an extra premium of 15.6% (t-statistic of 2.18) when coverage is redefined as beginning after judicial approval. Poison pills are associated with an added premium of 17.85% (t-statistic of 2.75). The left panel of table 4 reports results of the same regression based on the full sample of 21,887 firm-years. Here, takeover premium is zero in all firm-

Table 4

Least squares (OLS) estimates of the relation of takeover premiums with state antitakeover law, poison pills, accounting data, and characteristics of the takeover. Takeover premiums are measured as the compounded difference in the returns to target firms' stock and the CRSP value-weighted NYSE/AMEX market portfolio during the period from 20 trading days before the first merger proposal or tender offer through 5 trading days after the successful offer. In the left panel, the sample consists of pooled time-series cross-sectional data for exchange-listed firms with fiscal-year forecast periods beginning January 1977 through January 1991 (21,887 firm-years). The right panel uses the 669 firm-years when a subsequently successful takeover begins. The predictor variables are all defined as of the start of the forecast period. Two specifications of the timing of state antitakeover laws are used: (a) *State Law Dates* are the effective dates of the law in the firm's state of incorporation, and (b) *Court Case Dates* are when major legal precedents established the effectiveness of these laws (April 1987 for Control Shares laws, and June 1988 for Business Combination laws).

	Full Sample of Firm-years (21,887)				Successful Takeover Sample (669)			
	State Law Dates		Court Case Dates		State Law Dates		Court Case Dates	
Predictors	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat
Control share statute	0.0030	0.87	0.0109	2.31	0.0320	0.55	0.1560	2.18
Business combination statute	-0.0019	-0.53	0.0026	0.83	-0.0418	-0.74	0.0666	0.88
Poison pill	0.0254	4.69	0.0246	4.59	0.1785	2.75	0.1548	2.43
Pill and big-2 law firm	-0.0054	-0.74	-0.0053	-0.73	0.0085	0.09	0.0331	0.35
Pill and next-7 law firm	-0.0166	-1.73	-0.0168	-1.75	-0.1058	-0.68	-0.1130	-0.79
Abnormal return (over 4 years)	0.7228	1.46	0.7227	1.46	2.9101	0.41	3.4881	0.49
Sales growth (4-year average)	0.0101	2.06	0.0100	2.05	0.4237	3.69	0.4193	3.69
Growth-resource mismatch	0.0015	0.89	0.0015	0.89	0.0241	0.99	0.0224	0.93
Liquidity (4-year average)	0.0179	4.49	0.0180	4.50	0.0889	1.46	0.0862	1.40
Debt/equity (4-year average)	-0.0005	-1.80	-0.0005	-1.83	-0.0169	-1.42	-0.0170	-1.42
Size	-0.0020	-4.84	-0.0019	-4.78	0.0055	0.58	0.0054	0.58
Market/book (4-year average)	-0.0013	-3.77	-0.0012	-3.75	-0.0198	-1.88	-0.0193	-1.83
Price/earnings (4-year average)	-0.0001	-1.50	-0.0001	-1.50	-0.0012	-0.98	-0.0012	-0.95
Auction (=1 if multiple bidders)					0.1413	3.84	0.1356	3.65
All-Cash (=1)					0.0710	2.43	0.0702	2.42
All-Equity (=1)					-0.0407	-1.16	-0.0393	-1.12
Tender Offer (=1)					0.1249	4.93	0.1235	4.88
Trading days during offer period					-0.0005	-1.12	-0.0005	-1.11
Constant	0.0292	9.21	0.0291	9.18	0.2047	3.09	0.2076	3.14
1986	0.0023	0.71	0.0023	0.72	-0.1214	-3.72	-0.1212	-3.76
1987	0.0106	2.34	0.0106	2.38	-0.1280	-2.48	-0.1290	-2.47
1988	0.0095	2.03	0.0076	1.80	0.0970	1.56	0.0643	1.25
1989	-0.0092	-2.32	-0.0134	-3.73	-0.1137	-1.64	-0.2139	-2.75
1990	-0.0186	-5.83	-0.0226	-9.62	-0.1117	-1.73	-0.2222	-3.58
1991	-0.0247	-7.21	-0.0296	-10.79	-0.0722	-0.46	-0.2456	-1.62
Adjusted R-square	0.0079		0.0081		0.1878		0.1922	
Standard error of regression	0.1155		0.1150		0.2940		0.2932	
Degrees of freedom	21867		21867		644		644	

years without takeovers, yielding unconditional premiums. The story is much the same for unconditional premiums. The effect of coverage by both control share and business combination statutes on unconditional premiums is not reliably different from zero using original dates, but when coverage begins after judicial approval control share statutes are associated with an extra unconditional premium of 1.09% (t-statistic of 2.31). Poison pills are associated with an added unconditional premium of 2.54% (t-statistic of 4.69).

The Palepu variables are more successful as predictors of takeover premiums than as predictors of takeovers. Since size is the one variable with reliable predictive power for takeover likelihood, it is no surprise that this variable is also a good predictor of unconditional premiums (t-statistic of -4.84), as the dependent variables in the two estimation procedures are non-zero for the same 669 cases. It is surprising that a higher market/book ratio results in a reliable reduction in unconditional premium (t-statistic of -3.77), even though its effect on takeover likelihood is not reliably different from zero (in table 3b). Similarly, more liquidity is reliably associated with a larger unconditional premium (t-statistic of 4.49), even though the effect of liquidity on unconditional premium is not reliably different from zero.

The Palepu variables are less successful as predictors of takeover (conditional) premiums. Recent sales growth has a modest positive effect on takeover premiums. Given a takeover, a deviation in recent sales growth of 2.4% per year (from a sample mean of 8.7%) is required to increase the premium received by selling shareholders by 1% (t-statistic of 3.69). None of the other variables has an estimated coefficient that is both reliably different from zero and economically non-trivial. Market/book ratio is associated with lower premiums (t-statistic of -1.88), but a deviation of 0.5 (from a sample mean of 1.5) is required to change takeover premium by as much as 1%, so the economic importance of this result is questionable. Despite the usefulness of size in predicting takeover likelihood and unconditional premium, the effect of size on takeover premium is not reliably different from zero.

We confirm a result reported by Bradley, Desai and Kim (1988) with our finding that an

auction is associated with an added takeover premium of 14.1% (t-statistic of 3.84), compared with their estimate of 13% (t-statistic of 4.23). We also confirm a result reported by Huang and Walkling (1987) with our finding that all-cash transactions are associated with an added premium of 7.1% (t-statistic of 2.43), compared with their estimate of 12.9% (t-statistic of 3.68), but our evidence contradicts one of their central results, since we find that tender offers are associated with an added takeover premium of 12.5% (t-statistic of 4.93) after controlling for method of payment, compared with their estimate of -0.2% (t-statistic of -0.06).

8. Conclusion

If the 1980s merger wave was ended by modern antitakeover measures, evidence of deterrence should be seen in the experience of individual firms, following adoption of these measures, and this evidence should survive attempts to control for secular trends in takeover activity. Otherwise, it is more likely that broad-scale political or economic forces are responsible for the demise of the market for corporate control. In fact, we find no evidence of deterrence from control share statutes or poison pills. There is weak evidence of deterrence from business combination statutes, but even this support disappears when we control for secular trends. Consequently, we are unable to say that modern takeover measures were an economically-significant determinant of the demise of the 1980s takeover boom. In its decision upholding the Indiana control share statute, the U. S. Supreme Court noted that the case against the statute ultimately rested on an unsubstantiated empirical claim of deterrence, and our results validate the Court's skepticism, at least through 1991.

The existing evidence on how stock prices change with typical poison pill adoptions does not suggest an economically-meaningful degree of deterrence. If poison pills caused the demise of the 1980s market for corporate control, we should have seen larger declines in shareholder wealth on the adoption of these measures. This interpretation assumes that the deterrent effect of poison pills is fully anticipated at the time of adoption, which is problematic given that existing event studies cover only the earliest one-fifth of all pill adoptions. Our update of this evidence, through 1991, still

fails to show that poison pills contributed in a meaningful way to the demise of the 1980s market for corporate control.

The two most plausible explanations for the collapse of the 1980s market for corporate control are that (1) the spread of modern antitakeover measures made absolute deterrence feasible, and that (2) the 1990 recession and cash crunch had a disproportionate effect on this market. The first explanation is buttressed by our evidence that fully 87% of exchange-listed firms are now covered by one or another form of modern antitakeover measure (35% by poison pills, 80% by business combination statutes, and 24% by control share statutes), but refuted by our failure to find direct evidence of deterrence, using all available data through 1991. The lack of deterrence may not even be the best news we have for proponents of antitakeover measures, since we also find evidence that poison pills are associated with higher premiums for selling shareholders in takeovers. We therefore conclude that the demise of the 1980s market for corporate control was caused by secular trends and not the introduction, spread, and legal acceptance of poison pill rights plans, control share statutes, or business combination statutes.

Several of our results stand as curiosities. We find that variables expected to be useful in predicting takeovers serve, instead, as useful predictors of whether a firm has a poison pill. Incorporation in a state with an antitakeover statute is the best predictor of whether a firm has a poison pill, and it is not obvious why antitakeover statutes and poison pills should be complements rather than substitutes. (One scenario consistent with this finding occurs if firms self-select to incorporate in states based on the state's attitude towards incumbent management. Firms might lobby for passage of protective legislation while simultaneously adopting private protective measures such as pills.) We find a surprisingly-low frequency of takeover attempts in the year preceding poison pill adoptions, and we have no ready explanation for why recent sales growth should have a positive effect on takeover premiums realized by selling shareholders.

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