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MERGERS AND MANAGERIAL PERFORMANCE

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I. Introduction

This paper provides a non-technical summary of our research since 1982 on the economics of mergers and sell-offs. It deals only peripherally with contested takeovers, the conference's central focus. During the time period spanned by our principal data, contested takeovers were more of a rarity than in the 1980s, and so relatively few cases are covered. Rather, we are concerned with mergers of all kinds, friendly and hostile, large and small: why they are made, how they are managed, and what their financial consequences have been.

Our work was inspired by a paradox and an opportunity. Many scholarly studies have inferred from the behavior of stock prices immediately surrounding merger "events" that merger activity was unambiguously efficiency-increasing. The underlying hypotheses, implicit or explicit, are (1) that pre-merger financial performance of the acquired firm was deficient and improvable; and (2) that profitability increases would on average follow after mergers were consummated. Yet since the early 1970s, the business press has been reporting vast numbers of "sell-offs" --

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Use is made of Line of Business data collected by the Federal Trade Commission. A review by FTC staff has determined that individual company data are not disclosed. The conclusions are the authors' and not necessarily those of the FTC.

mergers that were made and then, because of ill fit, disappointing performance, or other problems, were being undone. The high incidence of post-merger divorces -- up to 40 percent of 1970s acquisition transactions, according to W.T. Grimm data -- seemed hard to reconcile with efficiency hypotheses. The opportunity that coincided with recognition of this paradox was the availability of richly segmented performance data under the Federal Trade Commission's Line of Business program. For the first time ever, it became possible to analyze microscopically, using a large statistical sample, the post-merger financial performance of corporate units.

At the heart of our research strategy was a desire to understand the actual internal events that preceded and followed mergers, and thus to go beyond stock market manifestations. To this end, three main research thrusts were pursued simultaneously. First, historical case studies were compiled on 15 mergers (or merger clusters) that led to sell-off. These were based on 70 interviews, mostly at the division head level or higher, as well as considerable research in documentary materials. Second, 27 years of merger history were linked to financial performance records for approximately 3,674 individual manufacturing lines of business (LBs) operated by some 456 corporations. Altogether, more than 5,000 mergers and acquisitions, with accompanying size, timing, and accounting treatment information, were coded to the company LBs, permitting a well-controlled analysis of the relationship between merger activity and post-merger profitability. Third, an attempt was made to identify all sell-offs occurring between 1974, the first year for which segmented financial performance data were available, and 1981. In this way, the financial

performance patterns that preceded sell-off could be isolated. The insights flowing from these three efforts and several related sub-projects are what we summarize here.

II. Pre-Merger Performance of Acquired Entities

Among merger phenomenon commentators whose reading is confined to works with a "Chicago" imprimatur, there persists an hypothesis that acquisition candidates are characteristically sluggards -- poorly-performing companies which, with the proper post-merger change in management, could achieve substantial profitability gains. One key source of this view was the seminal article by Henry G. Manne. Distinguishing voluntary "mergers" from tender offers and proxy fights, he wrote:

Mergers seem in many instances to be the most efficient of the three devices for corporate take-overs. Consequently, they are of considerable importance for the protection of individual non-controlling shareholders and are desirable from a general welfare-economics point of view.... Among the advantages of [the market for corporate control] ... are a lessening of wasteful bankruptcy proceedings, more efficient management of corporations, the protection afforded non-controlling corporate investors, increased mobility of capital, and generally a more efficient allocation of resources.... One real problem [of antitrust policy] will be in devising statistical methods for distinguishing mergers motivated by a quest for monopoly profit from those merely trying to establish more efficient management in poorly run companies.

Statistical studies of merger activity since the time of Manne's article have provided at best modest support for the deficient performance hypothesis. Steiner's overview of the literature through 1973 concluded that "acquired firms were not all that different from the average in their industry: perhaps slightly below average in their premerger profitability but certainly not on the brink of financial disaster."³ More recent

studies by Scherer⁴ and Harris et al.⁵ found acquired firms of the mid-1970s to be somewhat more profitable than population norms or nonacquired company control samples.

The early pre-merger profitability studies were severely constrained by their focus on "public" acquired companies -- a small subset of all acquired firms. A largely untapped data source escaping this constraint is the collection of "listing applications" filed when corporations with securities traded on the New York Stock Exchange make acquisitions entailing the issue of new shares. Such listing applications normally include recent income statements and balance sheets for the acquired entity, whether public or private. These were consulted for a sample of 634 domestic manufacturing company acquisitions made in three years: 1968, at the peak of the 1960s conglomerate merger wave; 1971, for which recession-year 1970 profitability data were disclosed; and 1974, by which time acquisition-prone firms had fallen out of favor on the stock market. The sample covers all manufacturing acquisitions with relevant data, and not only acquisitions made by the Line of Business companies analyzed later, although there is considerable overlap. The median pre-merger asset size of the acquired companies in our sample was \$2.4 million. In contrast, the "public" corporations on the Federal Trade Commission's list of large manufacturing corporations acquired in 1968 had median assets of \$29 million.⁶ Thus, our new study covers a population quite different from, and largely ignored in, previous pre-merger profitability analyses.

To maximize comparability with available Line of Business data, our measure of profitability is the ratio of annualized operating income (before capital charges, income taxes, and extraordinary items) to end-of-

period assets. Simple average pre-merger profitability defined in this way for the acquired company sample and for all manufacturing corporations was as follows:

	Sample of 634 Acquired Companies	All Manufacturing Corporations	Differential
1968 acquisitions	20.8%	11.3%	+9.5%
1971 acquisitions	19.6%	8.6%	+11.0%
1974 acquisitions	18.9%	11.6%	+7.3%
All three years	20.2%	10.9%	+9.3%

The acquired company profit averages are significantly higher than the all-manufacturing figures (derived from Quarterly Financial Report universe totals), but the acquired company differentials do not differ significantly from one another across individual years.

How can our results diverge so much from those that have formed the basis of conventional wisdom, in Chicago or elsewhere? There are three plausible explanations. As noted already, our sample is much more heavily weighted toward small companies -- the infantry of the 1960s and 1970s conglomerate merger campaigns. In a more complex analysis than is reported here,⁷ we found a negative association between pre-merger profitability and size. For every tenfold increase in assets, acquired firms' average profit premium declined by 2.3 percentage points. Yet this is not enough to reconcile the various samples' results. To have the whole-sample profit differential of 9.3 percentage points vanish, an acquired company's assets would have to increase from the sample median of \$2.4 million to approximately \$25 billion -- a size attained by few takeover targets even today. Second, our sample is non-representative in

the sense that new securities were issued to consummate the merger transaction. Mergers made without new securities (and listing applications) may have been different. Still it is noteworthy that there is no marked difference in the results between 1968, when the use of convertible preferred stock and other "funny money" securities to make acquisitions was common, and 1974, when that device had become costly owing to deflated conglomerate price/earnings ratios. Third and related, we found sharp differences in pre-merger profitability between companies acquired in transactions accounted for as poolings of interests and those handled as purchases (i.e., with post-merger assets "stepped up" above pre-merger book values to reflect premiums paid). Pooling-of-interests acquisitions, comprising 79 percent of our NYSE listing application sample, had average pre-merger operating income / assets ratios of 22.0 percent, whereas purchase acquisitions were only slightly (and statistically insignificantly) more profitable than their manufacturing peers. Thus, in emphasizing a set of acquisitions that lent themselves to the use of pooling accounting and the swap of securities (which are correlated) we have slighted the different (purchase accounting) set, which are less profitable and which comprised 47 percent of all the mergers covered by the more comprehensive sample to which we shall turn. If our pre-merger sample results are reweighted to reflect the relative pooling vs. purchase frequencies observed more generally, the simple average surplus of acquired company over manufacturing universe profitability would be on the order of 6.7 percentage points.

This statistical evidence is consistent with the results of our 15 case studies, which were selected to illuminate sell-off conditions but

had no deliberate pre-merger characteristics bias.⁸ With at most one or two exceptions, the buying companies perceived their acquisitions as highly promising, not as businesses in trouble. One manifestation was that none of the acquiring companies intended to purge the acquired firm's managerial ranks. In six cases, acquirers established control by installing their own chief executives, but even then, they showed in a number of ways their satisfaction with the inherited managers and their desire to keep them, if they were willing to remain.

Thus, from both statistical analysis and case studies, it appears that acquisition activity in the United States, at least during the late 1960s and 1970s, was characteristically a search for gold nuggets, not for dross that could, by some managerial alchemy, be transformed into gold.

III. Why Merger Led to Sell-Off: Qualitative Insights

If merger makers began with acquisitions of generally superior performance, why did they subsequently sell many of them off? Our case study research provided numerous preliminary insights.

One of the most important is that acquisition-making is appropriately viewed as a process of sampling under considerable statistical uncertainty. On average, as we have seen, the companies acquired during the late 1960s and early 1970s were of above-average profitability and with generally good perceived future prospects. But there was much uncertainty about those prospects, posing an "inspection problem" for the acquirer. Some acquisitions would turn out much better than anticipated. Others would develop problems. Our sell-off case studies emphasized the more problem-ridden acquisitions, and so our evidence on how problems emerge is especially comprehensive. Some emerging problems came from a

new roll of the business environmental dice and could not under any reasonable circumstances have been predicted. Examples include the OPEC shock that undercut the demand for Bendix' newly-acquired recreational vehicle business and for automobiles of a size requiring Great Lakes Screw's traditional fasteners, the whims of fashion that moved dresses toward using more buttons and fewer of Talon's zippers, and the quadrupling of prices for cobalt used in J.B. Lansing's loudspeakers. The 1970s were perhaps unusually turbulent in this respect, and so more post-merger problems intruded than might have been expected in "normal" times. Other problems were latent at the time of acquisition, more or less clearly perceived by the to-be-acquired firm's management. They included such things as the accelerating erosion of Talon's highly profitable home-sewing zipper market, the approaching obsolescence of some companies' equipment compared to that of competitors, and weaknesses in accepted product development strategies. Such latent problems are difficult for an outside acquirer to identify under the most cooperative circumstances. When the acquisition is conglomerate and the acquirer lacks in-depth knowledge of the business, detection is even more difficult. From our two case studies of hostile takeovers, latent problems are most difficult to pinpoint when the target refuses to talk in detail with the would-be acquirer about its internal operations and plans. Still other problems stemmed from the "chemistry" post-merger organizational changes engendered. Since the phenomena here are subtle, we defer examples and further discussion until the path has been prepared.

Our case study research revealed three and perhaps four principal (and partly overlapping) patterns underlying the sell-off of acquired

units. Most frequent was the emergence or persistence of some problem that reduced profits and left top management dissatisfied with acquired unit performance. Also common were cases in which division A was performing well, but divisions B and C, with similar market characteristics, had developed problems. Sensing that division A might become equally troublesome in the future, corporate management, stressing considerations of "fit" and "strategic compatibility," decided to divest A along with B and C. Third, companies sometimes found themselves in cash flow binds and sold off "crown jewels" along with the problem-ridden units to stem the crisis. Fourth, but often interacting with the first three scenarios in difficult-to-disentangle ways, companies sold off units because a would-be buyer made them an offer too good to refuse.

This summary prompts more questions than it answers. American managers take some pride in their "can-do" skills. Why should they sell off problem-ridden acquisitions rather than pitching in and solving them? And why should there be buyers willing to pay a price for problem-ridden units higher than the value to the incumbent parent of retaining the units and implementing remedial measures?

Wisdom begins by asking, "What do you do when you are a conglomerate corporation's group executive and one of your wards gets into trouble?" The options are surprisingly limited. One can sit back and do nothing but offer encouragement, hoping that matters improve. The troubled unit's key managers can be replaced. One can move in and offer corrective advice or "take over" to varied degrees. Or the unit can be sold off.

At least for our case study companies, which spanned a diverse array of circumstances, the more interventionist alternatives tended to work poorly.' Conglomerates seldom have a ready stock of managers who understand the details of subsidiary operations. The typical manager with general experience, transplanted to an unfamiliar business, takes a year or so to "grab hold." When a business is already in trouble, deterioration can snowball during the transitional period. Increased top management intervention in the operations of troubled units has other problems. If the operating-level managers are able -- and as we have seen, they were good enough on average to earn substantial pre-merger profit premiums -- they know they are in trouble and what the menu of potential correctives is. Intervention by top management is commonly seen by them as nit-picking, the setting of unattainable objectives, and/or downright derogation of their authority. Morale and motivation fall. If the operating level managers have alternatives, they leave; if not, they soldier on sullenly while the problems worsen.

Conglomerates such as Beatrice Foods wise enough to recognize that they had very limited interventionist problem-solving capabilities followed a rule of selling off units quickly when they experienced problems that persisted over several quarters. Others intervened, but saw the situation deteriorate and then resorted to sell-off. In either event, our case study research showed, there was an interaction between the emergence of problems, latent or totally unpredictable, and the impaired problem-solving ability of conglomerate organizations that sooner or later made sell-off likely. The buyer's side of the sell-off market existed because there were alternative organizational forms that could solve the

problems better. Most of the units covered by our sell-off case studies became self-standing unitary organizations (e.g., through leveraged buyouts) or were acquired in horizontal mergers. In these new organizations, authority was more closely linked with problem-solving knowledge, and especially in the leveraged buyouts, motivation was strengthened greatly. The behavioral changes were dramatic. Previously ignored cost-cutting opportunities were seized, new sales strategies were adopted, labor relations became less bureaucratic and more constructive, and much else. In our studies, we observed only occasional efficiency increases and many efficiency decreases with a shift from unitary to conglomerate organizational forms. But with the shift through sell-off from conglomerate toward unitary or tightly-integrated organizations, efficiency increases abounded.

There are further implications of the conglomerates' intervention dilemma. The job of a conglomerate group vice president or equivalent group executive is peculiarly difficult. He/she is in charge, but if the operating-level managers are good, ought to show it only in a minimal and supportive way. Yet to do so is contrary to a good deal of human nature. There is a strong temptation to intervene and "manage," but its consequence is frequently the souring of operating-level morale and motivation and the magnification of problems that otherwise would have been innocuous.⁹ Our case studies provided several clear examples. Sell-off was the eventual corrective for this negative interaction between conglomerate organization and operating efficiency.

Finally, the financial policies of parent corporations precipitated difficulties that eventually led to dissatisfaction with unit performance

and sell-off. Several case study parents imposed upon their acquired units stringent cash flow return requirements or consciously treated the units as "cash cows" from whom funds were to be drawn for supporting other, supposedly more promising, divisions. For the units treated in this way, results included the scrimping on capital equipment and R&D outlays, with an eventual loss of operating efficiency and competitive advantage, and the setting of high prices that attracted competitive inroads. Market shares declined as a consequence. A further consequence was more subtle. In principle, pursuing a "matrix strategy," of which cash cow treatment is one component, improves the efficiency of resource allocation, channelling funds from cash-rich but slow-growth lines to promising rapid-growth lines.¹⁰ However, partly because of the extraordinarily turbulent economic conditions of the 1970s and early 1980s, companies were not very good at identifying high-growth lines. And more importantly, cash cow status is a fragile thing that cannot be taken as given. People matter, and motivation matters. When lines run by highly-motivated managers are deprived of investible funds for which they see profitable uses, the milk soon sours. Motivation flags, and what could be a continuing source of good profits crosses the matrix and becomes a "dog." The end result, at least in several of our case studies, was sell-off.

Thus, having acquired thousands of characteristically small but profitable and promising firms, the conglomerates found that they could not manage them consistently. Many acquisitions, especially those lucky enough not to experience significant business setbacks, did do well under

conglomerate control. The parent corporations sometimes made positive contributions to their growth by providing funds at lower cost, and in more elastic supply, than would have been possible had the acquired units remained independent. In a subset of cases, the conglomerates maintained sufficiently enlightened managerial policies to work with their subsidiaries toward the satisfactory solution of emerging problems. But in a quantitatively substantial set of cases, the conglomerate acquirers proved to be inept problem-solvers and even created new problems by undermining operating management morale and depriving subsidiaries of funds for modernization. Profits turned to losses, pulling down overall parent corporation returns. Sooner or later the trouble-ridden subsidiaries were sold off to organizations that could manage them better, and further strategic pruning eliminated still-successful units for which the risk of future control loss was appreciable.

IV. Statistical Evidence

Our case study research was necessarily limited in scope, and by design biased toward acquisitions that ended in sell-off -- by our findings, a manifestation of failure. Do the case study results hold up for a broader sample of sell-offs? And were the disappointing profits observed in many (but not all) sell-off case study acquisitions offset, or more than offset, by above-average profits in the more successful acquisitions? More generally, how profitable has merger activity been? Has acquisition on average raised or lowered the basic profitability of the acquired units? These are questions that can only be answered through

the analysis of a large, well-controlled statistical sample. For that, we turn to Federal Trade Commission Line of Business data.

The Profitability of Sold-Off Units

Under the FTC's Line of Business program, a panel of from 437 to 471 corporations provided for the four reporting years 1974-77 income statement and balance sheet data disaggregated into a maximum of 261 manufacturing and 14 (broader) nonmanufacturing industry categories. We focus here on the manufacturing industry line of business (LB) reports. The average reporting company in 1977 broke its operations down into eight manufacturing LBs (excluding a residual catch-all category), with a range of from one to 53.

For each manufacturing line of each sample company, an attempt was made to identify and date all sell-offs occurring during the years 1974 through 1981 (with a few observations trailing into 1982). Because published information on sell-offs is much sparser than the data on mergers, the survey is undoubtedly incomplete, especially after 1977, when Line of Business reporting ended. Over the eight-year period covered, 450 individual lines of business were totally sold off. Of these, 83 percent had prior merger activity, and 70 percent are believed to have entered the parent company's operations through acquisition. In addition, 479 lines experienced partial sell-offs, i.e., leading to a less than total cessation of operations by 1981 in the relevant industry category.

The basic question addressed here is, what financial performance pattern preceded sell-off? Was divestiture the sequitur to disappointing profitability, as suggested by our case studies, or was the typical divested unit not significantly different from retained operations? The

measure of profitability used is the ratio of operating income (before capital charges, extraordinary items, and income taxes) to end-of-period assets. The results are summarized in Table 1. All four years' data for manufacturing LBs are combined. For lines experiencing either total or partial sell-offs, each row measures the average operating income / assets percentages for LBs commencing a sell-off program the stated number of years following the period for which profits were recorded. Thus, the row entries for 3 years before sell-off include 1974 profits of LBs with initial 1977 sell-offs, 1975 profits of LBs with 1978 sell-offs, 1976 profits for LBs with 1979 sell-offs, and 1977 profits for LBs with 1980 sell-offs. In each row for either total (left-hand numerical column) or partial (right-hand) sell-offs, the first entry is the operating income average, the second entry (in parentheses) the number of observations, and the third entry (also in parentheses) the sampling error of the mean profit figure.

For the 10,912 cases without total or partial sell-offs, the average profit return was 13.93 percent, with a standard error of 0.17 percent. Throughout the seven years of pre- sell-off history, lines of business subjected to total sell-off had returns averaging 4.76 percent --
significantly less than those of non-divested lines.¹¹ In the third year before total sell-off began, profitability deteriorated sharply, turning negative in the year before sell-off.¹²

It might be conjectured that the deficient financial performance of divested units was inherited from the time when the units were acquired. This hypothesis receives no statistical support. For 215 Line

Table 1

**Average Operating Income as a Percentage of Assets
for Lines of Business with Sell-offs, by Interval
Between the Years of Profit Reports and Sell-off Initiation***

Years from Profit Report to First Sell-off	LBs with Total Sell-off	LBs with Partial Sell-off
7	8.77% (58) (2.94)	10.66% (57) (1.80)
6	9.32% (110) (1.99)	11.00% (104) (1.44)
5	8.29% (155) (1.38)	12.35% (155) (1.40)
4	7.07% (191) (1.24)	12.38% (189) (1.23)
3	3.46% (204) (1.14)	10.04% (218) (0.93)
2	2.93% (201) (1.15)	9.26% (226) (1.08)
1	-1.09% (210) (1.60)	9.72% (219) (0.97)
0	-0.29% (121) (2.27)	11.43% (198) (1.06)
< 0 (Profits reported after first sell-off)	7.49 (39) (3.74)	13.02 (238) (0.91)
Unknown Sell-Off Date	-4.35 (19) (5.13)	12.97 (147) (1.55)

*The values in parentheses report the number of observations and the standard error of the mean.

of Business company acquisitions that were subsequently sold off, it was possible to obtain profitability data for the reporting year prior to acquisition. The average pre-merger ratio of operating income to assets for those divested firms was insignificantly different from that for the previously discussed pre-merger sample of 634 firms, most of which were not divested, controlling also for acquired company size and the merger accounting method adopted. Thus, sell-offs during the 1970s do not in general appear to have been a facet of some "asset redeployment" plan contemplated at the time of acquisition. Rather, they are manifestations of failure. Something went wrong after acquisition.

The 7.49 percent profitability average for totally sold-off units in < 0 years, i.e., years after the first recorded sell-off occurred, warrants special consideration. This subset covers LBs for which divestiture proceeded in stages. It provides verification for our case study insight that the most seriously distressed components of a multi-unit line are sold off first, leaving the more profitable components for later "tidying-up" divestitures.

The data for LBs with only partial sell-offs by 1981 (right-hand numerical column) exhibit a somewhat different but plausible behavioral pattern. Their seven-year pre-divestiture profitability average was 10.64 percent, which is significantly lower than the non-divested line average of 13.93 percent, but diverges much less than the average for totally divested LBs. Two to three years before the first partial sell-off, profitability erodes. In the post-divestiture period (year < 0), the tumor had been excised and profitability returned to levels only slightly different from those of lines without recorded sell-offs.

The relatively large cohort of LBs with unknown sell-off dates (last line) mainly involved divestitures in the 1978-81 period, after Line of Business reporting ceased. For them, the average lag between profit reports and partial divestiture was probably three to four years -- too long to encompass the period of noticeable profit deterioration. Also, the difficulty of pinpointing divestiture dates may imply that the units sold off were relatively small, so that their impact on the profitability of the LBs to which they belonged may have been modest.

In sum, the evidence on sell-offs is unambiguous. Sell-off was characteristically a response to disappointing performance. With the excision of low-profit units and the retention of the stronger operations, the parent companies' average profitability rose.

The Profitability of Acquired Units

Approximately six percent of the manufacturing LBs with a merger history were fully divested during the 1974-77 period for which Line of Business profitability data were available. Many unsuccessful acquisitions had been sold off before then. According to W. T. Grimm Co. data for a population broader than the Line of Business company sample, "divisional" sell-off activity peaked in absolute terms in 1971 at 1,920 transactions, averaged 1,193 transactions per year in the 1974-77 interval, and declined to 767 transactions per year over 1978-81.¹³ We now analyze the sample for years on which Line of Business data were available, asking how profitable acquisitions were on average, taking into account both the successful units and the unsuccessful ones that had not yet been divested.

Our assessment of acquired units' basic profitability began by compiling exhaustive lists of acquisitions made between 1950 and 1977 by companies included in the FTC's Line of Business surveys. Each acquisition not known to have been sold off by 1977 was coded to the line(s) of business they entered (or originated). The information coded included acquisition dates, type of acquisition, accounting treatment, and the (often estimated) value of the assets acquired. When an acquired company's activities extended to two or more LBs, its assets were divided among them. In some cases, it was difficult to determine who acquired whom. This problem was handled by creating a special "merger of equals" coding for pooling-of-interests mergers in which the merging parties' pre-merger assets differed by no more than a factor of two.

Altogether, the 2,955 manufacturing LBs operated by Line of Business survey companies in 1977 and surviving diverse data quality control deletions received codings for 5,552 non>equals acquisitions and 270 mergers of equals. Of the 2,955 sample LBs, 717 had no recorded (non>equals) acquisitions, 723 were already occupied by the parent companies in 1950 and had subsequent acquisitions, and 1,515 were new to the parent since 1950 and had acquisitions (the first of which usually marked the parent's entry into that line).

As before, our measure of profitability is the ratio of operating income to end-of-period assets. However, in analyzing the impact of mergers on this variable, it is crucial to recognize the role merger accounting plays. Under pooling-of-interests accounting, the assets of the acquired entity are taken onto the acquirer's books at their pre-merger book value. Any premium (deficit) of the acquisition price

over book value is debited (credited) to the acquirer's stockholders' equity account. Under purchase accounting, the acquired assets are "stepped up" or written down to reflect the difference between their pre-merger book value and the purchase price. On purchase acquisitions, which tended to be less profitable on average pre-merger than pooling acquisitions, average premiums paid over book value were smaller than on poolings, but they tended to be positive. To the extent that positive premiums were paid, the use of purchase accounting implies higher average post-merger asset values and depreciation charges than with pooling-of-interests, all else equal. Thus, an identical acquisition will show lower post-merger operating income / assets ratios under purchase accounting than under pooling. Purchase acquisitions may also exhibit lower returns because their lower pre-merger profitability persisted into the post-merger period. To disentangle these effects, pooling and purchase acquisitions must be distinguished.

Our key merger history variables are therefore three. POOL is the ratio of the value of acquired non>equals assets treated as poolings to the total value of assets at the end of the year whose profits are analyzed. PURCH measures the ratio of non>equals assets acquired under purchase accounting to total end-of-year assets. Because one cannot have more than 100 percent merger origination of a line, and also to guard against possible extreme value biases, the ratio of assets acquired in an LB, under purchase plus pooling, to total assets for the year whose profits are being analyzed was truncated at 1. (Sensitivity tests showed this truncation assumption to have no significant impact on the results.)

Our third basic merger variable, EQUALS, has a value of unity if an LB experienced a merger of equals and zero otherwise.

The method of determining how merger activity affected profitability is multiple regression analysis. Using techniques that need not detain us in this non-technical exposition, each individual line's profits were related to the mean profit level in the four-digit industry category to which it belonged. Thus, industry-specific effects were controlled. Also controlled was the market share of the individual LBs. The "control group," then, is lines of equivalent market share in the same industry that had no acquisitions, or minimal acquisition activity. Nearly a fourth of all LBs in the 1977 analysis had zero acquisition activity, and for half, 15 percent or less of 1977 assets originated from acquisition. To simplify the presentation of results, we suppress the coefficients for the control variables and present only the coefficients for the merger effect variables. Coefficients significantly different from zero at the 90 percent statistical confidence level are marked with one asterisk; those significant at the 95 percent level or better with two asterisks.

With operating income as a percentage of assets as the dependent variable, the estimated merger effect coefficients are as follows for three years:

	1975	1976	1977
POOL	+1.25	-1.60	+3.36**
PURCH	-3.31**	-3.48**	-3.74**
EQUALS	+2.00*	+1.55	+2.29**
Mean full-sample profitability	11.7%	13.4%	13.9%

Taking 1977 as an example, the coefficients are interpreted in the following way. Moving from having had no pooling merger activity (POOL = 0) to having 1977 assets 100 percent pooling merger-originated (POOL = 1) raises baseline profitability on average by 3.36 percentage points, or 24 percent above the full-sample mean of 13.9 percent. Purchase accounting mergers, on the other hand, were much less profitable. Moving from no purchase merger assets (PURCH = 0) to all-purchase merger assets (PURCH = 1) reduces profits by 3.74 percentage points relative to non-merger LBs and by 7.10 percentage points (the algebraic difference between the POOL and PURCH coefficients) relative to pooling of interests mergers. Having had a merger of equals was associated in 1977 with profitability 2.29 percentage points higher on average than the no-merger control group.

The POOL coefficients are in some respects the most interesting, since, barring for the moment an important qualification, they are on the same asset accounting basis as no-merger control group lines and can be interpreted as an index of relative efficiency (holding industry effects and market share constant). POOL is small in 1975, a year of sharp but brief recession, negative in 1976, and significantly positive in the strong recovery year 1977. This evidence has several possible interpretations. The most agnostic view would be that the profitability effects of acquisition (again excluding mergers of equals) jump around a fair amount and, averaged over three years of the business cycle, are mildly positive. An interpretation that reads more into the apparent pattern would say that management of acquired companies had more trouble coping with the recession of 1975 than their industry peers in no-merger

lines, but through sell-offs and other changes, got their acts in order again by 1977 and then exhibited significantly superior baseline profitability. A third possibility is that the acquired companies were, again relative to their industry peers, unusually susceptible to business downturns, and indeed, this vulnerability may have been part of their owners' reason for entering a merger. However, this "selection bias" explanation is at odds with the pre-merger profitability evidence presented in Section II. The companies acquired in 1971, whose pre-merger profit results were for the recession year 1970, actually fared a bit better relative to their peers than did acquired companies whose pre-merger profits were recorded for the boom years 1967 and 1973.

Selection bias is important, however, in another way. Suppose we embrace an even more optimistic interpretation: that 1975 and 1976 were anomalies and that "normal" 1977 (with unemployment of 6.9 percent) best reflects the baseline profitability of acquired entities. Does it follow that the average merger yielded efficiencies (e.g., synergies)? Not necessarily, since baseline profits might also be high because the units acquired were of above-average earning power. This, of course, is what we found in our study of pre-merger profitability. In fact, compared to the average 9.8 percent pre-pooling-merger profit premia identified through our listing statement survey, the 3.36 percentage point POOL premium for 1977 implies a fall in post-merger profitability. On this point we shall expand in a moment.

The merger of equals coefficient EQUALS has an interpretation similar to that of POOL, but its statistically significant positive values are more consistent over the business cycle. They are also more plausibly

interpretable as evidence of merger-related synergies. Pre-merger operating income data were available for 45 of the 69 mergers of equals. After adjustment for business cycle influences, average operating income / assets in the last reporting period before merger was 12.1 percent for the larger of the partners, 14.5 percent for the smaller, and 12.6 percent for the weighted average of the two. The weighted average is slightly but statistically insignificantly below the 1975-77 all-sample average return of 13.3 percent. Thus, a modest increase in returns following mergers of equals is indicated. Conceivably, mergers of equals were more successful in raising baseline profitability because fewer managerial hierarchy tiers were superimposed upon their pre-merger organizations and because more managerial effort could be concentrated on making them work.

The PURCH coefficient shows how post-merger profits were reduced as a consequence of takeover premium-related asset writeups and increased depreciation. It also reflects the selection bias associated with the demonstrated inferior pre-merger earning power of purchase accounting acquisitions. For all three years, the PURCH coefficients are strongly negative, revealing post-merger returns lower on average than the acquiring companies realized in pre-1950 lines with no mergers or in lines developed through internal growth without the help of acquisitions. Given evidence that purchase acquisitions were no less profitable pre-merger than the all-manufacturing average, the PURCH effect must be interpreted as indicating that baseline profitability deteriorated and/or that, on average, acquirers paid takeover premiums above acquired firm book value sufficiently high to drive post-acquisition returns below the returns in their established merger-free businesses.

The premium effect is measured explicitly only for acquisitions subjected to purchase accounting. For pooling of interests acquisitions, takeover premiums are concealed in stockholders' equity account debits rather than asset account stepups. For a subsample of 1,409 manufacturing acquisitions on which comparable data were available, the consideration paid averaged 1.75 times the book value of assets for acquisitions treated as poolings, but only 1.05 times assets for purchase acquisitions.

Assuming this to be representative, consider an LB whose 1977 assets of \$100 million were 100 percent pooling merger-originated. Let the line's operating income be \$17.25 million, i.e., the 1977 all-sample average of 13.89 percent plus the 3.36 percent differential associated with 100 percent pooling merger origin. If a 75 percent takeover premium above book value had been paid, the acquirer's actual investment in the line would be \$175 million, not the \$100 million debited to asset accounts. Then the line's return under purchase accounting (ignoring added depreciation charges) would be $100 (17.25 / 175) = 9.86$ percent, or 7.4 percentage points below the return revealed under pooling accounting and well below all-sample averages.

Time Lag Effects

The results discussed thus far come from an analytic model assuming that mergers have equal profitability effects, no matter how long ago the acquisition was consummated. This assumption must be tested. The tests focused on 1977, the most "normal" year macroeconomically and the only one for which significant positive baseline (pooling) profitability effects were observed. Alternative linear and nonlinear lag structures were imposed upon the POOL and PURCH variables, and tests were conducted to see

which lag structure best explained profitability. The best-fitting lag structure (significantly better than the constant effects structure assumed thus far) was a simple linear structure in which the merger effects, and especially the POOL effects, decline, the greater was the time interval between 1977 and an LB's asset-weighted average year of acquisition. Using this structure, pooling of interests acquisitions consummated in 1976 yielded profits 9.1 percentage points above control group norms on average. For older acquisitions, e.g., those made in 1968, the differential had declined to 4.8 points. By 1959, the differential goes to zero and was negative for earlier years' acquisitions.

These results are extremely important. The largest POOL premiums (for 1976) are of roughly the same magnitude as those our pre-merger profit analysis shows acquirers to have inherited at the time of a pooling acquisition. After that, it is all down hill. The question is, why?

A benign interpretation would be that the declining profit effects reflect the quite natural tendency, abundantly documented by Dennis Mueller,¹⁴ for abnormally high (or low) profits to regress over time under most circumstances toward "normal" levels. This tendency would be reinforced if acquisition candidates chose a time of peak (and non-sustainable) profitability to fetch the highest possible acquisition price -- a phenomenon observed in some of our case studies.

Alternatively, baseline profits could have declined with longer post-merger experience because of the managerial control problems and "cash cow" behavior identified by our case studies. Three strands of statistical evidence support this interpretation. First, for a subsample of 67 lines

originating from pooling of interests mergers and with perfectly-matched pre- and post-acquisition profit data, 43 percent experienced an absolute decline in current-dollar profits, even though assets more than doubled on average. Second, in our sample, the average market share of acquisition-making LBs that had not been part of the parent's operations in 1950 was only slightly higher (at 2.1 percent) than the average market share (2.0 percent) of post-1950 LBs without any acquisitions. The latter were presumably started internally from a zero market share base some time after 1950. The former, though new to the parent since 1950, typically had much longer histories before their acquisition. It is at least striking that, despite their history, they had 1977 market shares only slightly higher on average than those of new internal start-ups. Third, Dennis Mueller has analyzed before- and after data quite independent of ours and found that lines with sizeable mergers, especially conglomerate acquisitions, experienced much more serious market share declines between 1950 and 1972 than a minimal-merger control group.¹⁵ The combination of market share decline evidence with profitability decline evidence points strongly toward managerial control loss and/or cash cow interpretations.

The Effects of Merger Type

This view is reinforced by a further analysis of how baseline (i.e., pooling of interests) merger profitability effects vary with the type of acquisition -- i.e., horizontal, vertical, conglomerate, and "related business." An acquisition was counted as horizontal if the acquirer had at least five years' prior experience in the same four-digit FTC industry category. For "related business" acquisitions, the acquirer had to have five years' prior experience in the encompassing two-digit manufacturing

industry group. In this way, an attempt was made to emphasize the accumulation of experience that could make the difference between well- and ill-informed management.

When the regression equation whose basic results (i.e., assuming constant effects over time) are presented on p. 000 supra were reestimated taking into account merger type, there was no significant difference among types in the PURCH coefficients. However, the pooling of interests profitability effects varied considerably, as the following values show:

Horizontal acquisitions	+ 4.18*
Related business acquisitions	+ 5.61**
Vertical acquisitions	+ 1.77
Conglomerate acquisitions	+ 1.18

The horizontal and related business acquisitions exhibit pooling profitability effects appreciably higher than those for the conglomerate and vertical acquisitions, and only the coefficients for the first two pass conventional statistical significance tests. Moreover, the related business effect is higher than the horizontal effect, suggesting that it is managerial experience, rather than monopoly power (plausible at best only for the horizontals), that distinguishes the two from more poorly performing conglomerate acquisitions. The relatively low profitability of vertical acquisitions is more surprising. It may be attributable to the low incidence of such acquisitions (only 11 percent of total acquired assets) or internal transfer pricing choices that shifted profits to other lines.¹⁶

Tender Offer Acquisitions

Our sample consists preponderantly of larger corporations, and the years 1975-77, on which our profitability analysis focuses, predicated the period when large, well-established companies were a common instigator or target of tender offer takeovers. Nevertheless, 150 of the 1977 sample LBs were taken over through tender offers, in 39 of which the successful tenderer's efforts had been opposed overtly by incumbent management. We exploit this limited subset to determine whether appreciable profitability impacts follow tender offer mergers.¹⁷

The lines acquired through tender offers were divided into three categories: 39 "hostile" acquisitions to which there had been active management opposition, 34 acquisitions made by an incumbent management-favored "white knight" following an offer opposed by management, and 77 "others" in which management maintained at least overtly a neutral position with respect to solitary tenders (62 cases) or multiple tenderers (15 cases). Controlling also for accounting method, 1977 asset fractions resulting from merger, market share, and other variables as in the analysis summarized on p. 21, the estimated tender offer effect coefficients for 1977 operating income as a percentage of assets are as follows:

	Three Effects Separated	Hostile and "Other" Offers Combined
Hostile	-2.97	-4.77**
"Other"	-5.59*	
White Knight	+1.38	+1.36

Results covering the years 1975 and 1976 (reported in a separate paper) were similar for the hostile and (with one minor exception) "other" takeovers, but the "white knight" coefficients moved from positive to negative. Over the three years together, having been subjected to a takeover of any sort was associated with a significant negative impact on profitability. It is conceivable that tender offers were biased toward companies of inferior profitability that persisted after takeover. In fact, however, the targets' average pre-merger profitability, adjusted to be macroeconomically comparable to the 1975-77 data, was 11.88 percent in the year preceding (or overlapping) the first tender offer announcement and 12.21 percent two years earlier. Both years' averages differ from the all-manufacturing average of 12.50 percent by statistically insignificant amounts. Thus, the average observed tendency was for operating income / assets ratios to decline following takeover through tender offer. Yet in view of the small sample size, there is a need for further research tapping the richer sample generated by the more recent proliferation. Unfortunately, the end of Line of Business reporting will render analyses such as ours difficult or impossible.

V. Conglomerate Mergers and the Stock Market

Recapitulating, large numbers of highly profitable enterprises were acquired by Line of Business sample corporations during the 1960s and early 1970s. Substantial takeover premiums were paid, the more so, the greater the acquired entities' pre-merger profitability was. Baseline (i.e., pooling of interests) profitability of the acquired units subse-

quently declined at an average rate of about 0.36 percentage points per year, with the sharpest profitability drops occurring for pure conglomerate acquisitions. Many lines suffered more severe profit erosion and were sold off in whole or in part, leaving the more profitable operations and raising company-wide profitability averages.

These events were reflected in an interesting way by movements in conglomerate corporation stock values. To explore this linkage, we track the common stock performance of the thirteen leading (and relatively more successful) conglomerate acquirers, defined according to the following criteria:

- 1) The company had at least 99 mergers recorded on the Federal Trade Commission's historical file for 1950-78.
- 2) The company's acquisitions were mainly conglomerate (rather than horizontal or vertical, as with some acquisition-prone natural resource companies).
- 3) The company was one of the 20 most active acquirers of manufacturing and mineral industry companies.

For each corporation, we assumed that a \$1,000 common stock investment was made in 1965 (before the conglomerate merger boom accelerated) or in 1968 (at the boom's peak).¹⁸ Stock splits and dividends were accounted for, and each year's cash dividends were assumed reinvested at mid-year. Accumulated market values were tallied as of June 30, or for holidays, on the first trading day before, each year. A similar procedure was followed to track the market value of a comparable investment (with dividends reinvested) in the Standard & Poor's 425 industrials portfolio. The results are summarized in Table 2.

Table 2

**Cumulated Stock Market Value of \$1,000 Initial Investments
in Thirteen Leading Conglomerates**

As always, how investors fared depends upon how good their timing was. If they bought into the thirteen budding conglomerates in 1965 (top half of the table), they did 3.6 times better than the S&P by 1968, when conglomerate mergers were viewed enthusiastically by the market, but only 86 percent as well in 1974. By 1983 they had recouped nicely, with a portfolio value 2.7 times that of the S&P (but only 1.6 times the S&P's value if they had excluded from their purchases the spectacularly successful Teledyne, omitted from the right-hand side of the table).

The picture (bottom half of the table) is quite different for investors who bought at the peak of the conglomerate merger wave in 1968. By 1974, their holdings had lost 56 percent of their value while S&P investors gained by 10 percent. Although the conglomerate investors' position improved greatly by 1983, they had still not recouped, with or without the Teledyne bonanza, to a position of parity with those who had invested more conservatively in the S&P portfolio.

These movements parallel in a crude way the chronology illuminated by our case studies and statistical analyses. In 1968, conglomerates were acquiring highly profitable entities, albeit at high premium prices. By 1974, their managerial indigestion problems had become painfully evident, they had begun selling off the least successful acquisitions, and their growth had slowed appreciably. By 1983, the sell-off programs had pruned out the least profitable units while retaining those that were on average most successful.

However, the violence of the market's reaction to these changes raises doubts about the quality of stock investors' foresight. Why were investors willing to pay \$63,009 in 1968 for conglomerate stocks that

would sell for only \$16,543 six years later? Were they carried away by
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Keynes' "animal spirits"? Or did they fail to foresee the cessation of profit growth and the managerial difficulties that would befall the conglomerates -- a failure that speaks poorly for the use of contemporary merger-related stock price valuations as an indicator of future
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profitability? And what about the depressed valuations prevailing in 1974 (and indeed all of the early 1970s)? Had the animal spirits now lurched toward excessive pessimism? Or did investors fail to foresee the management purges and widespread sell-offs that would restore profit growth for some conglomerates? Or did they foresee the coming share value growth, but discounted it -- e.g., at the 24 percent discount rate necessary to make the present value of \$144,482 in 1983 equal \$16,543 in 1974? At such a high discount rate, it must be noted, very few farsighted investment projects could pass muster. Quite generally, it is hard to conceive a non-tautological rationalization of the conglomerates' long-term stock price experience with the assumption that stock markets correctly forecasted the actual consequences of merger. If the market can err so badly in evaluating the leading conglomerate acquirers of the 1960s and 1970s, will it not err again?

The leading conglomerates' stock price experience between 1965 and 1983 is also troublesome in a more technical sense. As Table 3 shows, the distribution of individual companies' stock value growth was extremely skewed. Six conglomerates performed worse than the S&P 425, three did slightly better, three considerably better, and one (Teledyne) 16 times as

Table 3

1983 Value of a \$1,000 1965 Investment in Each of Thirteen
Leading Conglomerates or the S&P Industrials

Rank	Company	1983 Value
1	Teledyne	\$65,463
2	Whittaker	24,025
3	Gulf & Western	16,287
4	U.S. Industries	7,152
5	Textron	4,947
6	Walter Kidde	4,813
7	Chromalloy-American	4,672
	S&P 425 Industrials	4,106
8	Beatrice	3,992
9	Consolidated Foods	3,820
10	IT&T	3,625
11	Litton Industries	2,691
12	W. R. Grace	2,587
13	Genesco	408

well. The distribution of gains is similar to what one would expect from investing in individual high-technology company stocks -- a far cry from the risk-reducing performance that was supposed to come from pooling the business fortunes of numerous unrelated entities under one corporate mantle.²¹ Plainly, the conglomerates were something radically different from simple mutual funds. Rather, they appear to have been "asset plays" with unusually high risks in terms of both their economic prospects, assuming managerial control of constant quality, and the quality of the managerial control that would actually be achieved.

VI. Conclusion

In the long run, the stock price evidence shows, those who invested early in the leading conglomerates of the 1960s prospered. Perhaps all's well that ends well -- at least for the early birds. But this is too simple. Good companies were acquired, and on average, their profits and market shares declined following acquisition. A smaller but substantial subset of those good companies experienced traumatic difficulties, triggering sell-off to non-conglomerate organizations that could manage them more effectively. There was considerable distress and wreckage on the road to conglomerate riches. Left to be resolved are what economic historians call "counter-factual" questions. Would acquired company profits have deteriorated even without merger? Would the average acquired and then divested company have plunged into unprofitability had it retained its independence? Would the companies that did well under conglomerate ownership have fared as well independently, among other things receiving the injections of capital required to sustain their growth? Like all counter-factual questions, these cannot be answered confidently. On the negative side, it is clear from our case studies and many accounts in the press that eventually divested units experienced sometimes severe managerial problem-solving breakdowns aggravated by the conglomerate form of organization and ameliorated, at least partially, by a transition to simpler organizational forms. And Mueller's evidence of sharp market share declines following conglomerate merger is hard to reconcile with any "business as usual" hypothesis. On the positive side, the unanswered counter-factual is how much the units favored in capital allocation -- units that on average were highly profitable and had good

perceived growth prospects -- would have been held back had they been forced to obtain financing on the open market. If there would have been significant retardation, a policy counter-factual is also posed. One might be well-advised to correct the problem by working directly to perfect capital markets rather than embracing the conglomerate merger solution, with its clear negative-side control loss consequences.

That even after the pruning of many worst cases through sell-off, baseline (pooling of interests) profitability had declined on average, is hard to square with the hypothesis that conglomerate mergers were on balance efficiency-increasing. At the very least, the defense of that hypothesis would appear to demand a substantial injection of detailed evidence on how efficiency was raised more in the successful cases than it declined in the unsuccessful cases.

FOOTNOTES

1. A complete analysis will appear in David J. Ravenscraft and F. M. Scherer, Mergers, Sell-offs, and Economic Efficiency, book manuscript in preparation, as well as in several shorter articles.

2. H. G. Manne, "Mergers and the Market for Corporate Control," 73 Journal of Political Economy 110, 119-120 (April 1965). See also Donald Dewey, "Mergers and Cartels: Some Reservations About Policy," 51 American Economic Review Papers and Proceedings 255 (May 1961).

3. Peter O. Steiner, Mergers: Motives, Effects, Policies (University of Michigan Press, 1975), p. 188.

4. Testimony before the House Committee on the Judiciary, Subcommittee on Monopolies and Commercial Law, Mergers and Acquisitions, 97th Congress, first session (1981), p. 255.

5. Robert S. Harris, John F. Stewart, and Willard T. Carleton, "Financial Characteristics of Acquired Firms," in Michael Keenan and Lawrence J. White, Mergers and Acquisitions (Heath-Lexington, 1982), pp. 235-239.

6. The Line of Business company sample members made three-fourths of the acquisitions, calculated in terms of acquired asset value, on the FTC "large" merger list for the years 1950-76.

7. See Ravenscraft and Scherer, Mergers, Sell-offs, and Economic Efficiency, chapter 5.

8. The case study findings are summarized more fully in F. M. Scherer, "Mergers, Sell-offs, and Managerial Behavior," in L. G. Thomas, ed., [to be added in proof]. The case studies were, with acquirer given first and the acquired unit(s) after the hyphen, as follows: Philip Morris - American Safety Razor; Consolidated Foods - Robert Bruce; Bendix - Boise Cascade Home Systems division; Bendix - Caradco; Chromalloy-American - Sintercast; Chromalloy-American - various glass companies; Inco - ESB; U. S. Industries - Great Lakes Screw; AMF - Harley-Davidson; Beatrice Foods - Harman International; W. R. Grace - Letisse; Gulf & Western - Marquette Cement; Textron - Talon; Pennwalt - S. S. White; and Lykes - Youngstown Sheet & Tube.

9. The problem is not limited to conglomerates, on which our case study research focused. See the thoughtful discussion of the automobile group vice president's role in J. Patrick Wright (for John DeLorean), On a Clear Day You Can See General Motors (Grosse Pointe, MI: Wright, 1979), especially pp. 16-31, 112, 194-195, and 209-210.

10. On the theory, see e.g., George A. Steiner, Strategic Planning (New York: Free Press, 1979), Chapter 9; and William E. Cox, Jr., "Product Portfolio Strategy, Market Structure, and Performance," in Hans B. Thorelli, ed., Strategy + Structure = Performance (Bloomington: Indiana University Press, 1977), pp. 83-102.

11. The t-ratio in a test of equality of means is $(13.93 - 4.76) / 0.58 = 15.80$.

12. Note that for parent corporations, sell-off is an exit decision -- one of the most fundamental decisions in the economic theory of firm. The strong pattern of deteriorating and then negative profitability before this decision is implemented goes far to refute the allegation that Line of Business profitability data are economically meaningless. See George J. Benston, "The Validity of Profits-Structure Studies with Particular Reference to the FTC's Line of Business Data," 75 American Economic Review 37 (March 1985); and F. M. Scherer and seven others, "The Validity of Studies with Line of Business Data: Comment," forthcoming.

The observations for a zero lag stem from reporting year mismatches, e.g., when a company's fiscal year ended in June and sell-off occurred in November of the same calendar year, and also from remnants persisting after the first of multiple-sell-off stages occurred.

13. From W. T. Grimm & Co., Merger Summary (Chicago: January 1974 - January 1981), and Mergerstat Review (Chicago: 1981, 1982, and 1983).

14. Dennis Mueller, The Persistence of Profits (Cambridge University Press, forthcoming).

15. Dennis C. Mueller, "Mergers and Market Share," 67 Review of Economics and Statistics 259 (May 1985).

16. See David J. Ravenscraft, "Transfer Pricing and Profitability," manuscript, 1985.

17. This hypothesis was suggested to us by Michael Jensen, who urged an extension of an earlier analysis focusing only on overtly contested takeovers.

18. On levels and timing of manufacturing and mineral company acquisition activity, see F. M. Scherer, Industrial Market Structure and Economic Performance (rev. ed.; Houghton-Mifflin, 1980), p. 120.

19. John Maynard Keynes, The General Theory of Employment Interest and Money (New York: Harcourt, Brace, 1936), pp. 161-162. See also Robert J. Shiller, "Do Stock Prices Move Too Much To Be Justified by Subsequent Changes in Dividends?" 71 American Economic Review (June 1981), pp. 421-436; and the Shiller paper in this volume.

(footnote 19 continued) It should be recognized that the notions of stock market "efficiency," strong or weak, used to justify merger "event" studies do not imply that stock prices forecast the future accurately, but only that they impound all currently available information. The use of merger event-related short-run stock price movements to draw inferences about future merged firm performance goes beyond the standard market efficiency assumptions.

20. By June 30, 1968, the Williams Act, sometimes blamed for the conglomerates' stock price declines, had already cleared the Senate and was near passage. The Justice Department's new Merger Guidelines had been out for a month.

21. Indeed, the frequency distribution of conglomerates' 1983 stock values is well-characterized as Paretian with an alpha coefficient of approximately 0.6. This means that in its limit, the distribution has neither finite mean nor variance, making it difficult to apply conventional statistical tests in evaluations of long-run performance. The observed variability is only slightly less than for the profitability of individual patented inventions. See F. M. Scherer, Innovation and Growth: Schumpeterian Perspectives (Cambridge, MA: MIT Press, 1984), p. 176.