

Corporate Takeovers: The Efficiency Arguments

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In recent years, the tender offer takeover has been praised and damned with a ferocity suggesting that the survival of capitalism is at stake. The truth, as in most disputes with substantial metaphysical content, is more prosaic. Some takeovers enhance economic efficiency, some degrade it, and the balance of effects, though not fully known, is most likely a close one. In this essay I try to lay bare the debate's foundations and bring it back to earth with an injection of evidence.

The Theoretical Bases

No match made in heaven is more blissful than an extant economic theory that finds an important real-world phenomenon to explain. The theory of takeovers articulated in Robin Marris's seminal article (1963) argues that two market failures can be corrected by the proper functioning of a third market—the market for corporate control. Competition in product and input markets may fail, it is said, to weed out firms that have strayed from the path of cost minimization and profit maximization. Within companies free from strong external market pressure, the “separation of ownership and control” identified by Berle and Means (1932) allows managers to pursue investment and cost-padding strategies that fail to maximize the profits of absentee owners—the shareholders. But a well-functioning market for corporate control comes to the rescue. Outside interests, seeing that profits would be

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higher if different strategic choices were made, bid on the stock market for a controlling stake in the firm, take the company over, enforce new profit-maximizing policies, and live happily (efficiently) ever after. The theory was prescient, because at the time it was articulated, the tender offer takeover was a rare anomaly on the capitalist scene.¹ But in the late 1960s and much more so during the 1980s, tender offer takeover activity has grown to dramatic levels. The result has been a renaissance of interest in the theory of takeovers.

Nevertheless, viewing the theory's applicability from a broad historical perspective raises awkward questions. The "separation of ownership and control," though increasing over time, was found by Berle and Means to be widespread among large U.S. corporations during the 1920s. If managerial deviations from profit maximization were already commonplace then, how can one explain the strong performance of the U.S. industrial economy during the 1950s and 1960s, before efficiency-restoring tender offer takeovers came into vogue? Also, the tender offer takeover phenomenon is both new and almost uniquely Anglo-American. If takeovers are necessary for efficiency, how have nations such as Japan, West Germany, Switzerland, and France continued to perform strongly, even though hostile takeovers are practically nonexistent there, and stock ownership is often separated from managerial control, as in America and Great Britain? The questions are rhetorical, for no satisfactory answer has been forthcoming.

Inherent Limitations of Event Study Evidence

Much of the empirical support for takeovers as an efficiency-increasing force comes from a new genre of statistical research. In 1974, Gershon Mandelker published the first merger "event study" rooted in the logic of the Capital Asset Pricing Model. Since then, the Center for Research on Security Prices has made available machine-readable data on daily stock price movements for a large population of corporations. The consequence of these two innovations has been the economics and corporate finance profession's closest analogue to the automated factory. Scores of papers have been written on how the announcement of a merger, takeover or related corporate control transaction affects the normalized stock prices of target and acquiring firms.

As the paper by Jarrell, Brickley and Netter in this symposium reveals, these merger event studies have yielded impressive results. Within a several-week time "window" around the announcement of a merger, whether voluntary or through takeover, stockholders of the target company experience substantial positive abnormal returns—that is, gains beyond those accruing had the target's stock price merely

¹Although rare, takeovers did occur. Marris (1963, p. 189) notes that his views were influenced by "the dramatic crop of raids, both successful and unsuccessful, which has occurred in the United Kingdom in the last ten years."

tracked overall market movements. For acquiring firms the results are less uniform, but the most common finding has been that no significant abnormal returns, positive or negative, appear. From the positive returns to targets and the small or zero returns to acquirers, merger event analysts generally conclude that mergers are on average value-enhancing. With some further assumptions, only two of which will be examined critically here, the conclusion is drawn that mergers are also efficiency-enhancing. The presumed efficiencies may stem from the displacement of inefficient managers, a reorientation of company business strategy, or the realization of economies of scale or scope. However, for a variety of reasons, there are serious gaps in the chain of logic leading from observed stock price increases to the inference that economic efficiency is improved.

Long-Term Losses for Acquiring Firms

Most merger event studies focus on stock price movements during only a few weeks surrounding the relevant announcement. When the time frame has been extended to one to three years after the event, acquiring firms are found to experience *negative* abnormal returns. In the seven one-year studies surveyed by Jensen and Ruback (1983), the abnormal returns averaged -5.5 percent; over the three-year post-takeover period examined by Magenheim and Mueller (1987), the abnormal returns were -16 percent by the most conservative measurement technique.² These negative post-merger abnormal returns often turn out to be statistically insignificant, since as is common in unbounded random walk problems, the variance rises with the length of the time period studied. Yet as Jensen and Ruback concede in their review of the evidence (p. 20), "These post-outcome negative abnormal returns are unsettling because they are inconsistent with market efficiency and suggest that changes in stock price during takeovers overestimate the future efficiency gains from merger."

A still longer-term perspective provides further grounds for skepticism. Early event study samples emphasized the preponderantly conglomerate mergers of the 1960s and 1970s. As in the newer studies, positive short-term stock market reactions were observed. Yet with two decades of hindsight, there is now considerable agreement that the conglomerate merger-making peaking in 1968 led to widespread failure, evidenced in low returns to conglomerate firms' shareholders and extensive divestiture of ill-fitting, poorly-managed subsidiaries.³ The implications of event studies for those early mergers have been contradicted by historical evidence. A technique that fails

²It is worth noting that when Ivan Boesky obtained advance information on an impending takeover, he often sold the shares of the acquirer short. See "Boesky Apparently Reaped at Least \$203 Million in Illicit Profits with Levine's Inside Information," *Wall Street Journal*, November 24, 1986, p. 2.

³Scholarly disagreement on this point, once strong, appears to be waning. Compare Ravenscraft and Scherer (1987c), Chapters 7 and 8, with the statement of Michael Jensen in U.S. House of Representatives (1987), p. 137, in which managers with large free cash flow and/or borrowing power are said to engage in "low-benefit or even value-destroying" diversification mergers. See also footnote 10.

once may work on subsequent iterations. But the failure in an important test at least advises caution in interpreting event studies on mergers of the 1980s.

Market Efficiency as an Operational Concept

Merger event studies usually accept the stock market's efficiency—that is, the tendency for stock prices to impound all available information at any moment in time—as an axiom, not as a hypothesis to be tested. Indeed, empirical proof or refutation is singularly difficult (Summers, 1986). Differential willingness to accept the efficient markets axiom is at the heart of much disputation between those who infer from event studies that takeovers are efficiency-enhancing and those who are more skeptical.

The skeptical view of takeovers advances an alternative explanation for the stock price behavior observed in merger event studies. It is well accepted that stock prices move over time in something approximating a random walk. Companies can therefore become targets not only because their managers have erred in failing to maximize profits, but because the stock market has erred, randomly (or through fad-like movements (Shiller, 1987)), setting share prices so low as to make their issuer a bargain worth snapping up.⁴ Random stock market valuation errors may also nominate likely acquirers, for the company whose stock is overvalued (and knows it) has a uniquely economical currency with which to make acquisitions or raise the cash for making them. Thus, premiums may be paid to gain control of undervalued companies even when no efficiency gains are expected to result from the ownership change.

On both practical and theoretical grounds, it appears likely that realistically efficient stock markets generate many opportunities for takeovers motivated by the perception that companies are undervalued. In his presidential address to the American Finance Association, Fischer Black (1986, p. 533) framed market efficiency in concrete operational terms:

[W]e might define an efficient market as one in which price is within a factor of 2 of value, i.e., the price is more than half of value and less than twice value. The factor of 2 is arbitrary, of course. Intuitively, though, it seems reasonable to me, in the light of sources of uncertainty about value and the strength of the forces tending to cause price to return to value. By this definition, I think almost all markets are efficient almost all of the time. "Almost all" means at least 90 percent.

If Black's estimate represents the 90 percent confidence bounds about a log normal distribution, for example, then 16 percent of corporate stocks would be undervalued

⁴Merger-makers often behave, or at least claim to behave, as if the efficiency axiom were untrue. They search actively for "bargain" companies to acquire. For numerous examples, see Ravenscraft and Scherer (1987c), pp. 9–10.

by 34 percent or more at any time. Such a distribution of actual prices creates enormous incentives for would-be acquirers who believe that their estimate of true value is more accurate, or based upon superior insider information, than the stock market's.

The sources of the market's valuation errors are not made clear by Black. One important element, as Shiller (1981) and others have argued, must come from exaggerated general market fluctuations over time. Consider Mobil Corporation's incentive in 1981 to take over Marathon Oil.⁵ The day before Mobil's first \$85 per share tender offer, Marathon's stock closed at \$63.75. What especially attracted Mobil to attempt a takeover was Marathon's 49 percent interest in the Yates oil field, with estimated reserves sufficient to support low-cost production of 22.4 million barrels per year for 45 years. Assuming (as most analysts did at the time) continuation of the prevailing \$35 per barrel price, and applying the average 16.04 percent Baa bond rate of 1981, the discounted present value of Yates field oil is found to be \$4.74 billion—slightly less than Mobil's first bid for all of Marathon's assets.⁶ But suppose one believed that the tight monetary conditions of 1981 could not persist, so one correctly forecasted that in 1986, Baa bonds could be floated at a 10.39 percent average rate. Assuming that bridge financing was secured at the 16.04 percent rate of 1981, and the 1986 rate applied until the field was depleted in the year 2026, the discounted present value would have been \$6.90 billion—46 percent more than the value assuming 1981 rates to persist indefinitely. Thus, to an acquirer with not unreasonable foresight about interest rate movements (even if not about oil prices), companies whose future cash flows were discounted heavily by the market in 1981 were attractive bargains. I believe many takeovers of the early 1980s had an explanation as simple as this. Speculators who paid a 30 to 40 percent or so stock price premium to acquire companies when the Standard & Poor's 500 company index stood at 128 in 1981 or 120 in 1982 could feel well satisfied with their purchases as the index moved to an average 1986 level of 236—especially when the gamble was made largely with other shareholders' or banks' money.

The most persuasive argument against such value error motives for merger comes from studies of stock price behavior following takeover attempts that failed. (Again, Jarrell, Brickley and Netter describe the evidence in this symposium.) After a tender offer fails, target company share values characteristically remain for a while near the higher level to which they were bid at the initial takeover announcement. Once a company is "in play," there is a sizable probability that a subsequent offer will materialize, and if it succeeds, the persisting positive abnormal return is validated. But

⁵The author was a witness for Marathon Oil in the ensuing antitrust case.

⁶Shortly after the tender offer was made, Mobil's president testified that his finance staff had estimated the value of Marathon's U.S. crude oil reserves, including several fields in addition to Yates, to be "as high as \$180" per share, or \$10.9 billion in total. *Marathon Oil Co. v. Mobil Corporation et al.*, N. Dist. Ohio (1981), hearing transcript p. 448. The present values presented here are computed by applying to annual cash inflows the factor $[e^{-rI} - e^{-rT}]/r$, where r is the applicable discount rate, I is the number of years hence at which the calculation begins, and T is the number of years hence at which the calculation ends.

if no new takeover occurs within two years, target stock prices tend to retreat toward their pre-first-offer level. Event analysts interpret this evidence as showing that value is enhanced only when a takeover actually occurs, with its accompanying internal reorganizations, and not by the signalling effect of an unsuccessful takeover.

An equally plausible but more skeptical interpretation is that some tender offer targets are not truly undervalued, while others are. During the “in play” period, targets are subjected to intense scrutiny. Those that were truly undervalued but escape the first tenderer will prove attractive to another acquirer, while the small minority that were not undervalued will fall through the screen and see their share values return to the (correct) pre-announcement levels. The evidence from event studies is incapable of distinguishing between these contending hypotheses.

Line of Business Data: An Alternative Approach

If merger event studies invoking the efficient markets axiom cannot demonstrate whether mergers are in fact efficiency-enhancing, what other recourse is there? One alternative is to investigate the internal financial health of companies at the time they become takeover targets and to ascertain how their profit performance changes over a substantial period of time following merger. The corporate control debate suggests two hypotheses testable under this approach. First, if tender offers are precipitated by incumbent management failures, tender offer targets should be less profitable than peer companies in similar industry groups. Second, if takeover displaces inefficient management or in other ways facilitates a movement to higher profit business strategies, post-takeover profitability should rise relative to pre-takeover profitability, conditions in the acquired unit’s home industry being held constant. David Ravenscraft and I (1987b) have carried out such an analysis using unprecedentedly detailed Line of Business data collected by the Federal Trade Commission.

For the task at hand, Line of Business data has two compelling advantages. With parent company operations disaggregated into detailed industry categories (for manufacturing, encompassing 261 distinct possibilities), acquired units can be singled out for special scrutiny. Their sales, assets, and profits are much less likely to be swamped by the larger magnitudes from other company activities. Also, with data disaggregated to the narrow industry category level, it is possible to form well-focused controls—notably, the performance of other companies’ non-acquired units of comparable size in the same industry.

The FTC’s Line of Business surveys covered a maximum of 471 U.S. industrial corporations that made three-fourths of all manufacturing and mineral company acquisitions, by asset value, between 1950 and 1976. To the 4,409 individual manufacturing lines of business on which the sample companies filed one or more annual reports, nearly 6,000 acquisitions consummated between 1950 and 1976 were coded. Of these, 96 were either tender offer takeovers or “white knight” transactions

triggered by a tender offer. Given the special interest in the efficiency implications of tender offers, I focus here on that subset of our acquired unit sample.⁷

For the 95 tender offer targets on which pre-takeover data were available, operating income (before deduction of interest charges, income taxes, and extraordinary items) averaged 11.08 percent of assets. The time-matched average for the principal two-digit manufacturing industries in which the tender offer targets operated was 12.06 percent. The difference is significant at the 0.05 level ($t = 1.90$). Thus, on average, the tender offer targets were under-performers by about 8 percent relative to their home industry norms.⁸

Post-takeover performance was analyzed by averaging profitability indices of the acquired lines for the three years 1975–77, which on average followed the takeover by nine years. Lines subjected to tender offer-induced acquisition were 23 percent less profitable on average than otherwise comparable lines not involved in tender offers, holding constant (among other things) the 21 percent degradation of profitability associated with the use of purchase accounting to value acquired assets.⁹

The accounting method used in valuing acquired assets is important in interpreting these results. Under purchase accounting, accepted for most tender offer takeovers as well as many other acquisitions, assets are written up to reflect the actual amounts paid to acquire them. If a premium over premerger book value is paid, as is typical in tender offer acquisitions, the denominator of the ratio between operating income and assets is inflated relative to the denominators of nonmerged units retaining their book values unchanged. With larger asset values, numerators of the ratio may also be reduced owing to higher postmerger depreciation charges. To filter out these accounting effects stemming from the payment of takeover premiums, the ratio of cash flow (before deduction of depreciation) to sales was substituted as dependent variable in an otherwise identical analysis. The estimated tender offer effect was still negative but smaller and statistically insignificant, showing average tender offer line performance 11 percent less than that of otherwise comparable non-tender lines. This implies that much of the observed deterioration of the ratio of operating income to assets associated with a tender offer history came from paying a high price to make the takeover and restating asset values to reflect that price.

⁷Results for the much larger voluntary merger group are reported in Ravenscraft and Scherer (1987c).

⁸For 56 targets of tender offers initiated between 1975 and 1983—a sample more recent than ours—Herman and Lowenstein (1987) found that returns on equity were superior to those of all manufacturing corporations when a weighted average was taken. By my reworking of their reported results, the simple average returns appear to have been slightly below the 1975–83 all-manufacturing average. Evidently, the largest targets—frequently oil companies—had profits well above average.

⁹A fixed effects multiple regression model was used. For 2,732 lines of business with high-quality data for the three years, profitability indices were regressed on a tender offer dummy variable (with unit value for the 153 lines with a tender offer history), a variable measuring the fraction of assets acquired by the parent company under purchase accounting, a variable measuring the line's market share, 256 industry intercept dummy variables, and three other control variables of less interest to the present discussion. In the regression of operating income as a percent of assets on these variables, the tender offer dummy variable had a value of -3.10 , with $t = 2.41$. The purchase accounting coefficient was -2.81 , with $t = 2.24$. Full-sample mean profitability was 13.3 percent.

Since the acquired companies had slightly inferior profit performance before takeover and, abstracting from accounting revaluation effects, the acquired lines continued to have slightly inferior cash flow/sales performance after takeover, one must conclude that operating performance neither improved nor deteriorated significantly following takeover. The hypothesis that takeovers improve performance is not supported.

Special Characteristics of the 1980s Takeover Wave

These results are for a data set covering takeovers up to the mid-1970s. It is uncertain whether the statistical results will extrapolate to tender offer takeovers of the 1980s, which are different from their predecessors in numerous respects. The new takeovers are larger on average and more likely to be made by blue chip corporations rather than maverick “raider” types. They have several other noteworthy characteristics.

“Bust Up” Takeovers

The (mostly voluntary) merger wave of the 1960s and early 1970s was preponderantly conglomerate, more than doubling the number of lines in which the average Line of Business survey company operated. By contrast, the 1980s have seen a high incidence of “bust up” takeovers—that is, acquisitions followed by the sell-off of numerous target company divisions. Divestiture in such cases has been motivated by two main considerations—a need to retire loans incurred in making the takeover, and a belief that the parts individually were worth more than the whole. To reduce debt, on which I shall say more shortly, “crown jewel” divisions are sometimes sold. The “parts worth more than the whole” motive is more interesting. The research by Ravenscraft and myself (1987c, Chapters 5 and 6) sheds new light on it.

With few exceptions, the diversifying acquisitions of the 1960s and 1970s were much less than a resounding success. For acquired lines surviving long enough to be included in the 1975–77 Line of Business surveys, profitability fell sharply on average relative to premerger levels. Moreover, Ravenscraft and I estimate conservatively that by 1981, one-third of the units acquired had been sold off.¹⁰ On average, lines that were fully divested had *negative* operating income in the year before sell-off commenced—a clear sign of failure. Fifteen case studies of acquired-and-then-divested units revealed that sell-off was often precipitated by managerial control loss and incentive breakdowns. These in turn had roots in the more complex organizational structures into which the acquired units were thrust, knowledge lacunae that impaired the conglomerate parent’s ability to solve emerging problems, and the inability of top management to develop incentives stimulating sustained, vigorous performance by

¹⁰Porter (1987, p. 48) finds an even higher 56.5 percent sell-off rate for pre-1976 acquisitions of 33 diversification-prone U.S. corporations and concludes, “The corporate strategies of most companies have dissipated instead of created shareholder value.”

unit operating heads. When sell-off occurred, the divested units typically moved from a conglomerate organizational structure to either a much simpler structure (under unit leveraged buyouts),¹¹ or to a horizontal or vertical relationship in which their new parent had substantial experience relevant to the divested-and-reacquired unit's business. Performance improvements, evident both qualitatively (from the case studies) and quantitatively (for units sold off to Line of Business sample parents) followed.

The cumulation of these developments has become known as the "back to basics" movement in American industry. "Bust up" takeovers have played a role. Managements that for some reason were unwilling to divest units that could be more profitable in another organizational structure have been forced to do so, either by displacement or to preempt feared takeovers. In this way, takeovers have been efficiency-increasing. But one should not exaggerate their role. The number of divisional sell-offs by U.S. corporations reached a peak in 1971, three years after the peak of the conglomerate merger wave and long before the "bust up" takeover became known. After declining by 65 percent relative to the peak, the number of sell-offs began rising again from 1981 on. "Bust up" takeovers undoubtedly contributed to the increase, but they were not yet popular in 1981, when the turnaround began. Another contributor was the increase in friendly merger activity, creating more ill fits that needed undoing.

A statistical analysis of Line of Business sample unit sell-offs between 1975 and 1981 showed that the probability of divestiture moved from zero to near unity with four standard deviation changes in each of six variables: line of business profitability, company-wide profitability, the degree to which a subsidiary was related conglomerately to its parent, the line's market share, research and development intensity, and change in the identity of the company's chief executive officer (Ravenscraft and Scherer, 1987a).¹² Takeovers may have raised the probabilities in the 1980s, but they cannot have raised them much. If a unit's performance was seriously deficient, sell-off was likely to occur in any event, especially after the parent's chief executive officer (often responsible for the earlier acquisition mistake) was replaced. (On average, our research revealed, such CEO changes occurred every eleven years.) Thus, much efficiency-enhancing sell-off activity was precipitated by such fundamental variables as profitability, strategic position, and "fit." Takeovers and their threat contributed only at the margin.

Debt Financing

Another prominent characteristic of takeovers in the 1980s is the extensive use of debt financing, introducing increased leverage into the merged company's financial

¹¹ Under a unit leveraged buyout, the sold-off unit becomes a new free standing enterprise, usually with a heavily debt leveraged capital structure. Heavy borrowing permits the unit's management to hold a substantial share of the outstanding common stock shares.

¹² In a logit analysis with seven other variables held constant at their means, each of the six was varied symmetrically about its own mean by four standard deviations in a sell-off probability-enhancing direction, and the predicted change in the sell-off probability for these combined changes was evaluated.

structure.¹³ Potential target companies have also been induced to refinance and accept increased leverage to deter takeover attempts. From the perspective of individual firms, debt is advantageous relative to common stock because its interest is deductible in computing taxable corporate income, avoiding the double taxation imposed upon dividends.¹⁴ Within limits, more debt financing reduces a corporation's cost of capital. Lower capital costs may in turn induce more growth-creating, productivity-raising real capital investment and tilt investment decisions in more far-sighted directions. In this respect, the greater reliance upon debt stimulated in part by the takeover movement is efficiency-enhancing, correcting the cost of capital disparities between U.S. corporations and their overseas rivals that became increasingly problematic as international competition intensified during the 1980s. The limits beyond which the risks of leverage, and hence risk premiums, rise sharply do not appear thus far to have been seriously overstepped. For the most part, the financial markets have reacted favorably.

But heavy leveraging imposes costs external to the individual debt-issuing firm and its creditors. As the replacement of equity with debt spreads to a substantial fraction of all industry, the macroeconomy becomes more unstable. If a recession occurs, highly leveraged companies whose cash flow has fallen may be forced to cut back real investment in order to service their debt and avoid default.¹⁵ The larger real investment cutbacks will be augmented by conventional autonomous investment multipliers, accentuating the magnitude of the downturn. This external cost of increased leverage could be serious, especially when the ability of the federal government to implement countercyclical measures is constrained by concern over the size of its budget deficits. Thus, the financial structure changes associated with takeover activity in the 1980s are a mixed blessing, meriting at best two cheers, and weak ones at that, on broad economic efficiency grounds.

Short-Term Managerial Horizons

Perhaps the most controversial and least understood consequence of the 1980s takeover movement is its alleged propensity to shorten managerial decision-making horizons and bias profit maximization toward the short run. If the allegation is true, it could be the most important implication of takeovers, since American industry is confronted by European and especially Asian rivals who invest heavily and practice penetration and learning curve pricing¹⁶—manifestations of a long-run strategy. To

¹³“Funny money”—often, convertible preferred stock—was also widely used to finance conglomerate acquisitions of the 1960s.

¹⁴Another advantage emphasized by Jensen in this symposium is that debt forces companies to pay out cash flows that would otherwise be invested unwisely. The excess cash flow idea was proposed and tested earlier by Mueller (1969) and Grabowski and Mueller (1975).

¹⁵Galbraith (1955, p. 183) notes a similar phenomenon as one contributor to the severity of the Great Crash in 1929.

¹⁶On learning curve pricing, which entails setting low prices at early stages in a product's life to advance more rapidly down the learning curve and gain cost advantages over rivals, see Spence (1981) and Ross (1986).

see how takeovers affect managerial time horizons and are affected by them, it is useful to distinguish between the early and late phases of the recent merger wave.

From 1979 to 1982, both nominal and real interest rates rose sharply, signalling that capital investment should be reduced and reoriented toward projects with shorter-run cash return profiles. But there is reason to believe that large corporations adjust the "hurdle rates" applied in capital budgeting decisions only with a lag, in effect "smoothing" out fluctuations in underlying capital market conditions (Hayes, 1977; Donaldson and Lorsch, 1983, pp. 51–53, 169–171). Data from the two most closely comparable surveys indicate that "hurdle rates" (computed mostly on an after-tax basis) rose from a median value of 12 percent in 1969 to 15 percent in June 1983.¹⁷ Meanwhile, after-tax corporate capital costs probably rose by at least 5 percentage points, excluding risk premium adjustments. Companies whose hurdle rates lagged during the early 1980s interest rate upsurge were apt to approve more far-sighted investment projects than what the market was demanding. This disparity could have made the companies vulnerable to acquirers who, following takeover, would enforce investment policies more to the market's liking. Fear of being displaced in this way probably underlay early top management complaints that takeover threats were forcing their firms to become excessively short-sighted. If interest rates were more volatile than long-run conditions warranted, it is by no means clear that managers were being inefficient in their rate-smoothing behavior, therefore meriting displacement through takeovers.

Since 1983, nominal interest rates have fallen, so dissonance between rate-smoothing firms and the market seems likely to have abated. If a problem remains, it must have other more subtle roots. Business leaders claim that "the market," and especially high-turnover stock fund managers, are excessively short-sighted, but clear-cut behavioral consequences have not been identified. The most pointed suggestions come from National Science Foundation, Battelle Institute, and McGraw Hill surveys reporting sharply lower company-financed research and development spending growth rates in 1986 and 1987, and attributing the changes partly to profit-raising efforts induced by takeover fears.¹⁸ All three sources concede that the causal link between

¹⁷Compare Williams (1970, p. 21) and Scherer (1983). My own survey, with usable responses from 42 *Fortune* 500 corporations, revealed an anomaly. Half the companies adjusted future cash flows to reflect expected inflation, while the other half did not. The former should have used nominal interest rates in computing their hurdle rates, while the latter should have used real interest rates. The difference between their hurdle rates was in the expected direction, but averaged only 2.72 percentage points. This surprisingly small difference may imply either misunderstanding of rather clear survey questions, or failure to understand and/or apply the relevant economic theory. If the latter, the non-inflation-adjusters probably biased their decisions too much toward the short run. But even so, stickiness in the face of 1979–82 interest rate increases implies a marginal lengthening of time horizons relative to what the capital markets signalled.

Less comparable surveys by Hayes (1977), Gitman and Forrester (1977), and Gitman and Mercurio (1982) yield *mean* (not median) hurdle, cost of capital or "cut off" rates of 13.9 percent in 1975, 14.0 percent in June 1976, and 14.3 percent in October 1980. Again, the smoothing implication is supported.¹⁸"The Sun May Be Setting on R&D's Glory Days," *Business Week*, January 19, 1987, p. 75; "Growth in Company-Funded Research and Development Expected to Slow in 1987," National Science Foundation, *Science Resources Studies Highlights*, NSF 86-314, January 30, 1987; and "Corporations Are Putting Less into Research," *Business Week*, August 10, 1987, p. 18.

takeover threats and R&D decisions is ambiguous. On the more optimistic side, a Securities and Exchange Commission study (1985) found that institutional investors and the stock market responded positively to R&D increases and research-intensive corporations generally. However, the samples used in that study were small or biased toward high R&D companies and perhaps toward the venture capital funds investing in such companies. The analyses suffered from a lack of industry controls, which earlier research has shown to be crucial if valid conclusions are to be drawn. More equivocal results on the R&D impact of 1976–85 mergers, voluntary and hostile, are reported in Hall (1987). In the present state of knowledge, the question of how takeovers affect R&D spending and other far-sighted investment remains unresolved. Analyses using richer data with superior controls and more precise identification of lagged behavioral effects are needed. Alternatively, new insights might be gained through carefully structured interviews with a large cohort of business decision-makers. Until such progress occurs, we remain in the dark on a potentially important efficiency effect of takeovers.

Conclusion

In theory, tender offer takeovers provide a significant corrective against managerial departures from profit maximization. Careful scrutiny of the available evidence leads to a more skeptical assessment. The market processes that put a company “in play” are at best noisy, creating incentives for takeover both when management errs and when the market errs. Consistent with this mix of incentives, target companies are seen on average to be only mild profit under-performers. Evidence on 1960s and early 1970s tender offer takeovers reveals no significant long-term improvement in operating profitability following takeover. Recent takeovers have probably accelerated needed divisional restructuring and led to lower-cost financial structures, but not without risks to the macroeconomy. Whether such takeovers and the more pervasive threat that they will occur have wider-ranging behavioral consequences remains unknown, leaving important challenges for future research.

As this paper was being written, numerous proposals for change in the laws and regulations governing takeover activity were pending before the U.S. Congress and state legislatures. Some of the proposals, by intent or as a by-product of “fairness” or procedural transparency goals, would make it more difficult to effect tender offer takeovers. The most vigorous principled objections to such changes are rooted in a belief that takeovers and their threat perform an important efficiency-enhancing function in the U.S. economy. In this paper, I have questioned both the theoretical and empirical bases for that belief. If takeovers on average do little to improve corporations’ operating efficiency, the objection to regulations emphasizing fairness and other criteria loses much of its force, and the case for slowing down what is clearly a costly and disruptive corporate restructuring process gains plausibility.

On the other hand, should the supporters of wide-open corporate control markets be correct in their belief that the separation of ownership and control causes serious inefficiencies, one must ask whether remedies simpler and more direct than the takeover mechanism might exist. If the real problem is that managers ride roughshod over absentee shareholders' preferences, a more direct solution would be to ensure that shareholders are better represented on more active corporate boards. Louis Lowenstein (forthcoming) has proposed, for example, that a sizable fraction of public corporations' directors be nominated directly by nonmanagement owners. Since roughly half of the typical large corporation's shares are held by financial intermediaries—including pension funds (Scherer, forthcoming)—this means in effect that significant nominating powers would be vested in the managers and trustees of such large funds as the College Retirement Equities Fund. Economist-trustees of CREF were instrumental in redirecting its investment policies away from costly "churning" strategies and toward practices consistent with the teachings of modern finance theory. It is an interesting question whether they might now help reform the target corporations themselves, if reform is in fact needed, by nominating superior "outside" directors. I support such an experiment in improved corporate governance much more readily than I can support the radical wide-open tender offer experiments, which place corporate management at risk whether it, or the stock market, has been guilty of error.

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