

The Value of Corporate Takeovers

This article summarizes the results of three studies of the value of corporate takeovers. The first study suggests that takeovers discipline some managers who make value-reducing decisions. Specifically, firms that have made acquisitions that reduced their stock values tend to become takeover targets, while firms that have made acquisitions that increased their values do not. Furthermore, acquisitions associated with abnormal stock price declines tend to be divested, either in subsequent bust-up takeovers or during and following subsequent takeover attempts.

The second study suggests that the quality of acquisition decisions tends to increase with the degree of the acquiring firm's leverage. The more levered the acquiring firm, the more likely it is that its stock price will increase at the announcement of an acquisition. However, it is difficult to determine whether managers of highly levered firms make better decisions (presumably as a result of the oversight provided by debtholders) or whether managers who make good decisions are simply able to obtain more debt.

The last study argues that Congressional action to limit takeovers contributed to the 10.44 per cent market decline on October 14–16, 1987, which in turn may have triggered the market crash of October 19. The stock market reactions following Congressional action suggest that market participants view takeovers favorably.

DURING THE 1980s, mergers and acquisitions, takeovers, restructurings and other corporate-control activities considerably altered corporate America. With junk-bond financing allowing a firm to acquire another firm several times its size, no firm appeared safe from takeover. While some commentators argue that this recent wave of takeovers and restructurings has increased the nation's wealth, others assert that these activities only serve to redistribute wealth from labor and other stakeholders to target shareholders.

Since 1983, the Office of Economic Analysis (formerly, Office of the Chief Economist) at the U.S. Securities and Exchange Commission has released numerous empirical research papers on takeovers and other corporate-control transactions. This article summarizes two of these papers and a third study currently in progress.¹ While these studies do not settle the ongoing debate, they do provide some empirical evi-

dence in support of takeovers and leverage-restructuring activities.

Do Bad Bidders Become Good Targets?

Commentators have long recognized that the interests of managers and shareholders can diverge.² Many mechanisms exist to solve the "agency" problems resulting from the separation of ownership and control. These mechanisms include competitive labor markets, managerial compensation plans linked to stock price performance, outside board directors, stock ownership by managers and corporate takeovers. We focus on the extent to which the last mechanism, corporate takeovers, disciplines target management.

Robin Marris and Henry Manne argue that the stock prices of firms whose managers deviate from profit maximization are less than they would otherwise be.³ They contend that this difference between actual and potential stock prices creates incentives for outside parties to acquire the firms and operate them in profit-maximizing ways. Michael Jensen argues that

1. Footnotes appear at end of article.

takeovers mitigate manager-stockholder conflicts that arise when firms generate free cash flow (cash flow in excess of that necessary to finance positive-return investment projects).⁴ Jensen asserts that the managers of such firms often use free cash flow to finance unprofitable ventures, rather than pay it out to shareholders; takeovers discipline such firms.

Anecdotal evidence suggests that some takeovers are motivated by the poor acquisition records of target firms. When Sir James Goldsmith attempted a hostile takeover of Goodyear Tire & Rubber Company in October 1986, for example, he stated that he intended to sell Goodyear's petroleum division and concentrate on tire operations. Goodyear had diversified into the petroleum industry in 1983, with its purchase of Celeron Oil for approximately \$800 million. On the day the Celeron acquisition was announced (February 8, 1983), Goodyear's stock price declined 10 per cent, never to rebound. The stock market had correctly anticipated that Goodyear would have difficulty with petroleum.

The premium Goldsmith offered presumably reflected the value of Goldsmith's divestment plan, which was designed to recoup shareholder losses sustained as a result of Goodyear's diversification efforts. Goodyear defeated Goldsmith's bid by instituting a major restructuring program similar to the one that Goldsmith had promised. The restructuring program included the sale of much of its petroleum assets.

Many commentators view Goldsmith's hostile takeover attempt as a social waste, because he failed to acquire Goodyear. The empirical evidence suggests otherwise. The bid forced Goodyear to institute a restructuring plan similar to Goldsmith's, and Goodyear's stock price remained well above the level it had been at prior to Goldsmith's takeover attempt. Can the Goodyear case be generalized to a large sample of takeovers? Do firms that become takeover targets have bad acquisition histories, and do bust-up takeovers correct bad prior acquisitions?

The Sample

We studied 1,158 corporations covered by Value Line. Based on its history between January 1980 and July 1988, each firm was classified into one of four groups—(1) nontargets, (2) hostile targets, (3) friendly targets and (4) miscellaneous firms. The hostile target group con-

Glossary

Nontargets: Firms that do not receive friendly or hostile bids, pay greenmail, file for bankruptcy, significantly restructure or become subject to large open-market purchases.

Hostile Targets: Firms that are targets of successful and unsuccessful hostile tender offers, proxy contests (in which the dissenting shareholder attempts control) and large unsolicited open-market purchases in which the purchaser seeks control.

Friendly Targets: Firms that are targets of successful and unsuccessful friendly tender offers, mergers and leveraged buyouts.

Greenmail: The repurchase by a target firm of a large stake held by an individual shareholder or small group of shareholders at a price higher than the market price. The purpose of the repurchase generally is to end the threat of a hostile takeover; often, the shareholder agrees not to buy any more stock in the target firm for a specified period of time.

Event Study: Empirical examination of an occurrence that causes investors to change their expectations regarding the discounted future cash flows of a stock. Event studies rely extensively on the Efficient Market Hypothesis, which holds that the price of a stock incorporates all currently available information and quickly adjusts to the release of new information.

Antitakeover Provisions: Measures taken to reduce the probability of a corporate takeover, especially a hostile takeover. Firms, especially potential takeover targets, as well as governments (noted in this article) implement these provisions.

sisted of 228 firms (19.7 per cent of the sample) that were targets of successful and unsuccessful hostile takeover attempts. The friendly target group contained 240 firms (20.7 per cent) that were targets of friendly takeovers. The miscellaneous category contained 90 firms (7.8 per cent) that paid greenmail in the absence of a tender offer, filed for bankruptcy, were subject to large open-market purchases where the purchaser expressed no interest in securing control, or significantly restructured (absent a takeover attempt). The remaining 600 firms (51.8 per cent) were classified as nontargets.

Next, we examined the Dow Jones *Broadtape* for announcements of acquisitions by the 1,158 firms during 1982–86, including acquisitions of public and private companies and purchases of

Table I Abnormal Stock Market Performance Associated with Firms Announcing Acquisitions During 1982–86 (t-statistics in parentheses)

Category	Event Window ^a				
	0	-1,1	-5,1	-5,40	-20,40
Entire Sample (N = 401)	-0.21** (-2.18)	-0.08 (-0.45)	0.14 (0.53)	0.70 (1.05)	0.57 (0.75)
Nontargets (N = 232)	0.09 (0.66)	0.49** (2.19)	0.82** (2.42)	3.32*** (3.80)	3.48*** (3.46)
All Targets (N = 113)	-0.78*** (-4.59)	-0.93*** (-3.16)	-1.27*** (-2.82)	-3.38*** (-2.93)	-3.46*** (-2.60)
Hostile Targets (N = 70)	-0.95*** (-4.64)	-1.50*** (-4.22)	-1.34** (-2.46)	-3.37** (-2.42)	-3.19** (-2.00)
Friendly Targets (N = 43)	-0.50* (-1.68)	-0.01 (0.02)	-1.17 (1.47)	-3.39* (-1.67)	-3.91* (-1.67)
Miscellaneous (N = 56)	-0.31 (-1.01)	-0.69 (-1.32)	0.14 (0.17)	-1.93 (-0.94)	-3.33 (-1.42)

a. The event window is the length of the period for measuring abnormal returns around acquisition announcements. 0 is the acquisition-announcement day, -1 is the day prior to the acquisition-announcement day, 1 is the day after the acquisition-announcement day, and so forth.

* Significant at the 10 per cent level.

** Significant at the 5 per cent level.

*** Significant at the 1 per cent level.

the assets, divisions and stock of other companies. We limited the sample to acquisitions in which the purchase price was at least 5 per cent of the market value of the acquiring firm's value. During this period, 280 firms (24 per cent of the sample) made 401 large acquisitions. This sample of 401 can be broken down into (1) 232 acquisitions by nontargets, (2) 70 acquisitions by 48 hostile targets, (3) 43 acquisitions by 29 friendly targets and (4) 56 acquisitions by 38 miscellaneous firms.

We employed conventional event-study methodology to measure the stock price effects associated with announcements of the 401 acquisitions.⁵ Table I provides a display of the stock price movements for several time periods around the acquisition-announcement date for the entire sample and the various subgroups. Overall, the data reveal that target firms, especially hostile targets, had systematically made acquisitions that reduced their equity values, whereas nontarget firms had made acquisitions that increased their equity values. These results support the argument that the market for corporate control disciplines inefficient management.

The target firms on average realized a stock price decline of 0.78 per cent on the day of the acquisition announcement. The average stock prices for hostile targets and friendly targets declined 0.95 and 0.50 per cent, respectively, on the acquisition-announcement day. Over longer intervals around the announcement day, the

average stock price for both hostile and friendly targets declined over 3 per cent. Almost all these stock price declines are statistically significant, especially for the hostile targets.⁶ In contrast, the average stock price for nontarget firms increased by 0.09 per cent on the announcement day and by over 3 per cent for longer trading periods around the acquisition announcement. In most cases, these increases are statistically greater than zero.

The results presented so far show that targets, especially hostile targets, tend to have made acquisitions that diminished their stock prices, whereas nontargets tend to have made acquisitions that increased their stock prices. One plausible explanation is that the takeovers aim to undo the inefficient acquisitions made by the targets. If this is correct, two things should be true. First, the divestiture rate should be higher for targets than for nontargets. Second, the divested assets should be those that had the most adverse effect on stock price around the acquisition announcement.

Target-Firm Divestitures

To test the first proposition, we compared the rate at which acquisitions made by target companies were subsequently divested with the corresponding rate for nontargets. The target divestiture sample consisted of acquisitions by targets that were divested during a period ranging from three months prior to the target's reception of a takeover bid through the end of

Table II Abnormal Stock Market Performance Associated with Announcements of Acquisitions that were Subsequently Divested Versus Acquisitions that were Not Subsequently Divested (t-statistics in parentheses)

Category	Event Window ^a				
	0	-1,1	-5,1	-5,40	-20,40
A. Acquisitions that were Subsequently Divested					
Entire Sample (N = 81)	-1.26*** (-6.15)	-1.75*** (-4.93)	-1.53*** (-2.81)	-4.01*** (-2.88)	-5.59*** (-3.48)
Nontargets (N = 21)	-1.16*** (-2.86)	-1.66** (-2.30)	-0.57 (-0.53)	2.55 (0.92)	2.48 (0.78)
All Targets (N = 46)	-1.45*** (-5.58)	-1.56*** (-3.46)	-2.07*** (-3.01)	-7.04*** (-3.99)	-8.91*** (-4.38)
Hostile Targets (N = 28)	-2.01*** (-7.13)	-2.59*** (-5.30)	-1.84** (-2.46)	-4.96*** (-2.59)	-6.35*** (-2.88)
Friendly Targets (N = 18)	-0.58 (-1.19)	0.04 (0.05)	-2.44* (-1.89)	-10.27*** (-3.09)	-12.90*** (-3.37)
Miscellaneous (N = 12)	-0.75 (-1.16)	-2.38** (-2.11)	-0.45 (-0.26)	-3.21 (-0.73)	-5.91 (-1.16)
B. Acquisitions that were Not Subsequently Divested					
Entire Sample (N = 320)	0.05 (0.50)	0.35* (1.90)	0.56** (1.99)	1.89*** (2.63)	2.13** (2.57)
Nontargets (N = 211)	0.21 (1.59)	0.70*** (3.07)	0.96*** (2.78)	3.40*** (3.80)	3.58*** (3.47)
All Targets (N = 67)	-0.32 (-1.47)	-0.50 (-1.33)	-0.72 (-1.26)	-0.87 (-0.59)	0.28 (0.17)
Hostile Targets (N = 42)	-0.25 (-0.94)	-0.77* (-1.70)	-1.00 (-1.45)	-2.31 (-1.31)	-1.08 (-0.53)
Friendly Targets (N = 25)	-0.45 (-1.24)	-0.05 (-0.08)	-0.25 (-0.27)	1.56 (0.64)	2.56 (0.91)
Miscellaneous (N = 44)	-0.18 (-0.56)	-0.23 (-0.40)	0.30 (0.34)	-1.58 (-0.71)	-2.63 (-1.02)

a. The event window is the length of the period for measuring abnormal returns around acquisition announcements. 0 is the acquisition-announcement day, -1 is the day prior to the acquisition-announcement day, 1 is the day after the acquisition-announcement day, and so forth.

* Significant at the 10 per cent level.

** Significant at the 5 per cent level.

*** Significant at the 1 per cent level.

the sample period. These include divestitures by targets to defend against takeovers, divestitures made as part of restructuring programs after defeat of takeover attempts, and divestitures by acquiring firms following successful takeovers of targets. The nontarget divestiture sample consisted of acquisitions that had been divested by the end of the sample period.

For the entire sample of 401 acquisitions during 1982-86, 81 (20.2 per cent of the sample) had been subsequently divested by July 1988. The divestiture rates differ significantly between nontargets and targets. Only 9.1 per cent (21/232) of the acquisitions made by nontargets were subsequently divested, whereas 40.7 per cent (46/113) of the acquisitions made by targets were subsequently divested, either in response to or following successful or unsuccessful takeover attempts. This evidence suggests that the takeover market during the 1980s functioned in part to reverse the bad acquisitions of poorly managed firms.

Table II displays for target and nontarget firms abnormal returns for two sets of acquisitions—acquisitions that were subsequently divested during the sample period and those that were not. For the subsample of 81 acquisitions that were divested, average stock price declined 1.26 per cent on the acquisition-announcement day; over a multiday trading interval around the acquisition announcement, average stock price declined as much as 5 per cent. All declines are statistically significant. For the 320 acquisitions that were not divested, average stock price increased 0.05 per cent on the acquisition-announcement day; over a longer window around the announcement, average stock price increased up to 2 per cent. In most cases, these increases are statistically significant.

The finding of significant negative abnormal returns associated with acquisitions that were subsequently divested and significant positive abnormal returns associated with acquisitions that were not subsequently divested suggests

Table III Shareholder Equity and Long-Term Debt for Goodyear Tire & Rubber

Year	Stock Price	Shares Outstanding (in 000's)	Shareholder Equity (in 000's)	Long-Term Debt (in 000's)	Debt/Equity Ratio
1982	35.000	73,917	2,587,100	1,037,100	0.40
1983	30.375	105,212	3,195,810	961,700	0.30
1984	26.000	106,113	2,758,940	950,700	0.34
1985	31.250	107,209	3,350,280	997,500	0.30
1986	41.875	109,435	4,582,590	2,487,500	0.54
1987	60.000	56,882	3,412,920	3,282,400	0.96
1988	51.125	57,246	2,926,700	3,044,800	1.04
1989	43.500	57,779	2,513,390	2,963,000	1.18

Source: Standard & Poor's Compustat Services and Standard & Poor's Daily Stock Price Record.

market efficiency. On average, the market is able to identify acquisition failures before any cash flows from the resulting business combination are known.

The results from the sample of 46 target-firm acquisitions that were subsequently divested support the argument that the motive behind many takeovers is to undo inefficient acquisitions previously made by targets. For these 46 acquisitions, average stock price declined 1.45 per cent on the announcement day and up to almost 9 per cent over multiday windows. All these negative movements are statistically significant. In contrast, for the 67 acquisitions that were not divested, there were no significant negative stock price movements.

The significant differences between stock price reactions to acquisitions that were and were not subsequently divested hold for both friendly and hostile targets. In short, the data reveal that the average negative stock price effect associated with acquisitions by targets is driven almost exclusively by the subset of acquisitions that were subsequently divested, either in bust-up takeovers or during or following an unsuccessful takeover attempt.

The divestiture rate for nontargets (9.1 per cent) is significantly lower than the rate of divestments by targets surrounding their receipt of takeover bids (40.7 per cent). What about target-firm divestitures well in advance of the receipt of takeover bids? In only two cases did the target firms divest acquisitions prior to receiving takeover bids for themselves. The voluntary divestiture rate for targets (1.8 per cent) is considerably lower than the divestiture rate for nontargets. Given the results in Tables I and II, this finding suggests that those nontarget firms that divested acquisitions may have avoided takeover attempts on themselves; had

the target firms divested their bad acquisitions, they may have avoided a takeover attempt.

The empirical evidence supports the argument that many corporate takeovers effectively discipline managers who do not maximize shareholder wealth. The results also provide evidence that many hostile bust-up takeovers promote economic efficiency by moving assets to higher-valued uses.

Managerial Decision-Making and Capital Structure

Goodyear successfully thwarted Sir James Goldsmith's bid, but only by instituting a restructuring program similar to the one proposed by Goldsmith.⁷ First, Goodyear repurchased half its common stock outstanding, using bank loans. The bank loans and stock buy-back increased Goodyear's debt-to-equity ratio substantially. Second, Goodyear sold its non-tire assets, including its petroleum division. Even after the sell-off of its assets, Goodyear's debt/equity ratio remained high relative to pre-restructuring levels.

Table III displays Goodyear's capital structure for the period 1982–89. During 1982–85, Goodyear's debt/equity ratio remained relatively flat, ranging from 0.30 to 0.40; it increased substantially in 1986 and 1987 as a result of the restructuring program. The increase in the debt/equity ratio to 0.54 in 1986 reflects the new bank loans, which increased the firm's debt burden from \$1 to \$2.5 billion. Goodyear did not repurchase any of its stock until 1987; as a result of the substantial equity retirement in that year, its debt/equity ratio increased again, to 0.96. Goodyear also increased its debt burden to \$3.3 billion in 1987.

Even after major asset sales in 1987 and 1988, Goodyear's debt burden did not fall substantially. In 1989, its long-term debt was \$3 billion,

only 10 per cent less than in 1987. Its debt/equity ratio actually increased to 1.04 in 1988 and to 1.18 in 1989. Given that Goodyear doesn't plan many more asset sales, it appears that its debt/equity ratio will remain relatively high for quite some time.

What impact will this heavy debt burden have on Goodyear management? Newly appointed Chairman Tom Barrett does not feel that the high debt burden has harmed Goodyear in its tire operations. He states, "Our debt is higher and our interest payments are higher . . . but we've been able to invest and continue to invest and do the things we've needed to be competitive."⁸ Barrett's claim is not without empirical support. While Goodyear hasn't made any diversifying investments since Goldsmith's takeover attempt, it has expended more dollars on its core business. On March 14, 1988, Goodyear disclosed a plan to build a radial-tires plant, costing up to \$500 million. This new plant would be Goodyear's first major expansion since Goldsmith's takeover attempt. The stock market approved of this decision, as Goodyear's stock price increased over 4 per cent during the two-day announcement period (the day of disclosure and following day).

What accounts for the difference between Goodyear's 1983 strategy and its 1988 strategy? Perhaps the threat of takeover was greater in 1988 than in 1983; certainly Goldsmith's attempted raid demonstrated that a takeover was not out of the question. Increased threat of takeover could, arguably, lead to better decision-making on the part of Goodyear management. Given that Goodyear had already divested most of its earlier mistakes by 1988, however, there would seem to be little threat of a bust-up takeover. And while a change in management had occurred following Goldsmith's takeover attempt, it was due not to the takeover attempt, but rather to Goodyear's mandatory retirement policy.

We argue that Goodyear's increased debt burden is the reason behind its change in strategy and the market's assessment of its strategy.⁹ Encouraged by Goldsmith's restructuring plan, the market did not allow Goodyear simply to sell assets and then distribute the proceeds to shareholders. Instead, the market forced Goodyear to incur the heavy debt burden, only part of which Goodyear could repay with the proceeds from asset sales. The remaining debt burden restricts Goodyear's discretion over

project selection. Debtholders require periodic payments. If Goodyear doesn't meet these payments, debtholders can take the firm to court. Also, given the limited amount of cash on hand, expansion projects must meet the test of the marketplace; lenders will scrutinize potential projects to ensure the return of their money. Management must be able to convince existing debtholders and new debtholders that proposed projects will yield profitable returns. In cases where managers have positive inside information about a project's feasibility, but are unable to convey that good information to lenders, they will have to bypass positive-net-present-value projects.

An Empirical Test

The foregoing discussion suggests that managers of highly levered firms will tend to make acquisitions that are favorably viewed by the market. Furthermore, debt-burdened firms may not be able to take on some positive-net-present-value projects, hence may engage in fewer and smaller projects than firms with low leverage. We tested these arguments using the sample of 401 acquisitions described above.

The empirical results indicate that the more levered the acquiring firm, the more likely its stock price will increase at the announcement of an acquisition. Thus managers of highly levered firms make better decisions, *ceteris paribus*. However, the highly levered firms actually acquired more and larger firms than the firms with low leverage. The imposition of debt does not appear to restrict positive-net-present-value projects.

While the empirical results support the argument that a heavy debt burden induces managers to make better decisions, they don't provide any direct evidence on this hypothesis. It may simply be that good managers can obtain more debt than bad managers, and that the positive relation between the debt/equity ratio of the acquiring firm and its return at the acquisition announcement is picking up this good-manager effect. This is not to say that the debt-monitoring effect is not also present; it may, however, be entangled with a manager-quality effect.

One way to determine the extent of the manager-quality effect is to examine acquisitions made by firms that have significantly increased their leverage. Differences between the quality of acquisitions made before and after an increase in a firm's debt/equity ratio can reason-

ably be attributed to the increase in firm leverage, rather than a change in manager quality. We are currently examining acquisitions made before and after leverage-restructuring events to test whether the debt-monitoring effect systematically operates independently of a manager-quality effect.

Did Antitakeover Provisions Trigger the '87 Crash?

Over the three trading days preceding the stock market crash on October 19, 1987, the market declined 10 per cent.¹⁰ Many observers claim that the market declines on Wednesday, Thursday and Friday (October 14–16) precipitated the market crash on the 19th. We set out to test this argument. We found that proposed tax changes restricting takeovers contributed to the October 14–16 decline.

On the evening of Tuesday, October 13, 1987, the House Ways and Means Committee introduced a tax bill that would have affected the market for corporate acquisitions and financial restructurings, especially hostile takeovers. The bill eliminated deductions for interest expenses exceeding \$5 million a year on debt incurred to acquire the majority of another firm's stock or to repurchase a majority of a firm's own stock over a three-year period. The bill also prohibited interest deductions on any debt used to finance a hostile bid for over 20 per cent of a target's stock. Finally, the bill contained provisions that would tax asset sales after takeovers, especially hostile takeovers.

These tax changes would have had far-reaching effects. First, eliminating the deductibility of interest expenses for debt incurred in hostile takeovers would have reduced the number of such takeovers. Second, the proposed interest restrictions would have limited not only takeovers, but also leveraged buyouts and recapitalizations, including stock repurchases and debt-for-equity swaps. Third, the debt restrictions would have increased the agency costs of free cash flow; the more debt a company has, the more cash flow it has to pay out to claim-holders and the less cash flow it has to invest in projects with negative net present value. Fourth, the taxation of post-acquisition asset sales would have reduced bust-up takeovers. Finally, inasmuch as takeovers and the threat of takeovers reduce agency costs arising from the separation of ownership and control of public corporations, the proposed changes, if enacted,

would arguably have lowered the value of most firms, and not necessarily only those firms actually "in play."

Chronology of the Bill

We examined the chronology of the House Ways and Means Committee tax bill to determine the dates on which information about the takeover restrictions reached the stock market. Our review of the financial press revealed no mention of the proposals before October 14. At 5:33 p.m. on October 13, the Dow Jones *Broadtape* reported that the Democrats on the committee were near an agreement on a tax package, but made no mention of changes in the tax treatment of corporate-control transactions.

One hour after the October 13 *Broadtape* story, Democratic members of the committee, in a closed caucus, agreed to tax increases, including the takeover tax proposals. On the evening of Thursday, October 15, the full committee approved the antitakeover provisions.

Immediately following the October 19 crash, investment banking firms, citing the potential effects of the proposed antitakeover tax provisions as a cause of the crash, began lobbying to eliminate the provisions from the House tax bill. On Wednesday, October 28, Representative Dan Rostenkowski, chairman of the House Ways and Means Committee, testifying before the House Rules Committee, indicated that the antitakeover tax provisions could be changed. On the evening of October 29, Chairman Rostenkowski made a formal statement agreeing to modify, though not drop, the takeover tax provisions. During the next month and a half, Chairman Rostenkowski maintained his willingness to modify the tax rules on takeovers but refused to drop all the provisions. On the morning of December 16, during negotiations with the Senate, the House abandoned almost all the takeover tax provisions.

We identified five event dates where new information about the proposed takeover restrictions reached the market. The top half of Table IV displays the chronology, source of news and corresponding event dates for the proposed takeover restrictions. Under the hypothesis that the proposed takeover restrictions would reduce shareholder wealth, the market should have declined on October 14 and 16 and increased on October 29 and 30 and December 16. Much of the price change on the first four event dates should have occurred during early

Table IV Chronology, Source of News, Corresponding Event Date and Daily and Intraday Stock Market Movements Associated with the U.S. House Ways and Means Committee Proposed Changes in the Tax Treatment of Takeovers and other Financial Restructurings (t-statistics in parentheses)

Tuesday evening, October 13: Democrats on the House Ways and Means Committee agreed to takeover restrictions. Reported in the *Wall Street Journal* on October 14. Corresponding event date: October 14

Thursday evening, October 15: The full committee approved the takeover restrictions. Reported on the *Broadtape* and in the *Wall Street Journal* on October 16. Corresponding event date: October 16

Wednesday afternoon, October 28: Chairman Rostenkowski in House testimony indicated that the takeover restrictions could be changed. Reported on *Broadtape* at 2:08 p.m. on October 28 (market closed at 2:00) and in the *Wall Street Journal* on October 29. Corresponding event date: October 29

Thursday evening, October 29: Chairman Rostenkowski strengthened his remarks from the day earlier, releasing an official statement that he would agree to a 'reasonable compromise.' Reported in the *Wall Street Journal* on October 30. Corresponding event date: October 30

Wednesday morning, December 16: Representative Downey of the committee announced that almost all the takeover restrictions had been dropped. Reported on *Broadtape* at 11:58 a.m. on December 16 and in the *Wall Street Journal* on December 17. Corresponding event date: December 16

	Oct. 14	Oct. 16	Oct. 29	Oct. 30	Dec. 16
Daily S&P 500 Return	-2.95% (-2.86)***	-5.16% (-5.00)***	4.93% (4.77)***	2.87% (2.78)***	2.17% (2.11)**
Intraday S&P 500 Return	-1.39% (-2.21)**	-1.18% (-1.88)*	2.23% (3.56)***	2.99% (4.77)***	0.80% (2.80)***
Daily Abnormal Return for Takeover Portfolio	-1.43% (-2.03)**	-5.25% (-6.92)***	5.00% (6.13)***	4.39% (5.62)***	1.79% (2.42)**
Intraday Abnormal Return for Takeover Portfolio	-0.31% (-1.60)	-2.51% (-6.15)***	3.65% (4.03)***	4.02% (4.21)***	

* Significant at the 10 per cent level.

** Significant at the 5 per cent level.

*** Significant at the 1 per cent level.

trading, because the first opportunity to trade on the antitakeover news was at the open. On December 16, some of the market reaction should have occurred immediately after noon, because the news came across the *Broadtape* at 11:58 a.m. Because the provisions would have had the greatest impact on companies that were actually in play during this period, those companies should have experienced even greater price changes than the overall market over the entire day and during the period immediately after the announcement.

The lower half of Table IV displays the movements of the overall market (represented by the S&P 500 index) on the five event dates. These movements are consistent with the hypothesis that the antitakeover provisions of the House proposal had a negative impact on the market. The S&P 500 declined 2.95 per cent on October 14, following the introduction of the provisions, and 5.16 per cent on October 16, following committee approval. On October 29 and 30, after reports that Chairman Rostenkowski might be flexible on the antitakeover provisions, the S&P 500 increased 4.93 and 2.87 per cent, respectively. On December 16, when House

conferees announced their decision to abandon the antitakeover provisions, the S&P 500 increased 2.17 per cent. All these movements are significantly different from zero, with the predicted sign.

Table IV also reports the S&P 500 return from the close on the day of each of the first four announcements (October 13, 15, 28 and 29) through 11:00 a.m. on the (following) event date. During early trading on each of these four days, the market moved as predicted—down 1.39 and 1.18 per cent on October 14 and 16 and up 2.23 and 2.99 per cent on October 29 and 30. During the hour after the December 16 announcement that the antitakeover provisions had been dropped from the House tax bill, the S&P 500 rose 0.80 per cent, providing further support for the hypothesis that the overall market reacted to the bill. All these returns are significantly different from zero, with the predicted sign.

To analyze the effects on takeover targets of the antitakeover provisions of the tax bill, we constructed a portfolio of 19 firms that were targets of an outstanding offer on October 13. We excluded in-play firms for which the take-

over was substantially completed by October 13 and thus exempt from the provisions of the bill (which applied to distributions made after October 13). We estimated the beta-adjusted return to the takeover portfolio for each of the five event dates, using CRSP daily stock return data. To determine immediate market response, we calculated intraday beta-adjusted returns for the first four event dates, using data on individual transactions from the Securities Industry Automation Corporation. (Intraday transaction data were unavailable for December 16.)

Table IV displays the takeover portfolio's beta-adjusted returns. The data support the hypothesis that takeover targets were more sensitive than the overall market to the antitakeover provisions of the tax bill. The beta-adjusted takeover portfolio declined 1.43 per cent on October 14 and 5.25 per cent on October 16 and increased 5.00 per cent on October 29, 4.39 per cent on October 30 and 1.79 per cent on December 16. These beta-adjusted returns are all significantly different from zero, with the predicted sign.

The intraday risk-adjusted returns indicate that the takeover portfolio responded significantly to the takeover tax news in early trading. The intraday takeover portfolio declined 0.31 per cent on October 14 and 2.51 per cent on October 16 and increased 3.65 per cent on October 29 and 4.02 per cent on October 30. With the exception of October 14, these intraday returns are all significantly different from zero, with the predicted sign.

Other Possible Factors

Factors other than the takeover tax bill may have contributed to the stock price drop during October 14–16. These include a higher-than-expected trade deficit, rising interest rates, and increased worries about the government deficit and possible recession.

At 8:30 a.m. on October 14, the Commerce Department released the trade-deficit figures for August 1987. The \$15.68 billion deficit for August was smaller than the July deficit of \$16.47 billion, but it declined by a smaller amount than expected. Several sources attribute the market decline on October 14 to this higher-than-expected deficit. To test this explanation, we investigated whether prior trade-deficit announcements were associated with comparable stock market movements.

We examined the market impact of 21 trade-

deficit announcements from April 1987 (February 1987 trade deficit) through December 1988 (October 1988 trade deficit). The data suggest that the announcement on October 14 caused little of the stock market decline. The difference between the predicted and actual trade deficit announced on October 14 is the fourth smallest of the 21 announcements. In contrast, the S&P 500 daily return on October 14 is the second-largest absolute return of the 21 announcement-date returns, and the intraday return on October 14 (from the previous day's close to 11:00 a.m.) is the fourth-largest in absolute terms.

The only surprise macroeconomic news other than the trade-deficit announcement during October 14–16 was an increase in interest rates on October 14. But commentators have suggested that this increase was not independent of the trade-deficit announcement, as traders feared that government actions to lower the deficit could increase interest rates. Other fundamental factors frequently cited in connection with the October 14–16 market decline (such as the budget deficit and Persian Gulf tensions) were not the subjects of unexpected news.

Richard Roll has argued that the crash did not begin in the United States, as many other world markets experienced a severe decline before the U.S. markets opened on October 19.¹¹ He recognizes that the U.S. decline during October 14–16 may have precipitated later international declines, but notes that some other world markets also declined during October 14–16. Roll concludes that "the overall pattern of intertemporal price movements in the various markets suggests the presence of some underlying fundamental factor . . . but . . . seems inconsistent with a U.S.-specific macroeconomic event."

A decline in the rest of the world's markets during October 14–16 that is insignificantly different from the contemporaneous U.S. decline would be inconsistent with our hypothesis that the proposed takeover restrictions caused the decline in the U.S. market, because the proposed restrictions did not affect foreign firms directly. We compared the performance of the S&P 500 with the FT-Actuaries World Index consisting of the value-weighted stock movements of 22 countries.

Table V displays U.S. versus non-U.S. market movements during October 14–16. On October 14, the S&P 500 declined 2.95 per cent, while the World Index actually increased 0.84 per cent. The difference is statistically significant. On

Table V S&P 500 vs. World Index During October 14–16, 1987 (t-statistics in parentheses)

	Oct. 14	Oct. 16	Oct. 14–16
S&P 500 Return	-2.95%	-5.16%	-10.44%
	(-2.86)***	(-5.00)***	(-5.84)***
World Index Return	0.84%	-0.67%	-0.60
	(0.87)	(-0.70)	(-0.35)
S&P 500 Return— World Index Return	-3.79%	-4.49%	-9.84%
	(-2.68)***	(-3.16)***	(-4.01)***

* Significant at the 10 per cent level.
 ** Significant at the 5 per cent level.
 *** Significant at the 1 per cent level.

October 16, the S&P 500 declined 5.16 per cent, while the World Index declined only an insignificant 0.67 per cent; the S&P 500 decline is significantly greater than the world decline. Only Mexico had a larger decline than the U.S. on October 14, and only Mexico, Ireland, France and Belgium had a larger decline than the United States on October 16.

Overall, during October 14–16, the U.S. market declined 10.44 per cent, while the world market fell only 0.60 per cent. These data demonstrate that the U.S. decline significantly exceeded the non-U.S. decline. If the October 14–16 decline did indeed trigger the October 19 crash, the evidence suggests a U.S.-based event as the trigger.

There was no significant news over the October 17–18 weekend that could have caused equity values to fall over 20 per cent on the 19th. But the decline on the 19th began *before* the market opened, or, as Grossman and Miller state, “some precipitating trigger before the 19th caused a massive liquidity event . . . at the opening of the markets on the 19th.”¹² While the mechanism of the crash itself is beyond the scope of this article, we suggest that the 10.44 per cent market decline during October 14–16 may have triggered the down open and subsequent drop on October 19. Before October 14–16, 1987, the market had not experienced a decline of over 10 per cent during a one, two or three-day period since May 13–14, 1940, when German tanks broke through the French lines. Given the rarity of the event, the October 14–16 decline may arguably be related to the October 19 crash, especially since no trading days intervened between the two events.¹³ ■

Footnotes

1. The article summarizes three essays on corporate takeover I coauthored while employed at the

Securities and Exchange Commission. Kenneth Lehn coauthored the first essay; Michael T. Maloney and Robert E. McCormick coauthored the second essay; Jeffrey M. Netter coauthored the third essay.

- This section is an abbreviated version of an article I coauthored with K. Lehn (Securities and Exchange Commission), “Do Bad Bidders Become Good Targets?” *Journal of Political Economy*, April 1990; it is used here with the permission of the publisher.
- R. Marris, “A Model of the Managerial Enterprise,” *Quarterly Journal of Economics*, May 1963, and H. Manne, “Mergers and the Market for Corporate Control,” *Journal of Political Economy*, April 1965.
- M. Jensen, “Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers,” *A.E.R. Papers and Proceedings*, May 1986.
- Using CRSP daily stock returns, we estimated the abnormal return, ar_{it} , for each acquiring firm during the period from 20 days preceding the announcement date (the first date on which the Dow Jones *Broadtape* reported a story about the acquisition) through 40 days following the announcement. The abnormal return is:

$$ar_{it} = r_{it} - \hat{\alpha}_i - \hat{\beta}_i r_{mt}$$

where r_{it} is the return to firm i at time t , r_{mt} is the return to the CRSP value-weighted index of NYSE and AMEX stocks, and $\hat{\alpha}_i$ and $\hat{\beta}_i$ are market-model parameter estimates from the period 170 through 21 trading days preceding the announcement date.

We averaged the daily abnormal returns across firms in each group to obtain the portfolio abnormal return, AR, and cumulated over various windows to obtain the cumulative return, CAR, for the portfolio. Tables I and II report the AR for the acquisition-announcement date (0) and the CAR for the corresponding four windows—(a) one day before the announcement through one day after the announcement, -1,1; (b) -5,1; (c) -5,40; and (d) -20,40.

- See B. Hagin, “What Practitioners Need to Know About t-Tests,” *Financial Analysts Journal*, May/June 1990, for a discussion of gauging statistical significance.
- This section describes the results of an unpublished paper, “Managerial Decision Making and Capital Structure,” I coauthored with M. T. Maloney (Clemson University and the SEC) and R. E. McCormick (Clemson University).
- “Talking Business: The Importance of Being Biggest,” *New York Times*, June 20, 1989.
- This argument follows the work of Jensen, “Agency Costs,” *op. cit.*
- This section is an abbreviated version of an article

I coauthored with J. M. Netter (University of Georgia), "Triggering the 1987 Stock Market Crash: Antitakeover Provisions in the Proposed House Ways and Means Tax Bill," *Journal of Financial Economics*, September 1989. It is used here with the permission of the publisher.

11. R. Roll, "The International Crash of October 1987," *Financial Analysts Journal*, September/October 1988.
12. S. Grossman and M. Miller, "Liquidity and Market Structure," *Journal of Finance*, July 1988.
13. I presented this paper at the Fall 1989 Institute for

Quantitative Research in Finance Seminar. The presentation won the Institute for Quantitative Research in Finance's 1989 Roger F. Murray Prize.

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