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Comparing acquisitions and divestitures

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Abstract

We study the acquisition and divestiture activity of a sample of 1305 firms from 59 industries during the 1990–1999 period. Consistent with the importance of restructuring activity during the 1990s, we find that half of the sample firms are acquired or engage in a major divestiture. Consistent with the notion that economic change is a source of the observed restructuring activity, we find significant industry clustering in both acquisitions and divestitures. We also study the announcement effects of the two forms of restructuring and find that both acquisitions and divestitures in the 1990s increase shareholder wealth. Moreover, the wealth effects for both acquisitions and divestitures are directly related to the relative size of the event. The symmetric, positive wealth effects for acquisitions and divestitures are consistent with a synergistic explanation for both forms of restructuring and are inconsistent with nonsynergistic models based on entrenchment, empire building and hubris.

JEL classification: G14; G34

Keywords: Acquisitions; Equity carve-outs; Spinoffs; Asset sales; Synergy

1. Introduction

In this paper, we study the causes and effects of acquisitions and divestitures during the 1990s. The general purpose of our analysis is to bring new evidence to bear on the contrasting views of corporate restructuring that have been presented

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in research on earlier time periods.[1] We study whether corporate restructuring can best be typified as an efficient response to economic shocks or instead is better described as an imperfect reaction to management entrenchment and hubris.

Our initial analysis gauges the impact of economic shocks on corporate restructuring activity by studying whether there are industry patterns in acquisitions and divestitures. We follow the premise of recent studies of merger patterns by Mitchell and Mulherin (1996) and Andrade and Stafford (1999) that the clustering of restructuring activity in particular industries emanates from fundamental economic shocks. Our work can be distinguished from the other research by our emphasis on the 1990s and by our consideration of both acquisitions and divestitures. Consistent with the importance of economic shocks for restructuring activity, we find that both acquisitions and divestitures exhibit significant industry clustering.

To more directly determine the importance of economic shocks for acquisitions and divestitures, the main body of the paper uses event study analysis to empirically distinguish between two broad sets of theories of corporate restructuring: the nonsynergistic theory and the synergistic theory. The joint consideration of acquisitions and divestitures facilitates more refined tests of the two theories than can be attained by studying either acquisitions or divestitures in isolation. In particular, we study whether acquisitions and divestitures have an asymmetric or symmetric effect on shareholder wealth.

The first set of models that we test can collectively be labeled the nonsynergistic theory. These include models based on management entrenchment, empire building, and managerial hubris (see, e.g., Jensen, 1986; Roll, 1986; Shleifer and Vishny, 1989). Although differing in assumptions and emphasis, these theories generally predict an asymmetric relation between the wealth effects of acquisitions and divestitures. In the models, divestitures create wealth by increasing specialization and reducing agency costs, while acquisitions lower wealth by protecting management from market forces and by lessening corporate focus.

A second set of theories poses synergistic reasons for both acquisitions and divestitures. The origin of this line of thought is usually traced to Coase (1937) who theorizes that the size of the firm responds over time to factors that affect the relative costs of market pricing and internal management decisions. As an example, Coase (1937, Footnotes 31 and 32) argues that technological change will alter the efficient size of the firm and, by implication, affect the decision to engage in acquisitions or divestitures. Subsequent analysis has extended these insights. Klein et al. (1978) argue that acquisitions and divestitures represent reactions to changes in the transaction costs created by specialized assets. Bradley et al. (1988,

[1] Jensen and Ruback (1983) and Jarrell et al. (1988) provide the seminal surveys of acquisitions research. The Appendix to this paper highlights some of the more recent research on acquisitions as well as selected research on divestitures.

p. 4) posit that mergers occur when bidding firms attempt ''to exploit a profit opportunity created by a change in economic conditions.'' Jensen (1993) more specifically relates the restructuring activity of the 1980s to changes in technology, input prices, and regulation. In contrast to the nonsynergistic theory, the synergistic models predict that both acquisitions and divestitures create wealth.

We test the predictions of the nonsynergistic and synergistic theories by studying the announcement effects of acquisitions and divestitures during the 1990s. We find that both acquisitions and divestitures create wealth. Moreover, the wealth effects for acquisitions and divestitures are directly related to the size of the restructuring event. The symmetric, positive wealth effects for both acquisitions and divestitures are consistent with a synergistic explanation for the two restructuring events and are inconsistent with nonsynergistic models based on management entrenchment, empire building, and hubris.

The sample used in our analysis is described in the following section. Section 3 characterizes the overall restructuring activity for the sample firms during the 1990s and Section 4 reports the industry patterns in acquisitions and divestitures. The fifth section presents the evidence on wealth effects. The final section summarizes the results and offers concluding comments.

2. The sample

The intent of our analysis is to study the causes and effects of acquisitions and divestitures during the 1990s. To implement our research design, we begin with a sample of firms covered by the Value Line Investment Survey and track their restructuring activity between 1990 and 1999. Our general procedure bears resemblance to recent research, such as Mitchell and Mulherin (1996) and Andrade and Stafford (1999), and allows us to estimate the rate of acquisitions and divestitures both in aggregate and at the industry level. The firms listed on Value Line are heavily followed in the media, allowing us to precisely pinpoint the incidence and nature of particular restructuring events. The use of Value Line also enables accurate assignment of firms to industries and avoids the ambiguity created from the reliance on SIC codes reported in CRSP and Compustat (see Kahle and Walkling, 1996).

The use of Value Line as the basis for our sample also facilitates comparisons of the wealth effects of acquisitions and divestitures. Rather than draw the two forms of restructuring from heterogeneous sets of firms, the acquisitions and divestitures are taken from a common universe. As reported below, this ensures that the relative size of the sample acquisitions and divestitures are of a comparable order of magnitude.

To form our sample, we begin with 1681 firms listed in the Value Line Investment Survey in the 1st quarter of 1990. We delete 376 firms for the following reasons: Value Line industries with fewer than nine US firms (110

deletions), particular Value Line categories, such as Diversified Company, Investment Company, REIT, and Unassigned (159 deletions), and non-US firms tracked by Value Line (107 deletions).

The resulting sample of 1305 firms is characterized in Table 1. The firms come from 59 industries spanning Aerospace/Defense to Trucking. By number of firms, the Electric Utility industry has the greatest representation with 102 firms. In terms

Table 1
The sample

Industry	Firms		Industry	Firms	
	Number	Value (US$ billions)		Number	Value (US$ billions)
Aerospace/defense	32	47	Medical services	9	10
Air transport	12	17	Medical supplies	37	58
Apparel	17	8	Metal fabricating	16	8
Auto parts	20	11	Metals and mining	12	21
Bank	50	97	Natural gas (dist)	28	14
Bank (Midwest)	23	28	Natural Gas (div)	22	45
Broadcasting/cable	10	28	Newspaper	13	30
Building materials	26	17	Office equipment	20	15
Chemical (basic)	10	68	Oilfield services	19	28
Chemical (diversified)	12	36	Packaging and contain	15	8
Chemical (specialty)	35	31	Paper	27	51
Computer and peripherals	37	105	Petroleum (integrate)	23	216
Computer software	17	21	Petroleum (produce)	18	22
Drug	19	153	Precision instrument	25	21
Electric utility	102	199	Publishing	17	30
Electrical equipment	20	98	Railroad	9	28
Electronics	38	15	Recreation	18	35
Environmental	11	32	Restaurant	17	18
Financial services	22	43	Retail store	27	85
Food processing	45	95	Retail (special lines)	49	34
Furniture	12	5	Securities brokerage	13	12
Grocery Store	19	20	Semiconductor	15	21
Homebuilding	11	2	Shoe	12	7
Hotel/gaming	14	13	Steel	25	19
Household products	10	42	Telecommunications	23	259
Industrial services	26	11	Textile	9	2
Insurance	47	105	Thrift	16	16
Machine tool	10	5	Toiletries/cosmetics	9	11
Machinery	32	16	Trucking	12	6
Machinery (constr.)	11	16	Full sample	1305	2514

This table reports the number and value of the sample firms by industry. The sample is formed from the firms covered by the Value Line Investment Survey in the 1st quarter of 1990. Industries with at least nine US firms are included in the analysis. The industries are reported in alphabetical order. Value (in US$ billions) is the sum of the equity value of the firms in an industry at year-end 1989 and is taken from the Daily Stock Price Record.

of equity value at year-end 1989, the Telecommunications industry is the largest at US$259 billion. The total value of the 1305 sample firms at year-end 1989 is US$2.5 trillion, which is 71% of the combined equity value of the listings on the NYSE, AMEX, and NASDAQ in 1989. The average firm in the sample has a value of US$1.9 billion at year-end 1989.

3. Overall acquisition and divestiture activity in the 1990s

For each of the sample firms, we track acquisition and divestiture activity during the 1990s. Relying on the Wall Street Journal Index, Lexis/Nexis, Mergers and Acquisitions, and other financial and news media, we determine whether and when a sample firm is acquired. Using the same sources, we also determine whether a sample firm engaged in any major divestitures, including corporate spinoffs, equity carve-outs and asset sales. The spinoffs and carve-outs in the sample are readily classifiable. By contrast, the choice of asset sales to include in the sample is somewhat more problematic, due to the substantial variation in the size of both the sample firms and their assets divested via direct sale. Our criterion in classifying an asset sale as ''major'' is that the sold assets were either worth at least US$100 million in absolute terms or represented at least 5% of the equity value of the divesting parent.

The results on overall acquisition and divestiture activity during the 1990s are reported in Table 2. A total of 335 firms (25.7% of the sample) are acquired but do not engage in a divestiture. In addition, 222 firms (17%) undertake a major

Table 2
Overall acquisition and divestiture activity

	# of Firms	Fraction of sample (%)	Average firm value (US$ billions)
Acquired	335	25.7	1.1
Divest	222	17.0	4.7
Both	46	3.5	2.9
Neither	702	53.8	1.4
Full sample	1305	100	1.9

This table reports the overall acquisition and divestiture activity for the sample firms in the 1990–1999 period. Acquisition and divestiture activity is determined by consulting the Wall Street Journal Index, Lexis/Nexis, Mergers and Acquisitions, and other financial and news media. Acquired reports — the firms that were acquired and did not engage in a major divestiture during the 1990–1999 period. Divest reports — the firms that engaged in at least one major divestiture (including spinoffs, equity carve-outs, and asset sales) but were not acquired. Both reports the firms that had at least one divestiture and were also acquired. Neither reports the firms that were not acquired and did not have a major divestiture. Average Firm Value reports the average equity value of the firms in a particular category as of year-end 1989.

divestiture but are not acquired. Finally, 46 firms (3.5%) engage in a divestiture and are later acquired.

As a whole, roughly half (46%) of the sample firms are acquired and/or engage in a major divestiture during the 1990s. These results indicate that the restructuring in the most recent decade has some comparability to the significant wave that occurred in the 1980s. As a comparison, Mitchell and Mulherin (1996) estimate that 48% of their sample firms were acquired or engaged in a defensive asset restructuring during the 1982–1989 period.

Table 2 also reports some characteristics of firms that turn out to be acquisition or divestiture candidates. Based on equity values at the time of the formation of the sample, firms that are acquired are smaller than average; the average value of the acquired firms as of year-end 1989 is US$1.1 billion. By contrast, the firms engaging in divestitures are much larger; the average value of a firm undertaking a major divestiture is US$4.7 billion. In results not reported in the table but available upon request, these relations hold at the industry level; acquired firms are generally smaller than their industry peers while divesting firms are larger than their industry counterparts. We report further data on the relative value of targets to bidders and divested subsidiaries to parents later in the text.

4. Acquisition and divestiture activity by industry

We next estimate whether there are industry patterns in the rate of acquisition and divestiture activity during the 1990s. Our analysis is motivated by the theory of the firm (e.g., Coase, 1937), which argues that firm size responds to changing economic conditions. Subsequent theory by Jensen (1993) more specifically relates corporate restructuring to changes in technology, input prices and regulation. Mitchell and Mulherin (1996) support the theory of the firm by finding significant patterns in acquisitions across industries in the 1980s. We provide further evidence by studying acquisitions in the 1990s and by extending the analysis to industry patterns in divestiture activity.

4.1. Industry patterns in acquisition activity

Table 3 reports the fraction of firms acquired for each of the 59 Value Line industries in the sample. In the median industry, 29% of the firms are acquired during the 1990s. But there is a notable variation in the rate of acquisitions across industries. Virtually every firm, 10 out of 11 or 91%, in the Environmental industry is acquired. By contrast, no firms in Homebuilding are acquired.

The variation in the rate of acquisitions is statistically significant. We compute the Pearson χ^2 that tests the null of no variation in the frequency of acquisition

Table 3
Acquisition activity by industry

Industry	% Acquired	Industry	% Acquired
Environmental	91	Recreation	28
Bank (Midwest)	57	Natural gas (div)	27
Bank	54	Industrial services	27
Broadcasting/cable	50	Paper	26
Petroleum (produce)	50	Auto Parts	25
Medical services	44	Machinery	25
Toiletries/cosmetics	44	Office equipment	25
Thrift	44	Financial services	23
Telecommunications	43	Food processing	22
Grocery store	42	Retail store	22
Electrical equipment	40	Textile	22
Electronics	39	Natural gas (dist)	21
Aerospace/defense	38	Oilfield services	21
Steel	36	Electric utility	20
Hotel/gaming	36	Metal fabricating	19
Publishing	35	Apparel	18
Computer and peripherals	35	Restaurant	18
Building materials	35	Petroleum (integrated)	17
Packaging and contain	33	Air Transport	17
Railroad	33	Chemical (diversified)	17
Trucking	33	Furniture	17
Precision instrument	32	Metals and mining	17
Insurance	32	Retail (special lines)	16
Drug	32	Household products	10
Securities brokerage	31	Machinery (constr.)	9
Chemical (basic)	30	Shoe	8
Machine tool	30	Newspaper	8
Medical supplies	30	Semiconductor	7
Computer software	29	Homebuilding	0
Chemical (specialty)	29	Full sample	29

This table reports the fraction of sample firms acquired in each industry in the 1990–1999 period. The data are sorted by the percent of industry members acquired. Acquisition activity is determined by consulting the Wall Street Journal Index, Lexis/Nexis, Mergers and Acquisitions, and other financial and news media.

activity across industries. The statistic is defined as $\sum_i (\text{Actual}_i - \text{Expected}_i)^2/\text{Expected}_i$, where i represents the 59 industries in the sample and expected_i equals the product of the average acquisition activity for the full sample, 29.2%, times the number of firms in the ith industry. The value of the statistic is 103 ($df = 58$, p-level = 0.001), indicating a rejection of the null.

A natural query is whether any of the sources of the inter-industry variation in acquisition activity can be identified. Jensen (1993) argues that the restructuring in the 1980s was induced by changes in regulation as well as a desire to eliminate

industry overcapacity. In support of these conjectures, Mitchell and Mulherin (1996) find that the rate of takeover activity by industry is higher in deregulated industries and in low-tech industries with little or no research and development or other growth options.

We consider whether acquisition activity in the 1990s is driven by similar factors as the 1980s. We regress the rate of acquisition activity by industry on two variables. The first is a dummy variable equal to one for seven industries that underwent federal deregulation in the 1990s. The federal deregulation and the affected industries are: Riegle-Neal Act of 1994: Bank, Bank (Midwest) and Thrift, Telecommunications Act of 1996: Broadcasting/Cable TV and Telecommunications, Energy Policy Act of 1992: Electric Utility, and termination of the Interstate Commerce Commission: Railroad.

The second explanatory variable is the average R&D/Sales in a given industry in 1989 (obtained from Compustat). This variable tests whether the clustering of acquisitions in the 1990s is driven, in part, by the variation in underlying technology and growth options across industries.

The results of this regression are (*t*-statistic in parentheses):

$$\text{Acquisition activity} = 0.27(12.3) + 0.16\,(2.75)\,\text{Dereg Dummy} + 0.015(0.03)\,\text{R\&D/sales},$$

$N = 59$; F-value $= 3.89$ ($p = 0.03$); Adjusted $R^2 = 0.09$.

The positive and significant coefficient for the Deregulation Dummy indicates that, consistent with the 1980s, deregulation has a significant, positive effect on the acquisition activity in the 1990s. Of course, the affected industries differ over time. In the 1980s, deregulation induced significant merger activity in industries, such as air transport, natural gas and trucking. In the 1990s, deregulation was directed toward sectors including banking, electric utilities, and telecommunications. Indeed, past research has often excluded industries, such as banking, telecommunications and electric utilities due to heavy regulation. The removal of the regulatory burdens in these industries allows them to become part of mainstream merger analysis.

The coefficient for R&D/Sales is not significantly different from zero. In contrast to the 1980s, merger activity in the 1990s is not restricted to industries with low growth options. Indeed, some of the industries shown in Table 3 to have the highest rate of acquisition activity during the 1990s include Telecommunications, Electrical Equipment, and Electronics that are in high-tech, growing sectors. These results are consistent with related findings in Andrade and Stafford (1999) and indicate that mergers can facilitate both industry consolidation and industry expansion.

As a more direct analysis of acquisition activity in the 1980s and 1990s, we compare the rate of activity across industries in the two decades. Our sample has 42 industries that overlap those studied by Mitchell and Mulherin (1996, Table 3) for the 1980s. The simple correlation coefficient of the rate of acquisition activity

between the two samples from the two decades is 0.25 ($p = 0.11$). This confirms that while there was significant restructuring activity in both the 1980s and 1990s, there was not a one-to-one relation in the affected industries.

4.2. Industry patterns in divestiture activity

We next analyze whether there are industry patterns in divestiture activity. Table 4 reports the results. For the median industry, 18% of the firms engaged in at least one major divestiture in the 1990–1999 period. Like acquisitions, however, there is a wide variation in divestiture activity across industries. In the Chemical (Diversified) industry, 67% of the firms undertook a major divestiture. By contrast, several industries, including Toiletries/Cosmetics, refrained from any measurable divestiture activity.

To determine whether the frequency of divestiture activity significantly differs across industries, we compute the Pearson χ^2 statistic. The value of the statistic is 110 ($df = 58$, p-level = 0.001), indicating a rejection of the null of no difference in divestiture activity across industries.

The estimates of acquisition and divestiture activity by industry in Table 3 and Table 4 allow us to do some analysis as to the nature of the shocks that induce the two forms of restructuring. If the underlying shocks are identical, then there will be a high, positive correlation between the rate of acquisitions and divestitures. Alternatively, if the underlying shocks are dissimilar, then there will be a strong, negative correlation between the relative occurrence of the two forms of restructuring at the industry level. The estimated correlation coefficient of the rate of acquisitions and divestitures is -0.08 (p-level = 0.53). Hence, acquisitions and divestitures are neither direct substitutes nor direct complements at the industry level. The estimate indicates, instead, that acquisitions and divestitures are induced by both common and dissimilar industry shocks. For example, exactly half of the 30 firms at the median or above in the ranking of acquisition activity in Table 3 are also at the median or above in the ranking of divestiture activity in Table 4. Dasgupta et al. (1999) report similar findings for a sample of mergers and divestitures in the 1986–1994 period.

The comparison of industry patterns in acquisitions and divestitures is somewhat crude as acquired firms, by the nature of our research design, cannot subsequently engage in a divestiture. To account for sample attrition due to acquisitions, we reestimated the rates of divestiture activity based on the available firm years for each industry. For example, in our sample, the Shoe industry has 12 firms, or a total of 120 firm years in the 1990–1999 period. But one firm in the industry was acquired in 1995, reducing the available firm years to 116. After accounting for sample attrition due to acquisitions, our estimates for the adjusted rate of divestiture by industry are also insignificantly related to the industry rate of acquisitions; the correlation coefficient is -0.03 (p-level = 0.84).

Table 4
Divestiture activity by industry

Industry	% Divesting	Industry	% Divesting
Chemical (diversified)	67	Restaurant	18
Chemical (basic)	50	Chemical (specialty)	17
Petroleum (integrate)	48	Air transport	17
Telecommunications	48	Petroleum (produce)	17
Medical services	44	Shoe	17
Natural gas (div)	41	Bank	16
Drug	37	Building materials	15
Electrical equipment	35	Office equipment	15
Paper	33	Retail store	15
Railroad	33	Natural gas (dist)	14
Trucking	33	Computer and peripherals	14
Financial services	32	Packaging and contain	13
Newspaper	31	Machinery	13
Insurance	30	Metal fabricating	13
Medical supplies	30	Computer software	12
Publishing	29	Electric utility	12
Electronics	26	Textile	11
Metals and mining	25	Machine tool	10
Food processing	24	Environmental	9
Retail (special lines)	22	Machinery (constr.)	9
Recreation	22	Furniture	8
Hotel/gaming	21	Semiconductor	7
Oilfield services	21	Thrift	6
Broadcasting/cable	20	Apparel	6
Household products	20	Auto parts	5
Precision instrument	20	Bank (Midwest)	0
Steel	20	Grocery store	0
Industrial services	19	Securities brokerage	0
Aerospace/defense	19	Toiletries/cosmetics	0
Homebuilding	18	Full sample	21

This table reports the fraction of the sample firms in each industry that engaged in at least one major divestiture (spinoff, equity carve-out, or asset sale) in the 1990–1999 period. The data are sorted by the percent of industry members performing at least one divestiture. Divestiture activity is determined by consulting the Wall Street Journal Index, Lexis/Nexis, Mergers and Acquisitions, and other financial and news media.

The similarity in results for both the unadjusted and adjusted rates of divestitures is due, in part, to the fact that a majority of the acquisitions in the sample occur in the second half of the 1990s. Table 5 reports that 33% of the acquisitions were completed in the 1990–1994 period, compared with 67% in the 1995–1999 period.

Overall, the analysis in this section finds significant industry clustering in both acquisitions and divestitures. These results are consistent with the theory of the firm, which predicts that corporate restructuring is a function of industry shocks

Table 5
Acquisition and divestiture activity by year

Year	Acquisitions		Divestitures	
	Number	Percentage (%)	Number	Percentage (%)
1990	38	10	22	6
1991	23	6	33	9
1992	21	6	36	10
1993	26	7	40	11
1994	19	5	47	13
1995	49	13	37	10
1996	41	11	53	14
1997	61	16	39	11
1998	61	16	36	10
1999	42	11	27	7
Total	381	100	370	100

This table reports the number and fraction of acquisitions and divestitures by year during the 1990–1999 period. Acquisitions and divestitures are assigned to the year of completion. Activity is determined by consulting the Wall Street Journal Index, Lexis/Nexis, Mergers and Acquisitions, and other financial media.

and changing economic conditions. In the next section, we estimate whether the reaction to changing economic conditions is wealth enhancing.

5. Wealth effects of acquisitions and divestitures

A large body of research has studied the wealth effects of acquisitions and divestitures. Much of the research on acquisitions is reviewed by Jensen and Ruback (1983) and Jarrell et al. (1988). The Appendix A to this paper notes some of the more recent research on acquisitions as well as selected research on divestitures.

In this section, we expand on the prior work by estimating the wealth effects of acquisitions and divestitures in the 1990s. Our joint consideration of acquisitions and divestitures allows us to distinguish between nonsynergistic and synergistic theories of corporate restructuring. In particular, we study whether acquisitions and divestitures have an asymmetric or symmetric effect on shareholder wealth.

5.1. Data used to estimate the wealth effects of acquisitions and divestitures

Our analysis of the wealth effects of acquisitions and divestitures employs standard event study techniques. As such, our only data requirement is stock price information around the announcement of the restructuring events. For acquisitions

Table 6
Data used to estimate wealth effects of acquisitions and divestitures

	No. of observations
Panel A. Data availability for acquisitions	
Total number of targets	381
Targets with stock price data	376
Acquisitions with available bidder data	281
Panel B. Data availability for divestitures	
Total Number of Divestitures	370
Spinoffs	106
Equity carve-outs	125
Asset sales	139

This table reports the data available for the estimation of the wealth effects of acquisitions and divestitures. Panel A reports data availability for acquisitions. Of the 381 target firms in the sample, 5 are delisted prior to being acquired, leaving 376 targets with available stock price data. Of these 376 targets, 63 are acquired by foreign bidders and 32 are acquired by private bidders, leaving 281 that are acquired by US publicly traded bidders, which have available stock price data. Panel B reports the number of observations in the full sample of divestitures as well as the subsamples for spinoffs, equity carve-outs and asset sales. For both acquisitions and divestitures, data from 1990–1998 are obtained from CRSP. Data from 1999 are obtained from the Daily Stock Price Record.

and divestitures in the 1990–1998 period, we obtain the data from CRSP. For events in 1999, we obtain the data from the Daily Stock Price Record.

Table 6 sketches the data available for the estimation of wealth effects. Panel A reports data availability for acquisitions. As reported previously in Table 2, a total of 381 sample firms are acquired in the 1990–1999 period. Five of these firms, however, are delisted prior to the announcement of their acquisition, leaving 376 target firms available for the analysis of wealth effects. Within this sample, 281 of the targets are acquired by US publicly traded firms having available stock price data to be used to estimate the wealth effects for the bidders as well as the combined target and bidder return.

Panel B of Table 6 reports the data availability for divestitures. As reported previously in Table 2, a total of 268 sample firms engaged in at least one major divestiture in the 1990–1999 period. Because some firms undertook more than one divestiture over the sample period, there are a total of 370 divestitures that can be used in the analysis of wealth effects. As noted in Table 6, within this divestiture sample, there are 106 corporate spinoffs, 125 equity carve-outs, and 139 asset sales.

5.2. The relative value of acquisitions and divestitures

Table 7 provides information on the relative size of the acquisitions and divestitures in the sample. Panel A reports the relative value of the acquisitions,

Table 7
Relative value of acquisitions and divestitures

Panel A. Relative value of acquisitions

Target value/bidder value	
Mean	42%
Median	27%
N	281

Panel B. Relative value of divestitures (subsidiary/parent)

	All	Spinoffs	Carve-outs	Asset sales
Mean	26%	22%	37%	18%
Median	13%	14%	17%	11%
N	370	106	125	139

This table reports information on the relative value of the sample acquisitions and divestitures. Panel A reports the relative value of the sample acquisitions, defined as the ratio of the equity value of the target divided by the equity value of the bidder, both measured 2 days prior to the initial announcement of the acquisition bid. Data are available for the 281 acquisitions where the bidding firm is a US publicly traded firm with available stock price data. Panel B reports the relative value of the sample divestitures. For spinoffs, the relative value is the equity value of the spinoff on the first day of trading divided by the equity value of the parent on the day before the spinoff. For equity carve-outs, the relative value is the equity value of the carve-out (offer price times total shares outstanding) divided by the equity value of the parent on the offer date. For asset sales, the relative value is the reported price of the asset sale divided by the asset value of the parent at the year-end prior to the announcement of the asset sale. For both acquisitions and divestitures, data from 1990–1998 are obtained from CRSP and Compustat. Data from 1999 are obtained from the Daily Stock Price Record and SEC filings.

defined as the equity value of the target divided by the equity value of the bidder, both measured two days prior to the initial announcement of the acquisition bid. Data are available for the 281 acquisitions with both target and bidder equity value. The average target firm is 42% as large as the average bidder. The median relative value is 27%. The median size of the target to the bidder is somewhat larger than that reported by Jarrell and Poulsen (1989, Exhibit 1) for acquisitions in the 1970s and 1980s (though not the 1960s), which is expected since we sampled the acquisition targets from firms covered by Value Line.

Panel B of Table 7 reports the relative value of the 370 sample divestitures. For spinoffs, the relative value is defined as the equity value of the spinoff on the first day of trading divided by the equity value of the parent on the day before the spinoff. The mean estimate for the relative value of spinoffs is 22% and the median is 14%.

To provide a comparable measure for equity carve-outs, the relative value is defined as the equity value of the carve-out (offer price times total shares outstanding) divided by the equity value of the parent on the offer date. The mean estimate for the relative value of carve-outs is 37% and the median is 17%. An

alternative measure for the relative value of the sample carve-outs based on offer proceeds rather than total equity value of the subsidiary, not reported in the table, generates a mean of 16% and a median of 7%.

For asset sales, the relative value is defined as the reported price of the asset sale divided by the asset value of the parent at the year-end prior to the announcement of the asset sale. We choose to weight asset sales by parent asset value because using parent equity value can lead to relative values larger than 100%, especially for parents experiencing financial difficulty (see Brown et al., 1994). The mean estimate for the relative value of asset sales is 18% and the median is 11%.

Across all 370 observations, the average divestiture comprises 26% of the parent firm. The median relative value of the sample divestitures is 13%. Although there is some variation in the mean relative size across the three types of divestitures, the median relative values are comparable across divestiture types.

Overall, the data in Table 7 indicate that both the acquisition and divestiture samples entail important events. The relative value of target firms and divested firms are both more than 25% of the value of the bidding firm and the divesting parent, respectively. This facilitates a direct comparison of the wealth effects of the two forms of restructuring.

5.3. Wealth effects for the sample acquisitions and divestitures

In this section, we estimate the wealth effects of acquisitions and divestitures. Our primary objective is to test two contrasting theories of corporate restructuring: the nonsynergistic theory and the synergistic theory. Within the nonsynergistic theory, we group models based on management entrenchment, empire building, and managerial hubris. Within the synergistic theory, we include models such as Coase (1937), Klein et al. (1978), and Bradley et al. (1988). Our joint analysis of acquisitions and divestitures enables tests that directly distinguish between the two theories. In particular, the nonsynergistic theory predicts asymmetric wealth effects of acquisitions and divestitures (see, e.g., Shleifer and Vishny, 1989), while the synergistic theory predicts that both acquisitions and divestitures create wealth.

Table 8 sketches the specific analysis used to test the two competing theories. As noted in Panel A, both theories predict that the announcement effect of corporate divestitures will be positive. By contrast, the nonsynergistic theory predicts that the combined bidder–target return in acquisitions will be negative, while the synergistic theory predicts that the combined wealth effect in acquisitions will be positive.

As outlined in Panel B of Table 8, the two theories also make contrasting predictions regarding the relation between wealth effects and the relative size of the event. The nonsynergistic theory predicts that larger divestitures will have a more positive effect on shareholder wealth while larger acquisitions will be

Table 8
Predictions from models of corporate restructuring

	Nonsynergistic	Synergistic
A. Announcement effects		
Divestitures	positive	positive
Acquisitions (combined)	negative	positive
B. Relation between announcement effect and relative size of the event		
Divestitures	positive	positive
Acquisitions (combined)	negative	positive

This table compares and contrasts the predictions from two sets of theories offering nonsynergistic and synergistic models of corporate acquisitions and divestitures. Panel A reports the predictions of the two theories for the wealth effects at the announcement of acquisitions and divestitures. Panel B reports the predicted relation in regressions of announcement effects on the relative size of the corporate events.

relatively more detrimental to shareholders, as the acquisition of a larger target will induce greater management entrenchment. The synergistic theory predicts that larger acquisitions and divestitures will both have relatively more positive effects on shareholder wealth.

In our analysis of the wealth effects of acquisitions and divestitures, we estimate changes in equity value at the time of the announcement of the two restructuring events. Because we want to isolate on the specific market reaction to the two events, we focus on a narrow window of the $(-1, +1)$ period around the events, where day 0 is the initial announcement as determined from Lexis/Nexis, the Wall Street Journal Index, and other financial and news media. Because of the employment of this narrow window, we simply rely on net-of-market estimates of the abnormal returns. In results available upon request, we also employ other estimation techniques, such as the market model and obtain findings comparable to those reported in the text. Similarly, the use of longer event windows does not alter the inferences drawn in the text. For events from the 1990–1998 period, the market index is the CRSP value-weighted index. For events in 1999, the market index is the S&P 500.

Table 9 reports the wealth effects for the sample acquisitions. Panel A reports the wealth effects for the entire sample of 376 targets with available stock price data. On average, the equity value of a target firm appreciates 21.2%, net-of-market, in the three days around the initial announcement of the acquisition. The median abnormal return in the $(-1, +1)$ period is 18.4%. The significant, positive return for the sample targets is consistent with research from earlier time periods.

Panel B of Table 9 reports the wealth effects for the 281 acquisitions with available data for both targets and bidders. The results for the targets resemble the full sample of all acquisitions. On average, targets gain more than 20% at the announcement of an acquisition.

Table 9
Wealth effects for the sample acquisitions

Panel A. Wealth effects for the full sample of acquisitions

	Target
Mean	21.20%
(*t*-Stat.)	(16.8)
Median	18.40%
(*p*-Level)	(0.0001)
N	376

Panel B. Wealth effects for the acquisitions with available bidder data

	Target	Bidder	Combined
Mean	20.2%	−0.37%	3.56%
(*t*-Stat.)	(14.0)	(−0.69)	(6.23)
Median	17.4%	−0.87%	1.99%
(*p*-Level)	(0.0001)	(0.004)	(0.0001)
N	281	281	281

This table reports the wealth effects for the sample acquisitions. All estimates are net-of-market, cumulative abnormal returns for the $(-1, +1)$ period, where day 0 is the date of the initial announcement of the acquisition bid, as determined from Lexis/Nexis, the Wall Street Journal Index, and other financial and news media. Panel A reports the wealth effects for the 376 targets with available stock price data. Panel B reports the wealth effects for the 281 acquisitions where the bidder is a US publicly traded firm with available stock price data. Note that bidder returns are based on the date of the first mention of the bidder in the financial press, which may be later than the initial announcement date for the target. The Combined Return is the value-weighted CAR, defined as: (target value × target CAR + bidder value × bidder CAR)/(target value + bidder value), where bidder and target values are the equity value 2 days prior to the initial acquisition announcement. Data from 1990–1998 are obtained from CRSP and the market index is the CRSP value-weighted index. Data from 1999 are obtained from the Daily Stock Price Record and the market index is the S&P 500. The *t*-statistic tests the null hypothesis that the mean CAR equals zero. The *p*-level is for the Wilcoxon sign rank test that the median differs from zero.

Bidders, on average, experience an insignificant mean change in wealth at the announcement of the acquisition. The median is also small in absolute terms, although the estimate is significantly negative. As in the prior research reviewed in the Appendix A, the bidder returns are somewhat sensitive to the event window. For example, in results not reported in the table, the net-of-market bidder return for the $(-42, +1)$ period is positive but insignificant: 0.65% $(t = 0.91)$. The small magnitude of the bidder returns is consistent with prior research and is generally interpreted as reflecting a competitive market for corporate control (see, e.g., Mitchell and Lehn, 1990).

To measure the total wealth effect of the acquisitions, we estimate the combined return, defined as the value-weighted CAR:

$$(\mathrm{TV}_i \times \mathrm{TCAR}_i + \mathrm{BV}_i \times \mathrm{BCAR}_i)/(\mathrm{TV}_i + \mathrm{BV}_i),$$

where $TCAR_i$ is the cumulative abnormal return for the ith target over the $(-1, +1)$ period, $BCAR_i$ is the cumulative abnormal return for the ith bidder over the $(-1, +1)$ period, and TV_i and BV_i are equity values for the ith target and bidder, respectively, 2 days prior to the initial acquisition announcement. The results indicate that the acquisitions in the sample create wealth. The combined return to targets and bidders averages 3.56%. This positive combined wealth effect for acquisitions is consistent with the synergistic theory.

Table 10 reports the wealth effects for the sample divestitures. On average, the divestitures create wealth. For the full sample of 370 divestitures, the average net-of-market return for the $(-1, +1)$ period is 3.04%. The median abnormal return is 1.75%. The positive wealth effects hold for all three types of divestitures. The mean abnormal return is 4.51% for corporate spinoffs, is 2.27% for equity carve-outs, and is 2.60% for asset sales. These results are comparable in magnitude to research on divestitures from earlier time periods.

In results not reported in the table, we further study the subset of asset sales with data available for the buyers of the assets. Of the 139 asset sales in the sample, there are 56 cases where the buyer is either a foreign firm or a private US firm, leaving 83 cases where the buyer is a publicly traded US firm. In this subsample, the asset sales also create wealth. The mean CAR for the seller is 1.75% $(t = 2.57)$ and for the buyer is 1.34%. The mean, value-weighted CAR for the buyer and the seller is 1.18% $(t = 2.88)$.

Overall, the results on wealth effects indicate that both acquisitions and divestitures create wealth. These findings are consistent with the synergistic theory of corporate restructuring. The results indicate that corporate decisions to expand and to contract both benefit shareholders, on average, in the 1990s. These findings on wealth effects are consistent with the results in Maksimovic and Phillips (1999) that both mergers and asset sales improve total factor productivity.

Table 10
Wealth effects for the sample divestitures

	All	Spinoffs	Carve-outs	Asset sales
Mean	3.04%	4.51%	2.27%	2.60%
(*t*-Stat.)	(7.96)	(7.55)	(3.54)	(3.75)
Median	1.75%	3.64%	0.84%	1.58%
(*p*-Level)	(0.0001)	(0.0001)	(0.0002)	(0.0001)
N	370	106	125	139

This table reports the wealth effects for the sample divestitures. All estimates are net-of-market, cumulative abnormal returns for the $(-1, +1)$ period, where day 0 is the date of the initial announcement of the divestiture, as determined from Lexis/Nexis, the Wall Street Journal Index, and other financial and news media. Data from 1990–1998 are obtained from CRSP and the market index is the CRSP value-weighted index. Data from 1999 are obtained from the Daily Stock Price Record and the market index is the S&P 500. The *t*-statistic tests the null hypothesis that the mean CAR equals zero. The *p*-level is for the Wilcoxon sign rank test that the median differs from zero.

5.4. Wealth effects and the relative value of acquisitions and divestitures

The basic results on wealth effects indicate that the average acquisition and the average divestiture in the 1990s create wealth. While consistent with the synergistic theory, the results do not indicate the sources of wealth gains from corporate restructuring. Moreover, the results do not conclusively reject the nonsynergistic theory, as the average returns do not account for the size of the particular restructuring events (see, e.g., Roll, 1986). To provide cross-sectional tests that distinguish between the synergistic and nonsynergistic theories, we estimate whether the wealth gains in the sample acquisitions and divestitures are related to the relative size of the restructuring events.

There is some prior analysis of this relation between wealth effects and the relative size of acquisitions and divestitures. Servaes (1991) finds that the combined return to targets and bidders is positively related to the relative size of the target. The papers on divestitures listed in the Appendix A generally report that the abnormal returns in corporate divestitures are directly related to the relative size of the divested entity. We extend this analysis by jointly studying acquisitions and divestitures in the 1990s.

Column (1) of Table 11 reports the results for the 281 acquisitions with available target and bidder data. The analysis entails an OLS regression that estimates the relation between the combined target and bidder return at acquisition

Table 11
Wealth effects and the relative value of acquisitions and divestitures

	(1)	(2)
	Acquisitions	Divestitures
Constant	0.022	0.022
(*t*-Stat.)	(3.11)	(4.79)
Relative value	0.033	0.031
(*t*-Stat.)	(3.45)	(3.01)
N	281	370
F-value	11.9	16.7
(*p*-Level)	(0.0007)	(0.0001)
Adjusted R^2	0.04	0.04

This table reports OLS regressions that estimate the relation between the relative value of acquisitions and divestitures and the wealth effects from the two events. Column (1) reports the results for acquisitions, where the dependent variable is the combined bidder and target net-of-market return at the announcement (days $-1, +1$) of the acquisition and the independent variable is the relative value of the acquisition (target value/bidder value), as defined in Panel A of Table 7. Column (2) reports the results for divestitures, where the dependent variable is the net-of-market return for the parent at the announcement (days $-1, +1$) of the divestiture and the independent variable is the relative value of the divestiture (divested entity/parent value), as defined in Panel B of Table 7. Data from 1990–1998 are obtained from CRSP and the market index is the CRSP value-weighted index. Data from 1999 are obtained from the Daily Stock Price Record and the market index is the S&P 500.

announcement and the relative value of the acquisition. The coefficient for Relative Value is positive and more than three standard errors different from zero. Hence, the combined target and bidder returns in the sample are directly related to the relative value of the acquisition.

Column (2) of Table 11 reports comparable analysis for the sample of 370 divestitures. Similar to the acquisition sample, the coefficient of Relative Value is positive and significant in the divestiture regression. Consistent with prior research, the wealth creation at the announcement of corporate divestitures is directly related to the relative size of the divestiture.

Interestingly, the estimated parameters in columns (1) and (2) of Table 11 are virtually identical. Hence, whether expanding or downsizing, the impact on shareholder wealth is comparably related to the relative size of the restructuring event. The results provide further support for the synergistic theory of acquisitions and divestitures and are not consistent with the nonsynergistic models.

6. Summary and concluding comments

In this paper, we compare the acquisition and divestiture activity of a sample of 1305 firms from 59 industries in the 1990–1999 period. We find a significant occurrence of these two forms of restructuring during the 1990s. Roughly half of the sample firms are acquired or engage in a major divestiture in the sample period.

We also find significant industry clustering in acquisition and divestiture activity during the 1990s. Consistent with results for the 1980s, we find that acquisition activity is greater in industries undergoing deregulation, although the specific industries affected by deregulation differ between the 1980s and 1990s. In contrast to the evidence for the 1980s, we find that acquisitions in the 1990s are not restricted to industries with low growth options.

We find that the acquisitions and divestitures in the 1990s create wealth. Indeed, the wealth creation from the two restructuring events is comparable in magnitude. The combined target and bidder return at the announcement of an acquisition averages 3.5%, while the announcement return for corporate divestitures averages 3.0%. Moreover, the wealth creation for both acquisitions and divestitures is directly related to the relative size of the restructuring event.

As a whole, these results are consistent with the predictions of the synergistic theory of the firm that changing economic conditions and industry shocks are at play in restructuring activity. Indeed, the results indicate that firms efficiently respond to economic change, whether such changes induce an expansion (via merger) or a reduction (via divestiture) in firm size. The symmetric relation for both acquisitions and divestitures is inconsistent with nonsynergistic models based on management entrenchment, empire building and managerial hubris, which argue that firms expand for reasons other than wealth creation. In the 1990s, the

Appendix A

A. Selected event studies of acquisitions that report target and bidder returns

Study	Time period	# Targets	# Bidders	Window	Target (%)	Bidder (%)	Combined
Bradley et al. (1988)	1963–1984	236	236	(−5, +5 last bid)	31.77	0.97	7.43%
Kaplan and Weisbach (1992)	1971–1982	209	271	(−5, +5 last bid)	26.90	−1.49	3.74%
Asquith et al. (1990)	1973–1983	157	343	(−1, 0)	18.04	−0.85	not reported
Jarrell and Poulsen (1989)	1963–1986	526	462	(−20, +10)	28.99	1.29	not reported
Servaes (1991)	1972–1987	704	384	(−1, resolve)	23.64	−1.07	3.66%
Schwert (2000)	1975–1996	2,296	1,286	(−63, 126)	22.00	−1.00	not reported

B.1. Selected event studies of spinoffs that include analysis of CARs and relative size of the spinoff

Study	Source	Time period	# Obs	Window	CAR (%)	Relative size	Effect of relative size on CAR
Miles and Rosenfeld (1983)	Moody's Div Record	1963–1980	55	(0, +1)	3.34	median = 10%	larger spinoffs have greater CAR
Hite and Owers (1983)	S&P Div Record	1963–1981	123	(−1, 0)	3.30	median = 6.7%	positive regression coefficient
Schipper and Smith (1983)	CRSP Dist Codes	1963–1981	93	(−1, 0)	2.84	mean = 19.7%	positive correlation
Krishnaswami and Subramaniam (1999)	CRSP Dist Codes	1979–1993	118	(−1, +1)	3.28	median = 13.8%	positive regression coefficient

B.2. Selected event studies of carve-outs that include analysis of CARs and relative size of the carve-out

Study	Source	Time Period	# Obs	Window	CAR (%)	Relative size	Effect of relative size on CAR
Schipper and Smith (1986)	SEC ROS tape	1965–1983	76	(−4, 0)	1.83	median = 8%	positive correlation
Allen and McConnell (1998)	SEC, IDD, SDC	1978–1993	188	(−1, +1)	1.90	median = 14%	positive regression coefficient
Vijh (1999)	SDC, M and A	1980–1997	336	(−3, +1)	2.29	median = 7.9%	positive regression coefficient

B.3. Selected event studies of asset sales that include analysis of CARs and relative size of the asset sale

Study	Source	Time period	# Obs	Window	CAR (%)	Relative size	Effect of relative size on CAR
Klein (1986)	Mergers and Acquisitions	1970–1979	202	(−2, 0)	1.12		positive regression coefficient
Lang et al. (1995)	SEC Form 8K	1984–1989	93	(−1, 0)	1.41	median = 23%	positive regression coefficient

This appendix summarizes selected prior research on acquisitions and divestitures. Panel A reviews selected papers that study the announcement returns for targets and bidders in acquisitions. Panels B.1 to B.3 review selected papers on corporate spinoffs, equity carve-outs, and asset sales that include analysis of the effect of the relative size of the divestiture and wealth effects.

corporate restructuring decisions made by management, whether downsizing or expansion, on average benefit shareholders.

Our results on the incidence and wealth effects of corporate restructuring in the 1990s have important policy implications. Many have interpreted the abrupt reversal of corporate takeovers at the end of the 1980s as evidence that entrenched managers could rely on antitakeover provisions and state laws to inhibit the market for corporate control. Our results of an active corporate control market in the 1990s, however, support Comment and Schwert's (1995) forecast that the decline in takeovers in the late 1980s and early 1990s would prove to be driven by economic conditions rather than legal burdens.

Our results also have implications for corporate finance, which extend beyond the basic wealth effects emphasized in the paper. A growing body of research has presented evidence of systematic mispricing in long windows following corporate events, such as those studied in this paper (see Mitchell and Stafford, 1999 for a recent survey). Our evidence that both acquisitions and divestitures cluster in particular industries adds to the growing cautions being applied to the long-run performance studies. Such clustering indicates that the assumptions of independence that frame much of the statistical tests of long-run studies are misapplied.

Finally, there is clearly much to be gained from more detailed study of acquisitions and divestitures in the 1990s. One query raised by Klein and Murphy (1997) is the nature of gains from large vertical mergers, such as Merck's acquisition of Medco and Disney's acquisition of Capital Cities/ABC. A further line of study raised by our own findings of the industry clustering of acquisitions and divestitures is a comparison of the sources of gains from restructuring in industries with high growth options vis-à-vis low growth industries. More broadly, are the sources of gains from restructuring in the 1990s the same as in prior decades? Along these lines, Boone (1999) reports that the source of gains from corporate divestitures is sensitive to time period. Clearly, an ongoing comparison of acquisitions and divestitures will continue to enlighten us on the causes and effects of corporate restructuring.

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