

Effects of Mergers and Acquisitions on the Economy: An Industrial Organization Perspective

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Once upon a time, study of the effects of mergers was clearly the province of specialists in industrial organization. But then, following two upheavals, this turf was lost. The first change was the shift (in the United States; less in other industrial countries) toward diversifying mergers and away from those combining competing or vertically related companies. The second change was the development of "event studies": the method of inferring the profitability of mergers *ex ante* from changes in stock-market values at the time when the transaction is announced.

The first change removed the bulk of acquisitions from categories for which microeconomic theory possesses strong models. We have lacked equally strong theories to explain the causes and the consequences of diversification. Some models can explain why diversifying mergers might improve the efficiency of resource use, while others show that they might facilitate collusive or rent-seeking behavior. But the yea-saying models have not attracted much interest except in business administration; and the nay-saying models, resting on stringent assumptions and hard to test empirically, have made only a modest impression.

The second change allowed the study of mergers to be annexed in a bloodless coup by the finance specialists. "Event studies" seem to have everything going for them. They focus directly on the primary question of whether mergers improve the use of scarce resources.¹ They avoid the vexing controlled-experiment problems that plague any attempt to infer the consequences of mergers from *ex post* data. And their authors possess deadly weapons for repelling skeptics who fear slippage between

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anticipations and outcomes, in the form of accumulated evidence failing to reject the hypothesis of financial-market efficiency.

One must admire the extensive findings about the market for corporate control that have emerged from the methodology of event studies.² The methodology's neatness certainly explains the widespread acceptance of their principal normative conclusion about mergers, especially diversifying mergers: that they create value in the eyes of shareholders, hence presumptively involve efficient reallocations of control over resources, and should therefore receive kindly treatment from public policy. Alas, this conclusion may well be wrong. In this paper I show that ex post evidence on the efficiency of mergers, especially that developed recently in the industrial organization camp, amounts to a convincing rejection of the presumed efficiency of mergers. Furthermore, recent developments in the study of corporate organization and governance help us understand why firms enthusiastically pursue mergers that in the end destroy value for their shareholders.

The first section briefly reviews the ex ante evidence from event studies that supports a favorable evaluation of the efficiency of mergers. It also considers what factors may explain the occurrence of mergers, consistent with the world view that most finance specialists find congenial: efficient capital markets and value-maximizing actors. Then we turn to the evidence on the efficiency of mergers from the field of industrial organization. There we find that the traditional modes of investigating their ex post productivity sustain a fragile case for them at best, and several important recent investigations provide strongly negative evidence. Then we turn to recent research on the economics of corporate governance for indications why nonproductive mergers may occur. The concluding section reviews some implications of this evidence for both business practice and public policy.

Event Studies and the Efficiency of Mergers

The Conventional Wisdom

The evidence from event studies on the efficiency of mergers is so extensive and consistent that a brief summary suffices. Acquisitions always entail a large gain for the target firm's shareholders over the market value of the freestanding entity. The proportional gain if anything has been rising over time and amounts to a premium of 30 percent for the change in

¹Even the contribution of horizontal mergers to monopolistic distortions can be tested by the expected value of rents that they create for competitors not involved in the merger.

²Jensen and Ruback (1983) provided an excellent summary of this literature. See Cook (1987) for an update.

corporate control via takeover, 20 percent via merger (Jensen and Ruback 1983). The average return to the bidding firm's shareholders is less clear. Some studies have found small but statistically significant gains, others small losses. It seems safe to conclude that the bidder's shareholders approximately break even. A bundle for the target's shareholders plus zero for the bidder's still sums to a bundle, supporting the conclusion that mergers create value and accordingly are economically efficient.

These results evidently invite the conclusion that mergers are profitable and therefore socially desirable.³ Yet the event studies themselves leave important doubts. Have we really established that the dollar value of the gain to bidder and target taken together is positive? Acquiring firms are typically much larger than their targets, and the sum of the target's proportionally large gain and a zero-mean and variable change in wealth for the bidder need not sum to a significant positive value. Firth (1980) found for British mergers that the mean sum is negative but insignificantly different from zero. For the United States, as Roll (1986) pointed out, relatively few studies have performed the exercise of calculating and testing the significance of mean dollar-value measures of gain, and those have obtained insignificant positive values.⁴ Although we shall continue to treat a positive *ex ante* dollar value of mergers as a stylized fact for purposes of this paper, the "fact" is not established with statistical confidence.

A second question arises for the bidding firms. If their shareholders on average get nothing from deals that absorb much managerial time and other transaction costs, what keeps the bidders in the game? It is suggested that a target (or its investment banker) can readily stage an auction that puts bidders into a Bertrand competition that drops all the surplus into the outstretched hands of its own shareholders. That may be true. However, if the *average* bidder's shareholders break even, that means they lose about half the time. Do we call this random noise, or do those shareholders correctly perceive that their wealth is impaired? This thought certainly raises a question about the motives of bidders' managements, even if it does not impugn the creation of value by the average merger.⁵

³Nobody denies the possibility that private and social values diverge. However, with diversifying mergers so prevalent, few treat the qualification as an important one. Tax factors have been taken more seriously as sources of private-social discrepancies in U.S. mergers; we return to them below.

⁴Jensen and Ruback (1983, pp. 22, 47) noted this qualification while maintaining that takeovers (if not necessarily mergers) on average generate net benefits.

⁵If mergers are productive but target firms can capture the full value of expected rents, then we should expect no relationship among mergers between the size of the gain to the target (due to the synergy) and the valuation of the merger by the bidder's shareholders (a random variable). Yet the evidence shows a strong negative relationship between them; see papers cited by Mueller (1977, pp. 329-30) and Roll (1986, pp. 202-6).

Some event studies have implicitly addressed this problem of what the bidder's shareholders are valuing. It is not necessarily the individual merger against the alternative of "do nothing." The financial resources expended on the merger at hand might have been used instead for another investment in physical or corporate assets that would also create value, though not so much. Or the market may value a bidder's larger strategic plan that entails a series of mergers and (perhaps) other transactions; then its valuation of the individual merger "event" rates this transaction not against "do nothing" but for its efficacy in pursuing the preannounced strategy. Empirical evidence has given this hypothesis only mixed support. Be that as it may, doubts about what the market is valuing *ex ante* do nibble ominously at the claimed sufficiency of these valuations for establishing the expected productivity of merger transactions.

A third concern with the event studies arises from the behavior of market valuations following the "event"—the announcement date of the merger or (in a few studies) its date of consummation. At the moment a merger is announced, securities-market participants react with what information they have at hand. As time passes, they can invest in securing more information, and also a good deal of previously confidential information is likely to be revealed. Expectations are likely to be refined, but no obvious bias should carry this adjustment either upward or downward. If the managers who contracted the merger hold insider information on its productivity, of course, the post-announcement valuation would rise.⁶ However, the studies that have followed post-announcement valuations for bidders have observed a change that is usually negative and (when negative) statistically significant. The studies range in temporal coverage from a month or so following the announcement to several years after the consummation.⁷ The contributors to Mueller's (1980) international study employed a similar procedure of following share values for acquiring firms, relative to matched enterprises or to the average firm in the acquirer's market. For five countries they found that the relative value of the bidder's shares rises in the year of the merger, then falls off to zero or below after three years. These negative second thoughts by bidders' shareholders seriously qualify the inferences that

⁶Roll (1986) pointed to another reason: an event putatively desired by shareholders that is probabilistic at the time of announcement later becomes certain.

⁷Besides the ones tabulated by Jensen and Ruback (1983), p. 21, see also Weidenbaum and Vogt (1987); they include Dodd (1980), Eger (1983), Choi and Philippatos (1984), and Magenheimer and Mueller (1987). Magenheimer and Mueller showed that the measured extent of the post-event decline may be quite sensitive to the way in which the cumulative residuals are estimated, and specifically the degree to which the estimation period picks up the premerger high returns that acquiring firms regularly exhibit.

the average bidding firm breaks even and the average merger creates value.⁸

Gains from Diversifying Mergers: Theory

If we accept the positive inference from event studies, the conclusion that mergers are productive may require no more theoretical foundation than the widely assumed disinclination of purposive individuals to leave currency on the footpath. Many explanations have accumulated as to why mergers should have a positive realized return to the decision-maker. Only a few of them, however, are consistent with well-functioning markets and value-maximizing behavior all around. Of these, the explanation that commands the most empirical support is "synergies" due to the sharing between activities of "lumpy" or intangible multiuse assets. Assume that the firm operating in a certain activity must employ some real asset that is efficiently acquired or enlarged only in discrete lumps, and that it cannot be readily shared between independent firms. An intangible asset such as production know-how is the limiting case in terms of its "excess capacity" for the firm utilizing it. Assume also that such a lumpy asset enters into the production functions for other activities as well. Then the firm holding the underutilized asset can employ it fully by adding another activity that requires the same asset. The opportunity cost for the firm entering this new activity will be less than for a de novo entrant who must recruit a unit of this asset at market cost. (Rubin (1973) provided a model of this expansion process.) Expansion either by acquisition or green-field entry could potentially realize this gain.

This "lumpy multiuse asset" model of diversification has a good deal of empirical support. Economic research has associated diversification with high levels of research and development activity (which creates intangible assets that sometimes have diverse and unpredictable uses), common customers, distribution systems, and channels for acquiring inputs (Lemelin 1982; MacDonald 1985). Stewart, Harris, and Carleton (1984) confirmed that diversifying mergers follow a similar pattern. Other support comes from the literature of business administration, where "related diversification" has often been seen as a profitable activity to be undertaken at an appropriate stage in the firm's evolution (for example, Rumelt 1974). Some investigators who analyzed market valuations of

⁸Krishna Palepu pointed out that it is easy for target shareholders to value a merger, but estimating its contribution to future cash flows of the bidding firm is a complex exercise (even apart from the opportunity-cost question mentioned above). The pattern of no abnormal return to the bidder on "event day" followed by negative returns thereafter could be read as a negative overall evaluation that emerges only after sharpened pencils have done their work.

mergers in cross section found that "related" mergers are valued more highly than those without any apparent synergistic potential.⁹

A second explanation of diversifying mergers' value lies in managerial efficiency. Corporate shareholders face a public-good problem in monitoring hired managers to assure that they obtain the maximum value from the firm's resources. The market for corporate control permits a single agent (at substantial transaction cost) to obtain sufficient voting shares to expel managers who follow suboptimal policies, and to restore the firm to the pinnacle of optimality. Because a "raider" normally cannot capture the full rent due to this expulsion (Grossman and Hart 1980), mergers to improve efficiency are arguably underprovided, and takeovers are all the more to be cherished.

No strong evidence on the prevalence and success of these managerial tune-ups has come to light. Event studies have found that the market valuation of the target firm declined for a period prior to the acquisition, suggesting managerial deficiencies that the incumbents are not expected to cure on their own (Jensen and Ruback 1983, p. 25).¹⁰ Yet negative abnormal returns could also stem from disturbances that depress the expected profitability of the firm's bundle of resources, but in ways remediable through consolidation with another firm. Both interpretations imply that mergers are productive. Still another explanation lies in arbitrage: when the target's share price is depressed (for whatever reason), acquisition is a cheap way to acquire its real assets. Because only a little *ex ante* evidence uniquely indicates that managerial overhaul motivates a merger (Palepu 1986), the hypothesis that mergers actually do shape up deficient management can really be tested only on *ex post* profit or productivity data. (See below.)

Managerial shape-up and the full use of lumpy, fungible assets are the most plausible theoretical bases for mergers' productivity that are consistent with efficient capital markets and wealth-maximizing behavior. Numerous other hypotheses have been put forth. (Mueller 1977 provided a compact survey.) Apart from those resting on market distortions (taxes; seeking rents from market power), they imply either that capital markets suffer imperfections (the price/earnings game) or that managers pursue goals other than maximizing value for shareholders (maximization of growth; reduction of risk to the firm's cash flow). One hypothesis on the borderline holds that a nonfinancial firm could run an efficient portfolio strategy by searching systematically for bargains in the market for corporate control. That hypothesis is implausible in well-

⁹You and others (1986), who do not confirm this hypothesis, cite earlier papers that failed to reject it.

¹⁰Consistent with this are studies showing that target firms on average have lower ratios of market to book value than matched firms not taken over (for example, Hindley 1970).

developed capital markets, where “attractive companies with good managements show up on everyone’s computer screen and attract top dollar in terms of acquisition premium” (Porter 1987). Another borderline hypothesis holds that, by dint of expertise and objectivity, a multibusiness firm’s central administrative office can shunt cash flows more effectively among controlled businesses than could the capital markets interacting with independent business managements. That hypothesis gets a boost from the return to respectability of the “pecking order” hypothesis of corporate finance, which concludes that managers (for several reasons) assign lower shadow prices to internally generated funds than to those obtained externally (new borrowings or equity issues). For example, external borrowings may entail transaction costs associated with problems of agency that can be avoided or reduced if the bidder not only transfers surplus cash flows to the target but also assumes supervisory control over their use.

In short, if one infers from event studies that value-maximizing corporate managers make intendedly rational decisions, there is no shortage of models to explain why mergers that are neither horizontal nor vertical could represent productive uses of resources. Accordingly, a skeptic who suspects (or finds) that a substantial proportion of mergers are unproductive can base his doubts on two foundations. The bidding managers may fail to maximize expected value, either because other motives dominate their preferences or because an unrecognized bias blights their expectations. Or, discrepancies between private and social valuations of merged firms’ cash flows may make mergers profitable but socially unproductive. The *ex post* evidence on mergers’ profitability, to which we now turn, is crucial for distinguishing between these alternatives.

Productivity of Mergers: Ex Post Evidence

Ex post studies of mergers’ effects may have been overshadowed by the event-study methodology, but important evidence has nonetheless been accumulating. Furthermore, most recent contributions are resoundingly negative on the average productivity of mergers and sharply at variance with the findings of the event studies. We first review evidence from studies of realized profits and productivity levels, then highlight several new studies with strongly negative import.

Evidence on Realized Profit and Productivity

Many *ex post* appraisals were made of the profitability or productivity of mergers completed in the United States during the 1950s and

1960s. While not particularly decisive, they were not on balance blatantly inconsistent with the positive conclusion of the later event studies.¹¹ Acquiring firms during the 1950s appeared to attain no excess profits from their efforts, a result that is of course consistent with real gains that just offset premiums paid to target firms' shareholders. Reid's extensive study (1968) concluded that the profit performance (several measures) of acquiring firms decreased with the extent of their merging activity, but the later evidence took a more favorable turn. Weston and Mansinghka (1971) concluded that the acquisitive conglomerates of the 1960s began the period earning profits below those of a control group (due to capital sunk in declining industries) but pulled themselves up to equality with the control group. They attributed the apparent gain in productivity to the more aggressive use of leverage, substituting tax-deductible debt for equity and thereby transferring revenue from the U.S. Treasury to the owners of capital. The targets' managers apparently sinned by underexploiting their borrowing power.

Later research on postmerger movements of market valuations also underlined the importance of leverage increases: Choi and Philippatos (1983, 1984) found negative changes in the postmerger value of the bidder to occur in acquisitions that were unrelated (that is, had no obvious basis for real synergy) and entailed no substantial increase in leverage.¹² The evidence on the average outcome of mergers for acquiring firms took a nosedive after macroeconomic conditions in the early 1970s brought down the acquisitive conglomerates (Mueller 1977, pp. 323–5). Thus the *ex post* evidence for the United States indicates overall that acquirers realized little profit, and what they did obtain came mainly in a private but not a social form; but the premiums to target shareholders stand as unimpugned gains.

Great Britain has been the site of numerous studies of the results of mergers. While their findings may not apply to the United States or other countries, their scope and character warrant a review. Meeks (1977) compared the actual profitability of merged companies and their premerger components with the average of all companies classified to their industries. In the three years preceding the acquisition, the acquirers were at least one-fifth more profitable than their industries, while their targets were about normally profitable (which of course questions the managerial shape-up hypothesis). After the merger, especially in the third through the sixth subsequent years, the average normalized profitability of the consolidated enterprise was significantly negative, with approximately 60 percent of the sampled acquirers showing

¹¹The relevant studies were surveyed by Steiner (1975, chap. 8) and Mueller (1977).

¹²Evidence from other countries agrees on this point. See Singh (1971, pp. 160–1) and Mueller (1980, pp. 302–3).

losses.¹³ The deterioration is not associated in a simple way with mergers that represent far-flung diversifications for the bidder, or with the size of the target relative to the acquirer.

The British literature also includes two close investigations of the effects of mergers on the surviving firm's productivity. Newbould (1970) intensively explored the actions that acquirers undertook to integrate and utilize the assets absorbed in 38 mergers. Because these mergers were horizontal, they should have provided the maximum opportunity for synergistic gains. He found that a small minority of acquirers did obtain each of several types of gains; overall, he concluded that half his sample realized no gain or very little, the other half medium to high gains. He also found that ingesting acquisitions took considerable effort from the bidder's management. Cowling and others (1980) also studied productivity changes occurring in largely horizontal mergers in Britain, using an efficiency measure that boils down to the profit margin on sales adjusted for changes in input and output prices. None of nine mergers that were studied intensively (Cowling and others 1980, chap. 5) exhibited extensive gains in efficiency, and two-thirds showed extensive declines in the few years following the merger—declines that suggest substantial transition costs. Other intensive studies of mergers in the engineering and brewing industries (chaps. 6, 7) were no more positive.

In conclusion, the ex post studies of the performance of acquiring companies in the United States provide little positive evidence for the productivity of mergers, while the British evidence shows specifically that any gains seem to be erased by transition costs. Although some studies of mergers in Britain have also painted a less rosy picture (Firth 1980; compare Franks and Harris 1986) than their American counterparts, the British ex post evidence is not obviously irrelevant to the United States.

Control Changes and Market Shares

We now turn to the first of three recent studies that are particularly negative on mergers. Mueller (1985) drew upon surveys taken by the Federal Trade Commission in 1950 and 1972 of shipments by the 1,000 largest companies in narrowly defined 5-digit product classes. He focused upon 209 companies in the 1950 study that were acquired by 123 others included in the 1,000-largest group in both years. Thus, he could observe market shares in both years for business units that did and did

¹³Meeks adjusted the acquirers' profits to eliminate premiums paid for the target's assets. He also deleted 20 outliers from his sample of 233 observations; if they are retained, the apparent decline in postmerger relative profitability is much larger than the 4 to 10 percent reported after their elimination. His results are consistent with earlier studies by Singh (1971) and Utton (1974).

not undergo changes in control. His data imply that an unacquired business on average retained 88 percent of its 1950 market share in 1972, while an acquired one retained only 18 percent! Part of the decline could well have taken place before the changes in control, which of course were distributed over the period. However, the size of the declines coupled with the relatively weak evidence of debilitated premerger profits of target firms (Ravenscraft and Scherer 1987, chap. 3) leave little doubt that significant declines in market shares followed changes in control.

The sample included both diversifying and horizontal mergers, and the latter were examined separately for the theoretical reason that a horizontal acquisition undertaken to exploit market power must (on Cournot assumptions) give up some market share in order to attain its goal. The share losses for horizontal acquisitions were indeed even larger than for diversifying ones, but an enormous decline remains for the latter.

Mueller's results are naturally subject to various qualifications, such as mergers (by both the acquiring and the control firms) outside of the 1,000-largest sample. However, the dramatic size of the share declines seems blatantly inconsistent with any persistent efficiency gain from mergers, implying instead that enterprises seeking to run acquired business units on average underperform their previous specialized managers, or at best fail to improve on their records.

Business-Unit Profitability and Divested Acquisitions

In the early 1970s not a few of the "go-go conglomerates" of the 1960s were dismantled, and late in the decade it became a commonplace observation that many acquired business units were being resold or re-established as independent firms (Porter 1987). On the face of it, firms divesting businesses that they have acquired need not be burying their mistakes. On the one hand, some gains from merger are one-shot. The badly run business can be bought, its managerial cadre shaken up, and turned loose again as an independent entity. The business that benefits from receiving an infusion of intangibles from its acquirer or supplying them to the acquirer can also be turned loose once it has received the indicated transfusion. The acquirer might as well perform the value-creating deed and then capitalize the value of its achievement. Divestments, in principle, need not indicate failed mergers. On the other hand, the bumbling acquirer who has spoiled the profitability of a good business can rectify its mistake by reselling the unit only if the damage is temporary and reversible by a management with a greener thumb. Otherwise, the loss is unavoidable and can be realized but not reversed by selling the withered acquisition.

With these points recognized, the observer is nonetheless impressed with the many doleful tales: "We bought Business X but then found out we didn't know how to run it, and so are putting it back on the market." Ravenscraft and Scherer (1987, chap. 5) undertook a series of case studies of acquired businesses that went through a divestment cycle, confirming this conventional wisdom from the business press. Some acquirers tripped over a "lemons" problem, learning after the transaction of substantial problems with the acquired business that they had not previously spotted. The acquirer's managerial outsiders then were ineffective at providing a fix. Yet the opportunity cost of managerial effort was high and figured as strongly in the divestment decision as the opportunity cost of funds. The cases are consistent with the view that multibusiness companies have certain repertoires of skills and control/evaluation/reward structures that work well for a subset of businesses but are apt to fumble when extended into new areas.

In their statistical analysis, Ravenscraft and Scherer (1987, chaps. 3, 4) used the Federal Trade Commission's Line of Business data for an intensive study of changes in profitability of narrowly defined business units that had undergone changes in control, with special attention to the occurrence of sell-offs. By means of the 1950 FTC survey (also used by Mueller), they were able to identify businesses of the large companies responding to the 1977 Line of Business survey that had experienced changes in control. An important dividend of this study is information on the premerger profitability of many target firms too small to be publicly traded. It turns out these small units were highly profitable, while profits of larger acquired businesses were not substantially below average (a finding that agrees with other investigators). In assessing the profitability of business units that had been acquired, they controlled for profit opportunities either with a fixed-effects model or with the standard exogenous variables indicating profit opportunities.¹⁴ Their evidence clearly shows that acquired businesses suffered a substantial deterioration of profitability. In their most carefully constrained sample, the profitability during 1974-77 of business units acquired in single mergers was down by one-half from their premerger profitability; yet their rates of asset growth were rapid, so they were not being milked as cash cows.

Ravenscraft and Scherer found that during 1974-81 one-fifth of the business units reporting Line of Business data during 1974-77 were sold off. At the earliest time they could be observed (seven years before sell-off), these units' profits were 66 percent below the average for all reporting units, and they tended strongly toward negative values as the day of

¹⁴A distinctive feature of this study by Ravenscraft and Scherer is its careful attention to the effect of a merger's accounting treatment on the subsequent measurement of the real profitability of the acquired assets.

expulsion approached. The pre-acquisition profits of these units were no different from those of acquired businesses not sold off during this period. Sell-off was more likely for businesses that the owner had acquired since 1950 and for those diversified from the parent's industrial base.

Thus, the important Ravenscraft-Scherer study shows that mergers on average had substantial negative effects on the real profitability of acquired business units, and that the booming market in corporate divisions is importantly fueled by diversified companies that are disposing of their worst mistakes.

Technical Efficiency and Corporate Diversification

The third recent study to question the productivity of mergers is one that I am completing in collaboration with David R. Barton. We use the methodology of stochastic frontier production functions to assess the extent to which plants classified to various 4-digit U.S. manufacturing industries in 1977 displayed productivity levels below the attainable frontier. The methodology proceeds from the standard statistical estimation of a production function, but it assumes that the error term comprises two components, the usual normally distributed random error and another asymmetrically distributed (half-normal, for example) component indicating the dispersion of inefficient plants below the frontier. The observed residual—the sum of these two components—is expected to have a skewed distribution, a prediction confirmed by the data for a satisfyingly high proportion of industries. The variance of the one-sided distribution indicating technical inefficiency can be inferred under quite general assumptions.

Our objective was to discover the average extent of technical inefficiency and, even more, to determine what factors explain its variation from industry to industry. Our interest in the average evaporated when we discovered that the several reasonable ways of expressing it in a form comparable among industries yield wildly divergent results. Fortunately, interindustry differences in these measures are highly correlated despite their different means. We confirmed a number of hypotheses—the important one for present purposes being that technical efficiency decreases significantly as the extent of corporate diversification increases. We used two measures of this end product of mergers. The extent of inbound diversification is inferred from the proportion of shipments that emanate from plants classified to the industry at hand controlled by firms based in other industries. The extent of outbound diversification is measured by the proportion of shipments by firms classified to this industry emanating from plants which they control that are classified to other industries. The sum of these measures has a highly significant negative effect on the industry's technical efficiency, as does the measure

of inbound diversification by itself. Outbound diversification takes a smaller coefficient and is only marginally significant statistically. This pattern is consistent with the hypothesis that multibusiness companies do a poor job of managing business units that are remote from their industrial base, and that efforts to do so have a negative though less substantial and predictable effect on the efficiency of their base activities.

The obvious negative implications of this analysis for diversifying mergers require careful qualification. First, we cannot distinguish between diversification attained by merger and by other means. Second, while the statistical association between diversification and inefficiency is strong, the methodology does not specifically identify the plants of diversified companies as the ones that bring up the rear of the productivity distribution. A third qualification, which we could address with our data, lies in the facts that (1) research-intensive industries *appear* technically inefficient (because of incompletely diffused innovations and competitors' uneven success in the inventive race), and (2) diversification and research intensity are strongly associated, as we know from other evidence. We allowed the effect of inbound diversification on technical efficiency to differ between industries with high and low ratios of research and development outlays to sales, finding that diversification erodes efficiency in both groups but more in the low-R&D sector. Thus, in context of the studies by Mueller (1985) and Ravenscraft and Scherer (1987) summarized above, these results seem to add substantially to the negative evidence on the ex post efficiency of mergers. In particular, they indicate substantial declines in the real productivity of acquired assets, not merely that acquirers fail to create enough value to justify their acquisition premiums.

Managerial Transaction Costs

Popular discussion has flagged another possible source of inefficiencies from mergers that has not been documented in the research literature. It is that merger activity distracts managers excessively from maximizing the productivity of the resources that they currently supervise. The threat of acquisition is supposed to constrain managers to deploying resources for short-run payouts, implying that problems of agency and asymmetrical information between managers and the financial markets keep the managers from maximizing the value of the firm over a long time horizon. The evidence that we have documents the high effort-cost of effecting mergers for acquiring managers (Newbould 1970), and a good deal of casual evidence suggests that the productivity of an acquired firm drops sharply in the short run while everyone conjectures on the course of the axe's descent. However, the best attempt to find a specific embodiment of these costs—a negative effect of merger

activity on the level of research and development outlays (Hall 1987)—came up with nothing. This hypothesis remains open.

Tax Incentives for Mergers

While our concern in this paper is not chiefly with discrepancies between mergers' public and private returns, we can note some recent evidence from Auerbach and Reishus (1987a, 1987b) on the effects of taxation on the pecuniary gains from mergers. They sampled 322 acquisitions of publicly traded companies, mostly during 1976–82, generating (1987a) direct measures of the sizes of benefits stemming from various tax provisions. The tax-loss carryforwards of one company can be used to offset taxable earnings of the other. This practice they found present in about one-fifth of all mergers, with the average benefit 10.5 percent of the value of the acquired firm—substantial in relation to the premium paid for control. Also significant although harder to measure is the gain from writing up the depreciable basis of the acquired property—a small gain in their estimation but subject to substantial underestimation. For their time period, however, they did not confirm the evidence from earlier periods (summarized by Weston 1981, pp. 30–33) that mergers were important occasions for increasing the acquirer's leverage. During 1976–82, they note, leverage increases were common among nonmerging firms.

Auerbach and Reishus also (1987b) sought to discriminate between the tax-related opportunities of merging and nonmerging firms. The influence of tax-loss carryforwards was significant in some specifications but not economically important; no robust influence of write-up opportunities was found. Thus, the tax motives for mergers seem to be quantitatively substantial but not demonstrably important among the factors inducing corporate mergers.

What To Make of It?

We have a conundrum. *Ex ante*, mergers appear to create value for bidder and target together that is substantial relative to the premerger worth of the target firm. That is, the financial markets appear to believe that bidders can wring a *lot* more value from the typical target's assets. *Ex post*, recent studies run exactly in the opposite direction, indicating that mergers reduce the real profitability of acquired business units, shrivel their market shares, and increase the intra-industry dispersion of plants' productivity levels.

Attempts to reconcile these results could proceed along several lines. One might ask how, if the financial markets are so smart, they can

be so apparently wrong. I duck this issue except to recall a colleague's formulation of adaptive expectations: "People do pretty stupid things, but they wise up eventually." It is more fruitful to proceed in the direction favored by industrial organization economists, namely, to examine the cross-section variance of merger experience for clues as to why some mergers yield more value than others. Most event studies and some ex post assessments of mergers' value have emphasized average experience and not the variance of cases and the factors explaining it. Clearly, not all cats are black, nor are all mergers bad. If mergers create value *ex ante*, it remains true that at least a large minority of acquiring firms' shareholders suffer losses in value. If average market valuations of acquiring companies drop off after the acquisition, it remains true that around 40 percent of them increase. Our ultimate question thus is what explains those mergers that work out badly, or which ones were assessed with inadequate pessimism at the time of announcement.

Recent work on managerial behavior certainly supplies part of the answer. Jensen (1986) hurled down the charge that managers can gain utility from diverting "free cash flow" to projects that yield low expected returns but provide various rewards to the firm's managerial cadre. He thus restates a traditional concern of industrial organization with the "split between ownership and control" (Berle and Means) and the "exercise of managerial utility" (Williamson).¹⁵ If unproductive mergers may result from a bargain between shareholders and managers that is incomplete, or incompletely monitored, then we have at the least a basis for explaining why value-destroying mergers can occur.

That managerial behavior can affect mergers is usually heard nowadays in a different context. The spotlight falls on target-firm managers, because golden parachutes, greenmail, poison pills, and other feverish contrivances may function to preserve managerial rents at the expense of shareholders.¹⁶ Of course, less cynical explanations also abound, for these devices may also serve as ploys for getting the shareholders a better deal, guarantees of postponed managerial compensation against expropriation, or other such impeccable roles. However those compet-

¹⁵One might suggest that Jensen reprises a tune heard often before in earlier research on mergers: they achieve growth for the sake of opportunities for the managerial cadre or the pecuniary benefits growth provides them; mergers reduce risk not to the shareholders but to employees whose utility diminishes with the variance of outcomes for the firm; mergers that enlarge the firm also make its independence—and its top managers' jobs—more defensible against would-be acquirers. See, for example, Reid (1968), Newbould (1970), and Mueller (1977). For evidence associating mergers with the compensation contracts of bidders' managements, see Firth (1980), Larcker (1983), and Lewellen, Loderer, and Rosenfeld (1985).

¹⁶For example, Morck, Shleifer, and Vishny (1987) found clear evidence that a target management hostile to a takeover was apt to be underperforming (low market/book value) and have a small equity stake in the firm.

ing hypotheses may be resolved, much less attention has gone to managerial behavior by bidders' managers. Nonetheless, what we have does lay significant blame at that door. You and others (1986) investigated in cross section the excess returns to bidding firms' shareholders and found that shareholders fare worse, the smaller is the proportion of the bidder's shares held by managers and directors, and the larger the proportion of the board of directors composed of insiders. This result ties the diversion of "free cash flow" specifically to managerial incentive structures and the effectiveness of the board as a monitor on shareholders' behalf.

Other evidence also supports the hypothesis that free cash flow provides a major opportunity for bidding firms' managers to divert funds to low-value uses. A series of papers beginning with Baumol and others (1970) investigated the rate of return imputed to cash flows invested by large, mature corporations, finding it very low indeed. This result by itself does not decisively point to managerial behavior, because of the advantage to (some) shareholders of converting potential dividends into (then) more lightly taxed capital gains. But it is consistent with Jensen's hypothesis of contention over free cash flow, as well as with the diffuse evidence that acquiring firms tend to be cash-rich.¹⁷

Conclusions and Implications for Industrial Organization and Market Performance

Conclusions

We have reached the following conclusions:

(1) Evidence from event studies has been widely read as confirming the efficiency of the typical corporate merger. While it does confirm substantial gains to the owners of target firms, the evidence for significant gain to target and bidder together is in fact thin.

(2) Theoretical bases exist for synergistic gains from mergers, outside of those between horizontally or vertically related firms, but little evidence connects the empirical achievement of these gains to merger transactions.

(3) The thrust of evidence accumulated in the past on the ex post profitability of mergers is that the average acquiring firm at best realizes no net profit on its consolidated assets.¹⁸

¹⁷The tendency for bidding firms to enjoy positive excess returns in the months before a merger may be read as evidence that good news resulting in higher earnings causes managers to undertake a spending spree on mergers (Franks and Harris 1986).

¹⁸Depending on accounting practices and the method of measuring profitability, these studies may indicate either that mergers create no value at all, or that the gains do not exceed the acquisition premium.

(4) Recent studies show that business units that have been through changes in control on average suffer substantial declines in profitability and losses in market share; industries with many such business units show enlarged gaps between average and best-practice plant productivity levels.

(5) There has been some concern that utility maximization by target managers precludes beneficial mergers. Less appreciated until recently has been the evidence that the managers who make acquisitions that destroy wealth for their shareholders are those in a position to pursue goals other than their shareholders' welfare.

Implications

These results have numerous implications for economic behavior and public policy. We can start with issues of corporate governance and management. It is hard to state the implications for business managers, when one is unsure whether they are part of the problem or part of the solution. Roll's (1986) assessment suggests managers require a stern lecture on the sin of hubris, with an excursion into such statistical issues as the winner's curse and the importance of relying on available a posteriori evidence (on the proportion of mergers that succeed) and not just subjective judgments on the proposal at hand (*we can do it!*).

However, other evidence (You and others 1986) suggests that the problem lies in the agency relationship between managers and shareholders. We know that a "clean" story can be told about this bargain: shareholders know *ex ante* that managers' utility embraces the policies that they are allowed to pursue, and so the owners offer a compensation package that optimally trades off pecuniary compensation against the managers' scope for actions that increase their utility at the expense of shareholders' wealth. The trouble is that owners who would monitor managers *ex post* (raiders included) face significant transaction costs. Furthermore, finding real-life counterparts of these fictive corporate charters is no easy task—they fall to hand more readily in the literature on corporate governance than in the file cabinets of Wilmington, Delaware.

At this point public policy becomes relevant. While I shall not review the possibilities here, a case certainly stands for tax and other policies that encourage managers to return free cash flow to shareholders (through dividends and stock repurchases) rather than invest it in mergers and other low-yield projects.

Economists and others have been concerned with diverse possible consequences of mergers that so far have gone unmentioned in this paper. They may increase concentration, raise collusive potential (even across markets), aid the rationalization of excess capacity, make firms

more effective in competing with large foreign rivals, and so on. I have put these questions aside because of the primacy of the question whether mergers increase the productivity of resources. If assets subjected to a change in corporate control cannot be used effectively, the rug is snapped smartly from beneath any hypothesized consequence of mergers that depends upon value-maximizing behavior by the merging firm. With that precondition in doubt, let me offer a few (no doubt high-handed) propositions about mergers' effects on industrial organization:

(1) Outside the United States where horizontal mergers are much more prevalent, the same studies that cast doubt on their positive contribution to resource productivity confirm their traditionally expected effects on price (for example, Cowling and others 1980). Williamson's (1968) trade-off between allocative efficiency and cost minimization may be no trade-off at all.

(2) Some event studies have claimed that horizontal mergers do not have monopolistic effects, because competitors' share values do not rise as they would if the merged firm were expected to contract output or hold the price umbrella a little higher. Could these shareholders appreciate (as Newbould 1970 found) that their own managers might react to a competitor's bad merger by undertaking a bad merger of their own?

(3) Is there any evidence to support the widespread faith that national firms enlarged through mergers become more effective at dealing with their overseas rivals? I shall simply assert that I have never seen such a case convincingly documented.¹⁹ More to the point, an extensive project on the bases for success of national industries in international markets, now being completed by Michael E. Porter, reveals on generous interpretation two cases out of 110 in which a firm with effective rivalry in its home market absent or suppressed has gone on to triumph against overseas rivals.

(4) Are horizontal mergers effective for rationalizing resources in contracting industries? This is the one form of asset redeployment for which mergers have shown some aptitude (for example, Cowling and others 1980, chap. 6). The closures and transfers of facilities that mergers effect could in principle be done in other ways, but a merger transaction may sometimes serve to upset obsolete but rent-yielding contracts and end bargaining stalemates more effectively than other methods of recontracting.

¹⁹Those who put it forth display no familiarity with the Cournot-based proposition that a consolidated firm in quest of maximum profits will produce less than its erstwhile independent components.

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Discussion

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The title of Richard Caves's paper is "The Effects of Mergers and Acquisitions on the Economy." However, the bulk of the paper deals with a review of the empirical evidence concerning the effects of these transactions on the profitability of the combining firms.

Economists and others have been concerned with diverse possible consequences of mergers that so far have gone unmentioned in this paper. They may increase concentration, raise collusive potential (even across markets), aid the rationalization of excess capacity, make firms more active in competing with large foreign rivals, and so on. I have put these questions aside because of the primacy of the question whether mergers increase the productivity of resources. If assets subjected to a change in corporate control cannot be used effectively, the rug is snapped smartly from beneath any hypothesized consequence of mergers that depends upon value-maximizing behavior by the merging firm (Caves 1987).

In other words, before one can argue that corporate mergers increase social welfare, one must first show that these transactions increase the value or productivity of the assets of the combining firms. I wholeheartedly agree with this premise but strongly disagree with Caves's interpretation of the existing evidence.

Caves begins his inquiry into the profitability of corporate mergers and acquisitions with a critical examination of the empirical evidence provided by financial economics. In his review of so-called "event studies," he readily admits that this body of empirical evidence universally shows that corporate acquisitions reallocate corporate resources to higher-valued uses.

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The evidence from event studies on the efficiency of mergers is so extensive and consistent that a brief summary suffices. Acquisitions always entail a large gain for the target firm's shareholders over the market value of the free-standing entity. . . . The average return to the bidding firm's shareholders is less clear. Some studies have found small but statistically significant gains, others small losses. It seems safe to conclude that the bidder's shareholders approximately break even. A bundle for the target's shareholders plus zero for the bidder's still sums to a bundle, supporting the conclusion that mergers create value and accordingly are economically efficient (Caves 1987).

This passage serves as an adequate summary of empirical work from the field of financial economics. Moreover, Caves is correct in pointing out that, to date, event studies have yet to establish that the dollar value of the gain to the target and bidder taken together is positive. I am sure that he will be pleased to learn that I have recently completed a study with Professors Desai and Kim that attempts to fill this void in the empirical literature (Bradley, Desai, and Kim 1987).

In this paper we estimate the combined return to matched pairs of targets and bidders involved in interfirm tender offers over the period 1962–84. Our sample consists of all successful tender offers where both the target and acquiring firms were listed on either the New York Stock Exchange or the American Stock Exchange at the time of the offer. Our selection criteria yield a sample of 236 successful combinations.

The major finding of the study is that the average successful tender offer generates a statistically significant 7.4 percent revaluation of the combined resources of the two firms. This 7.4 percent translates into an average value creation of \$117 million, stated in December 1984 dollars. Our subperiod analysis reveals that the percentage synergistic gain created by successful offers has remained remarkably constant over time. However, the average dollar gain created by the offers in the 1981–84 period is more than double the gain created in the earlier periods. The average synergistic gain created by these 1981–84 tender offers is in excess of \$218 million because the average target is three times larger than it was in the early 1960s. We also find that the gains to target stockholders have increased over time, whereas those to acquiring firms have decreased. In fact in the 1981–84 subperiod, the stockholders of acquiring firms suffered a significant capital loss of almost 3 percent. However, the total gain to these acquisitions is a significant 8 percent. This result demonstrates the danger of examining the returns to acquiring firms in isolation. While there is evidence that the acquirers in the most recent period paid too much for the targets they acquired, these acquisitions still created significant synergistic gains.

Caves characterizes event studies as providing *ex ante* evidence regarding the efficiency of corporate mergers and acquisitions. The sec-

ond part of his paper is a review of what he terms *ex post* studies from the field of industrial organization. These studies involve measuring the effects of mergers and acquisitions on the performance of acquiring firms using the more traditional standards of industrial organization: accounting numbers, market share, and technological efficiency. Before I comment on the particular studies that Caves cites, let me note from the outset that I think that this area of research is very important if we are ever going to understand the nature of corporate combinations. Examining the *ex post* performance of acquiring firms will undoubtedly provide insights regarding the underlying motivation of these and other corporate control transactions.

The industrial organization studies employing accounting measures of performance are by and large consistent with the results of event studies. However, a study by Mueller in 1985 shows that on average, an unacquired business retained 88 percent of its 1950 market share in 1972, while an acquiring one retained only 18 percent. Caves interprets this result as important evidence that corporate acquisitions do not enhance efficiency. While it is impossible to evaluate the merits of Mueller's study from the brief description offered in the current paper, the difficulty in defining market share at a point in time is well known, let alone defining changes in market shares from 1950 to 1972. I would venture to say that many, if not most, of the markets that existed in 1972 did not exist in 1950.

Caves goes on to cite the results of studies by Porter and by Ravenscraft and Scherer as evidence contrary to the thesis that corporate mergers increase economic efficiency. Essentially these authors examine the history of divested business units. They find that a significant number of these divestments involved assets that were previously acquired by the divesting firms. They interpret these transactions as evidence of failed acquisitions. Caves does point out that all divestitures do not involve assets that were obtained through a merger or acquisition; nor do they necessarily reflect failed ventures on the part of the divesting firm. These qualifications having been made, he goes on to argue that these transactions cast serious doubts as to the ability of acquiring firms to run their acquired assets efficiently. On a previous occasion, I noted that examining divestitures to gain insights into the nature of corporate acquisitions is like trying to understand the institution of marriage by interviewing only divorced couples. I just can't see how this line of inquiry will improve our understanding of the nature of corporate acquisitions.

The last piece of evidence that Caves offers comes from his own work with David Barton. Their work indicates that diversified firms are not run as efficiently as sole-purpose firms. From this result he concludes that diversifying acquisitions are not efficient because diversifying firms are, on average, operated less efficiently. Here again it is hard

to see how this finding helps us understand the welfare implications of corporate mergers. I am skeptical that we can even meaningfully distinguish among horizontal, vertical, and diversifying combinations.

In the end, Caves concludes:

We have a conundrum. Ex ante, mergers appear to create value for the bidder and target together. . . . Ex post, recent studies run exactly in the opposite direction. . . (Caves 1987).

He then goes on to sketch out several lines of research that might reconcile these apparently conflicting results. However, he misses the most obvious. Why not conduct one study that combines the methodology of event studies with the more traditional approaches of industrial organization? One could then test directly whether capital market agents were able ex ante to anticipate the ex post performance of acquiring firms. I suspect that firms with poor post-acquisition performance also realized a less than average capital gain when the acquisition was announced. But this is an empirical question that can be answered with existing data and methodology. Unless and until the empirical results of event studies are reconciled directly with the empirical work on post-acquisition performance, I am afraid that the arguments made by financial economists and industrial organization specialists concerning the welfare implications of corporate mergers will continue to pass like ships in the night.

Finally, it should be noted once again that studying only the ex post performance of acquiring firms can, and most probably will, lead to misleading conclusions. Since all serious empirical work finds that target stockholders capture the lion's share of the synergistic gains created by corporate mergers, one cannot focus exclusively on the ex post performance of acquiring firms to infer the welfare implications of these transactions.

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