An Investigation of the Gains from Specialized Equity Claims

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We investigate whether operating performance improves when a firm creates traded equity claims on a subsidiary without relinquishing control. We find that the change in a parent firm's operating performance following an equity carve-out is negatively related to the fraction of subsidiary shares that the parent firm retains after a carve-out. Operating performance of parent firms improves only when the parent completely divests its ownership of the subsidiary. We also find no improvement in operating performance following the creation of tracking stock. We conclude that corporate restructuring without relinquishing control of assets does not enhance operating performance.

In recent years, equity carve-outs, spin-offs, asset sales, and tracking stocks have been important methods of restructuring assets and financial claims of publicly traded companies. These forms of corporate restructuring vary in terms of whether they create new equity claims on assets and how they change control over assets. For example, equity carve-outs and spin-offs create new and distinct equity claims on some portion of a firm's assets; the sale of assets does not. An asset sale or spin-off results in a complete divestiture of assets by the parent, but the creation of tracking stock has virtually no effect on the assets controlled by the parent. Following a carve-out, the parent's control ranges from majority ownership to no ownership of the subsidiary.

Although prior research documents that the stock market initially views all of these forms of restructuring as value enhancing, the source of an increase in value is not entirely clear.[1] We provide evidence on whether the gains from restructuring depend on the parent relinquishing its control over assets. Our primary objective in this article is to answer whether parent companies benefit when they restructure assets to create distinct equity claims, yet retain substantial control of a subsidiary.

We investigate this issue by examining changes in operating performance following an equity carve-out. The distinctive feature of equity carve-outs that motivates our study is that, although

[1]Numerous studies have documented significantly positive stock returns around these different forms of restructuring. For example, significantly positive returns around the announcement of a spin-off are documented by Hite and Owers (1983), Miles and Rosenfeld (1983), Mulherin and Boone (2000), and others. Abnormal returns are also documented around the announcement of a proposal for a tracking stock by Billet and Mauer (2000), D'Souza and Jacob (2000), and Elder and Westra (2001) and the announcement of an equity carve-out by Shipper and Smith (1986), Allen and McConnell (1998), Mulherin and Boone (2000), Hulburt, Miles, and Woolridge (2002), and Vijh (2002). Klein (1986), John and Ofek (1995), Lang, Poulsen, and Stulz (1995), and Mulherin and Boone (2000) report positive excess returns around the announcement of an asset sale.

Part of this research was conducted while Haushalter was with the Lundquist College of Business at the University of Oregon. We thank Jeff Brookman, Sandy Klasa, and Liwei Shan for valuable research assistance. We also thank an anonymous referee, Jarrad Harford, Randall Heron, Tim Kruse, Erik Lie, Harold Mulherin, Megan Partch, Michael Schill and participants in a University of Oregon finance roundup and at the Frank Batten Young Scholars Conference at the College of William and Mary for their helpful comments.

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all equity carve-outs result in the creation of a specialized equity claim, carve-out parents typically relinquish only partial control over the restructured assets. In our study, we measure the parent's control of a subsidiary's assets by the fraction of subsidiaries' shares owned by the parent. The changes in control in equity carve-outs range from cases in which the parent retains majority control of the subsidiary for several years to cases in which the parent relinquishes all control at the time of the carve-out. This variation provides an opportunity to investigate the consequences of a parent company's decision of how much control of a subsidiary to retain.

We study equity carve-outs of US publicly traded companies that took place between 1985 and 1995. We track the parent companies' ownership stake of the carved out subsidiary for the four years following the carve-out and measure operating performance of the parent and subsidiary companies' assets for six years following the carve-out.

Our primary test examines whether the change in operating performance from before to after the equity carve-out relates to the amount of ownership retained by the parent company. Similar to Vijh (1999), we examine the long-term performance from equity carve-outs. Unlike Vijh (1999), who focuses on whether the long-run stock returns after an equity carve-out are abnormal, we focus on operating performance and whether the ownership that the parent retains following an equity carve-out is related to operating performance.

We find that the operating performance of parent companies depends on the extent to which they retain control over the subsidiary. We find that the operating performance of the parent companies improves if they completely sell or spin-off their ownership stake in the subsidiary unit. We observe no improvement for either the subsamples of cases in which the parent retains a minority ownership stake (less than 50%) or a majority ownership stake (more than 50%). We also show that subsidiary firms' operating performance declines following carve-outs, but the changes in performance are unrelated to the amount of control retained by the parent company. The variation in operating performance among parent firms supports the view that the benefits of carve-outs arise primarily in cases in which the parent eventually gives the subsidiary full independence.

We also investigate performance following the creation of tracking stock, which is a specialized equity claim on a subsidiary that does not change a parent company's control. As with carve-outs in which parents do not relinquish control, we find no change in performance when parent companies create tracking stock in a subsidiary.

The absence of improvements in performance when the subsidiary does not gain full independence implies that the creation of specialized equity claims on a subsidiary does not generate benefits that can be detected in operating performance. Our results complement prior work by Vijh (2002) and Hulburt, Miles, and Woolridge (2002) by providing further evidence that benefits from carve-outs stem from divestiture-based explanations, such as increasing managerial efficiency. We conclude that equity carve-outs must ultimately separate the parent and subsidiary companies in order to bring about improvements in performance.

I. Potential Effects on Subsequent Performance

We discuss three possible ways that carve-outs affect or relate to the operating performance of the parent and subsidiary companies. The first is greater focus of the parent and subsidiary companies. The second is altered incentives of managers of the parent and carved-out companies. The third is parent managers' attempt to time their offering of shares in a subsidiary.

A. Improved Focus

A carve-out can improve the management of the assets of the parent and subsidiary firms. The improvement results from reduced diversity of operations, or increased focus, which leads to gains from specialization. For the parent firms, we expect that, to capture gains from improved focus, the parent must relinquish its majority, if not all, ownership of the carved-out subsidiary. For parent companies that maintain a majority control of the subsidiary, it is unlikely that the carve-out changes the focus or breadth of management responsibilities of the parent firms' managers. Therefore, if increased focus is the primary benefit of creating specialized claims, we do not anticipate any significant improvements in the parent firm performance following a carve-out in which the parent retains substantial control.[2]

The effects of a change in ownership structure on the subsidiary are less clear. For example, if the parent maintains a majority control of the subsidiary, the ownership of subsidiary will remain concentrated. Therefore, in addition to the benefits of greater focus, the performance of the subsidiary can improve because agency problems decrease. However, a majority ownership stake of the parent might limit the extent to which managers of the subsidiary can apply their discretion in managing the subsidiary's operations. This impediment to managerial discretion can worsen performance of the subsidiary.

B. Improved Managerial Incentives

Another potential benefit of a carve-out, which is discussed by Schipper and Smith (1986) and by Aron (1991), is an improvement in managerial incentives that results from creating traded equity claims on a subsidiary. Creation of specialized equity claims in a subsidiary can improve managerial incentives by better aligning the incentive contracts of managers with performance. Both the parent and subsidiary companies potentially can realize these gains. However, the benefits from improved performance-linked compensations do not appear to depend on the size of the parent's retained ownership stake of the carved-out subsidiary.

C. Timing

Nanda (1991) contends that equity carve-outs, which are a sub-sample of initial public offerings of stock, may be undertaken when the parent company's managers perceive that subsidiary shares are overvalued. This overvaluation can reflect recent favorable operating performance of the subsidiary that is not sustained following the carve-out. Thus, as Mikkelson, Partch and Shah (1997) show for companies that go public, operating performance of the subsidiary may decline following a carve-out.

As implied by Nanda (1991), we hypothesize that the smaller is the retained ownership stake of the parent, the greater the overvaluation and the subsequent decline in operating performance of the carved-out subsidiary. However, it is unclear what, if any, effect timing of the carve-out in order to exploit overvaluation should have for the parent companies'

[2]John and Ofek's (1995) study of asset sales and by Daley, Mehrotra, and Sivakumar's (1997) study of spin-offs find greater stock price reactions to restructuring announcements when parent firms divest assets that are unrelated to their primarily line of business. Comment and Jarrell (1995) also document better stock price performance for firms that have greater focus. Desai and Jain (1999) document a significant improvement in the operating performance of the remaining assets following the divestiture of an unrelated business unit. However, studies of equity carve-outs by Allen and McConnell (1998), Boone (2001), and Vijh (2002) do not find an association between announcement stock returns and the similarity in operations between the parent and the subsidiary. These studies leave unanswered whether gains from increased focus can be realized without the parent ultimately giving the subsidiary division full independence.

operating performance.

II. Sample Selection

We obtain our sample of equity carve-outs from a list compiled by Securities Data Company (SDC) of US initial public offerings of subsidiary firms between 1985 and 1995. We augment the SDC sample with carve-outs listed in issues of *Mergers & Acquisitions*. These sources produce an initial list of 189 equity carve-outs.

To ensure that we can measure operating performance for five years after a carve-out, our sample period ends in 1995. We require that prior to the equity carve-out the subsidiary is wholly owned by the parent corporation and that prior to the announcement date the parent firm has stock price data available on CRSP date.

Our analysis examines changes in the ownership structure of the subsidiary following the carve-out. Data on the parent's ownership stake in the subsidiary following the carve-out comes from several different sources. As our starting point, we identify the ownership immediately following the carve-out using the data from Securities Data Corporation and check these figures against the prospectus from the subsidiary's initial public offering. We track the ownership structure during the first four years subsequent to the offering by examining the carve-out subsidiary's proxy statements and 10-K reports. We eliminate four carve-outs because they are structured as master limited partnerships. Because our tests focus on operating performance, we eliminate 41 carve-outs in which data for the parent or the subsidiary is not included in Compustat and 21 carve-outs in which the parent or the subsidiary is a financial firm, as designated by an SIC code between 6000 and 6999. Our final sample consists of 123 carve-outs by 115 parent firms.

Table I shows the year of issue for these 123 carve-outs. The number of carve-outs per year ranges from five in 1988 to 19 in 1994. The median is 12 carve-outs per year.

Panel A of Table II shows substantial variation both in terms of the level of the parent firm's ownership stake and changes in the parent firm's ownership stake following the equity carve-outs. We separate the sample into three categories based on ownership at the end of the fiscal year: parent ownership equal to zero, parent ownership between zero and 50%, and parent ownership of 50% or higher.

At the carve-out, we find that a majority of parent companies retain more than a 50% stake in the subsidiary. By four years after the carve-out, many firms have no ownership of subsidiary shares. The proportion of the sample firms in which the parent retains majority control is 0.71 for the year of the carve-out (year 0), 0.50 by the end of year 2, and 0.41 by year 4. The fraction of the sample in which ownership equals zero is 0.08 in year 0, 0.37 at the end of year 2, and 0.49 at the end of year 4. Four years after the carve-outs, the sample is concentrated in, and allocated approximately equally between, parent firms that have retained a majority ownership stake in the subsidiary and parent firms that have relinquished all stock ownership.

Panel B of Table II shows the distribution of the parent's ownership stake in the subsidiary immediately following the carve-out relative to its stake four years after the carve-out. In this table, we classify the sample into narrower ownership categories and show the actual number of firms in each category. The first two columns show that for 32 (37%) of the 87 observations in which the parent owned at least 50% of the subsidiary at the end of the year of the carve-out, the parent completely divests its stake in the subsidiary by the end of year 4. At the other extreme, seven parent firms reacquired all of the outstanding shares of the subsidiary

Table I. Distribution of Carve-Outs across Calendar Years

The sample comprises equity carve-outs by non-financial firms between 1985 and 1995. To be included in the sample, we require that the subsidiary unit have been wholly owned by the parent corporation prior to the equity carve-out. We also require that the parent firm have stock price data available on CRSP prior to the announcement date. The subsidiary and parent must have financial data on Compustat, and neither the parent nor the subsidiary can be a financial company or structured as a limited partnership.

Year	Total Number of Carve-Outs
1985	5
1986	11
1987	12
1988	12
1989	10
1990	7
1991	15
1992	9
1993	13
1994	19
1995	10
Total Sample	123

by the end of four years.

III. Empirical Analysis

Our evidence includes various descriptive characteristics of sample firms, measures of operating performance for the entire sample of carve-outs and for sub-samples grouped by parent ownership stake, regressions on operating performance, and the results of various robustness checks.

A. Summary Statistics

Table III presents the average and median measures of the characteristics of the 123 sample firms at the time of the equity carve-out. We classify the sample firms according to the level of the parent company's ownership of the carved-out subsidiary four years following the carve-out. Because about 90% of the ownership stakes fall in the category of parent ownership equal to zero or the category of parent ownership of 50% or greater, we report information only for these two groups of firms.

Table III shows that the characteristics of the two groups of firms are similar at the time of the carve-out. Row 2 shows that, on average, the subsidiary's assets account for slightly less than a quarter of the total assets of the firm, which we calculate as the sum of the parent's assets and the subsidiary's assets. The total assets of the parent and subsidiary at the end of year 0 are shown in rows 3 and 4. These characteristics are also similar to those reported in other studies of equity carve-outs, such as Allen and McConnell (1998), using samples constructed during a different time period.

We assign the parent and the subsidiary to one of 48 industries using four-digit SIC codes and the industries categories defined in Fama and French (1997). The results in Row 5 indicate that a higher proportion of parents completely divest their ownership in the

Table II. Ownership Levels following Equity Carve-Outs

We define ownership as the fraction of a subsidiary unit's shares owned by the parent firm following an equity carve-out. The sample consists of 123 equity carve-outs issued between 1985 and 1995. To be included in the sample, we require that the subsidiary unit have been wholly owned by the parent corporation prior to the equity carve-out. We also require that the parent firm have stock price data available on CRSP prior to the announcement date. The subsidiary and parent must have financial data on Compustat, and neither the parent nor the subsidiary can be a financial company or structured as a limited partnership. We obtain ownership data from prospectuses for the subsidiary's initial public offering, subsidiary proxy statements, and 10K reports. Year 0 is the fiscal year in which the equity carve-out occurs.

Panel A. Distribution of Sample Proportions for Categories of Parent Ownership Stakes from Initial Equity Carve-Out to Four Years Later

	Year Relative to Initial Equity Carve-Out				
Parent's Ownership Stake	**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**
Parent Owns 0%	0.08	0.19	0.37	0.41	0.49
Parent Owns >0% to <50%	0.21	0.21	0.13	0.13	0.10
Parent Owns ≥ 50%	0.71	0.60	0.50	0.46	0.41

Panel B. Distribution of Number of Firms in Different Categories of Parent Ownership Stakes of Subsidiaries Immediately Following and Four Years after Equity Carve-Outs

	Parent's Ownership Stake Created by the Equity Carve-Out					
Parent's Ownership Stake Four Years after the Carve-Out	**80 to <100%**	**50 to <80%**	**20 to <50%**	**>0 to <20%**	**0%**	**Row Total**
100%	4	2	1	0	0	7
80 to <100%	22	2	0	0	0	24
50 to <80%	3	15	1	0	0	19
20 to <50%	0	5	4	0	0	9
>0 to <20%	0	2	0	1	0	3
0%	15	17	15	4	10	61
Column Total	44	43	21	5	10	123

subsidiary by the end of four years when the parent and subsidiary are in different industry categories.

Row 6 indicates that there is no significant difference between the proportions of cases in which the proceeds of the carve-out are distributed as dividends or paid to reduce debt. When we compare rows 7 and 8, we see that operating return on assets in year 0, which we define as operating income divided by operating assets, is greater for the subsidiary than the parent company for both the samples of high and low parent ownership. The relatively high operating performance of subsidiaries in year 0 is consistent with parent companies timing offerings of common stock in equity carve-outs to follow a period of favorable performance by the subsidiary.

B. Differences in Operating Performance

Our tests focus on whether changes in operating performance following a carve-out are associated with changes in parent ownership of the subsidiary. As in Table III, we again group the firms according to the fraction of the subsidiary unit's shares owned by the parent

Table III. Descriptive Characteristics of Equity Carve-Outs

The sample comprises of equity carve-outs done by non-financial companies between 1985 and 1995 that are included in Compustat. To be included in the sample, we require that the subsidiary unit have been a wholly owned by the parent corporation prior to the equity carve-out. Additionally, the parent firm is required to have stock price data available on CRSP prior to the announcement date, we classify companies into two ownership categories according to the parent's ownership of the subsidiary four years after the carve-out. We set the *Fama French Industry Dummy* equal to one if the parent and the subsidiary are in the same industry according to the industry classifications described in Fama French (1997). The *Use of Proceeds* is a dummy variable that we set equal to one if the proceeds from the equity carve-out are paid out to investors and zero otherwise. Year 0 is the year of the carve-out. Median values are presented under the mean value.

	Parent Ownership Four Years after Carve-Out	
	Ownership = 0% (n=58)	**Ownership ≥ 50% (n=51)**
1. Ownership	0%	79.10%
	0%	81.20%
2. Subsidiary Assets / Total Assets, Year 0	0.231	0.204
	0.135	0.148
3. Parent's Assets, Year 0 ($millions)	4717.36	3527.36
	1184.13	968.26
4. Subsidiary's Assets, Year 0 ($millions)	618.99	563.22
	196.92	115.10
5. Fama French industry Dummy	0.227[a]	0.452
	n.a.	n.a.
6. Use of Proceeds Dummy	0.448	0.588
	n.a.	n.a.
7. Return on Assets for Parent, Year 0	0.087	0.089
	0.087	0.107
8. Return on Assets for Subsidiary, Year 0	0.166	0.184
	0.155	0.185

[a]Companies with 0% ownership significantly different at the 10% level from firms with ownership ≥ 50%.

in year 4. We use the ownership in year 4 because, as Table II shows, substantial changes in ownership structure occur during the first two years after the carve-out. Our results are similar if we use the ownership in year 3. As before, we measure operating performance as operating income before depreciation divided by assets.

Table IV reports the operating return on assets for both the parent and subsidiary firms from the year prior to the carve-out through six years after the carve-out. Panel A presents the median changes in operating performance beginning with the performance in the fiscal year before the carve-out. For the sample as a whole, we find that the operating performance of parent firms improves during the sample period. The operating return on assets for the median parent is 0.094 for the year prior to the carve-out, which is not reported in the table, and increases by 0.014 at the end of five years after the carve-out. In contrast, the operating performance of the subsidiary firms decreases during this period. The operating return on assets of the median subsidiary firm is 0.164 for the year prior to the carve-out, which is not reported in the table, and decreases by -0.043 at the end of five years after the carve-out. The median changes for both the parent and subsidiary firm samples are

Table IV. Operating Performance Around Equity Carve-Outs

Performance is median operating income return on assets. The sample comprises equity carve-outs by non-financial companies between 1985 and 1995. To be included in the sample, we require that the subsidiary unit have been wholly owned by the parent corporation prior to the equity carve-out. We also require that the parent firm have stock price data available on CRSP prior to the announcement date, that the subsidiary and parent must have financial data on Compustat, and that neither the parent nor the subsidiary is a financial company or structured as a limited partnership. We classify companies into ownership categories according to the parent's ownership of the subsidiary four years after the carve-out. P-values for sign rank test of whether values are significantly different from zero appear in parentheses.

Panel A. Median Unadjusted Change in Return on Assets from Fiscal Year prior to Carve-Out

	Parent Ownership Stake Four Years after Carve-Out		
Year Relative to Carve-Out	**Entire Sample of Parent Firms**	**Ownership = 0%**	**Ownership ³ 50%**
1	0.005 (0.40)	0.004 (0.79)	0.008 (0.55)
2	0.009 (0.03)	0.009 (0.31)	0.006 (0.23)
3	0.016 (0.03)	0.023 (0.21)	0.006 (0.44)
4	0.027 (0.00)	0.036 (0.00)[a]	0.001 (0.71)
5	0.014 (0.04)	0.043 (0.00)[a]	-0.003 (0.80)
6	0.013 (0.06)	0.049 (0.01)[a]	-0.013 (0.54)
Year Relative to Carve-Out	**Entire Sample of Subsidiary Firms**	**Ownership = 0%**	**Ownership ³ 50%**
1	-0.001 (0.16)	0.003 (0.99)	-0.001 (0.20)
2	-0.012 (0.02)	-0.001 (0.36)	-0.009 (0.17)
3	-0.022 (0.01)	-0.009 (0.68)	-0.024 (0.09)
4	-0.034 (0.00)	-0.010 (0.21)	-0.028 (0.08)
5	-0.043 (0.00)	-0.035 (0.04)	-0.034 (0.07)
6	-0.056 (0.00)	-0.035 (0.07)	-0.070 (0.04)

Panel B. Median Change in Return on Assets Adjusted for Firms with Return on Assets within 10% of the Sample Firm in the Fiscal Year prior to the Carve-Out

	Parent Ownership Stake Four Years after Carve-Out		
Year Relative to Carve-Out	**Entire Sample of Parent Firms**	**Ownership = 0%**	**Ownership ³ 50%**
1	0.008 (0.47)	0.006 (0.89)	0.009 (0.60)
2	0.004 (0.20)	0.004 (0.69)	0.002 (0.48)
3	0.005 (0.49)	0.017 (0.70)	-0.002 (0.90)
4	0.016 (0.04)	0.030 (0.00)[a]	-0.012 (0.77)
5	0.007 (0.17)	0.038 (0.01)[a]	-0.002 (0.58)
6	0.008 (0.24)	0.030 (0.03)[a]	-0.016 (0.32)
Year Relative to Carve-Out	**Entire Sample of Subsidiary Firms**	**Ownership = 0%**	**Ownership ³ 50%**
1	0.003 (0.95)	0.006 (0.44)	-0.002 (0.76)
2	-0.005(0.28)	-0.001(0.87)	-0.008 (0.60)
3	-0.004 (0.48)	0.005 (0.38)	-0.004 (0.77)
4	-0.015 (0.06)	-0.005 (0.72)	-0.020 (0.22)
5	-0.035 (0.02)	-0.007 (0.22)	-0.054 (0.25)
6	-0.023 (0.01)	-0.008 (0.10)	-0.026 (0.09)

[a]Companies with 0% ownership significantly different at the 0.10 level from firms with ownership ≥ 50%.

significant at the 0.05 level.

The second and third columns in panels A and B show the change in performance when we classify the sample firms according to the level of the parent's ownership of the subsidiary at the end of year 4. We find significant differences in operating performance between the two ownership categories. The change in the return on assets for the parent firm is only significant and positive when the parent has completely divested itself of the subsidiary by the end of year 4. For this category, the change in performance from year zero is 0.036 in year 4, 0.043 in year 5 and 0.049 in year 6. By comparison, the change in operating performance for parent firms that retain a majority stake in the subsidiary is 0.001 in year 4, -0.003 in year 5, and –0.013 in year 6. The difference in performance between these groups is statistically significant at the 10% level.

For both samples of subsidiary firms, there is a decrease in operating performance following the carve-out. There is no difference between the performance measures of the sub-samples of subsidiary companies. Overall, Panel A indicates that the fraction of ownership that the parent retains in a subsidiary is related to the performance of the parent but not to the performance of the subsidiary.

To examine whether the changes in performance following the carve-out are abnormal, we follow the recommendations of Barber and Lyon (1998) and Lie (2001) and adjust the change in return on assets of each of the sample companies, both the parents and the subsidiaries, by the change in return on assets for a performance-based benchmark. The performance-based benchmark consists of companies with a return on assets that is within 10% of the sample firm in the year prior to the carve-out (year –1).[3]

Panel B of Table IV presents the changes in operating performance adjusted by the performance benchmark. For the entire sample of parent firms, the benchmark-adjusted change in the return on assets is statistically significant only through year 4. For the entire sample of the subsidiary firms, the benchmark-adjusted change in the return on assets is statistically significant and negative in years 4 through 6 after the carve-out.

When we separate the sample into two groups according to the parent's ownership level in year 4, the results for the parent companies are similar to the results presented in Panel A. For the parent firms that completely divested their ownership in the subsidiary, the benchmark adjusted changes in operating performance in years +4 through +6 are significant and positive. These values are also significantly greater than the change in the return on assets of the parents that retained a majority stake in the subsidiary. For example, the median change in the return on assets through six years after the carve-out is 0.030 for the parents that completely divested of the subsidiary by year 4 and –0.016 for the parents that maintained a majority stake. Again, for the subsidiary units there is no evidence of differences in performance between parent company ownership categories.

Our results thus far support the argument that changes in ownership structure affect a firm's performance. We find an improvement in operating performance among parent firms that divest a subsidiary, but no change in performance among parents that maintain an ownership stake in the subsidiary. We can interpret this result to mean that the change in ownership enables the parent to focus on its core operations.

The results also imply that issuing stock in a subsidiary while retaining majority ownership does little to improve the focus of the parent firm. By showing that operational gains accrue to parents that fully divest their holdings, our results support Vijh (2002) and Hulburt, Miles,

[3]For five of the 123 sample firms, there are fewer than three firms in Compustat that have an operating return on assets within 10% in the year prior to the carve-out. In these cases, we constructed our benchmark using companies that had an operating return on assets outside of the 10% band.

and Woolridge (2002), who find that the benefits of carve-outs primarily arise due to divestiture-based gains rather than from the reduction of asymmetric information.

C. Analysis of Acquired Parent Firms and Subsidiaries

One concern with the analysis is that abnormal performance might reflect a survivorship bias. For example, parent firms that divest a subsidiary, but perform poorly, might be more likely to be acquired before year 5. Firms that survive for five years after a carve-out would tend to have better performance. Therefore, we examine the sub-sample of the firms for which operating performance data is not available because the company was delisted from Compustat prior to five years after the carve-out. This sub-sample includes 15 parent firms and 14 subsidiaries. We compare the operating performance during the first two years after the carve-out of the acquired parent firms to other parent firms that were not acquired. We also compare the acquired subsidiaries to subsidiaries that were not acquired.

We find no evidence of significant differences in operating performance between the acquired parent firms and the other parent firms in our sample. For the subsidiary firms, we find that on average, the subsidiaries that were acquired significantly outperformed the other subsidiary firms in the first two years after the carve-out. However, there is no difference in the median performance between the two groups of parent firms. These similarities suggest that survivorship does not influence our measures of operating returns, at least not in years 1 and 2.

D. Analysis of Performance around a Complete Divestiture

Although our tests document an association between ownership and the performance of the parent firms, these results do not necessarily indicate that the change in performance results from this change in ownership structure. An alternative interpretation of the results is that parent firms that perform better tend to completely divest their ownership stake in a subsidiary unit. Therefore, we further examine the association between changes in ownership structure and subsequent changes in operating performance by focusing on the change in performance during the four-year window around the complete divestiture of the subsidiary. This four-year window includes the year prior to the complete divestiture, which is not necessarily the year of the carve-out, through two years after the complete divestiture. Because we only include observations in which the parent completely divests its subsidiary by year 4, the sample for these tests is 58 carve-outs. For about 83% of these observations, the complete divestiture takes place within two years after the equity carve-out. Also, the change in the ownership structure around the complete divestiture is substantial. For the year prior to the complete divestiture, the median parent owns slightly more than 45% of the subsidiary.

Our analysis of these data focuses on the change in operating performance from the year before until two years following the complete divestiture. Table V presents the results from this analysis.

For the parent firms, the return on assets improves significantly after they completely divest the subsidiary. For example, the return on assets of the median parent increases from 0.087 in the year before the divestiture to 0.128 two years after. This change in the return on assets of the parent is significant and positive at the 0.05 level for years 0 and 2 relative to the divestiture. The performance-benchmark-adjusted change in the return on assets during this window is also positive, although at a lower level of statistical significance.

For the subsidiary firms, the return on assets tends to decrease after the complete

Table V. Median Change in Operating Performance Following Complete Divestitures of the Subsidiary

The sample includes the 58 equity carve-outs in which the parent completely divests the subsidiary within four years after the equity carve-out. The years shown in the table are relative to the year of the complete divestiture. Change in operating performance is relative to the year prior to the complete divestiture, year -1. The performance benchmark is matched on the operating performance for year -1. P-values based on a sign-rank test appear in parentheses.

Panel A. Change in Return on Assets for the Parent

Year Relative to Complete Divestiture	Operating Performance	Change in Operating Performance	Performance Benchmark adjusted by Performance Benchmark
-1	0.087		
	(0.001)		
0	0.107	0.017	0.014
	(0.001)	(0.019)	(0.046)
1	0.112	0.019	0.013
	(0.001)	(0.202)	(0.288)
2	0.128	0.027	0.015
	(0.001)	(0.012)	(0.061)

Panel B. Change in Return on Assets for the Subsidiary

Year Relative to Complete Divestiture	Operating Performance	Change in Operating Performance	Performance Benchmark adjusted by Performance Benchmark
-1	0.150		
	(0.001)		
0	0.154	-0.000	-0.003
	(0.001)	(0.373)	(0.291)
1	0.131	-0.009	-0.002
	(0.001)	(0.077)	(0.173)
2	0.132	-0.012	-0.025
	(0.001)	(0.069)	(0.044)

divestiture. The return on assets for the median subsidiary is 0.150 for the year before and 0.132 two years after the divestiture. The performance-adjusted change in the return on assets is negative and statistically significant at the 0.05 level in year 2, and statistically insignificant in years 0 and 1. Because improvements in performance occur after the divestiture, it appears that the divestiture of a subsidiary unit causes the improvement in a parent's operating performance.

E. Regression Analysis

To further investigate the association between changes in ownership structure and changes in operating performance, we estimate a series of regressions. Table VI presents these regressions.

The first regression in Table VI relates the change in operating performance for the parent companies between years -1 and 5 to the parent's ownership stake at the end of year 4. We adjust the changes in performance for the median change in performance of firms whose

Table VI. Regression Analysis of Changes in Operating Performance Following Equity Carve-Outs

The dependent variable is the change in the return on assets adjusted for firms with similar performance in the year prior to the equity carve-out. We measure performance from the year prior to an equity carve-out to five years after the carve-out. *Parent's Ownership Stake* is a continuous variable equal to the fraction of shares owned by the parent four years after the carve-out. *Parent Ownership > 0* is a dummy variable that is set equal to one if the parent ownership of the subsidiary four years after the carve-out is greater than zero and set equal to zero otherwise. *Parent Ownership ³ 50%* is set equal to one if the parent's ownership of the subsidiary four years after the carve-out is at least 50% and set equal to zero otherwise. We set the *Fama-French Industry Dummy* equal to one if the parent and the subsidiary are in the same industry according to the industry classifications described in Fama French (1997). The *Use of Proceeds* is a dummy variable that we set equal to one if the proceeds from the equity carve-out are paid out to investors and zero otherwise. Year 0 is the year of the carve-out. P-values appear in parentheses.

Panel A. Dependent Variable is the Performance-Adjusted Change in Return on Assets for the Parent Company

Independent Variables	**(1)**	**(2)**	**(3)**	**(4)**
Constant	0.029	0.004	0.029	0.001
	(0.05)	(0.01)	(0.05)	(0.98)
Parent's ownership stake in the subsidiary in	-0.047	-0.162		
year 4	(0.05)	(0.12)		
Parent's squared ownership stake in year 4		0.001		
		(0.25)		
Parent Ownership > 0 Dummy			0.017	0.015
			(0.58)	(0.78)
Parent Ownership ≥ 50% Dummy			-0.057	-0.086
			(0.06)	0.019
Fama-French Industry Dummy				-0.049
				(0.28)
Subsidiary Assets/ Total Assets, Year 0				0.061
				(0.39)
Use of proceeds				-0.008
				(0.73)
Log of parent's assets in				0.008
year 0				(0.21)
Adjusted R-square	0.03	0.03	0.04	0.04
P-value of F-statistic	0.05	0.08	0.05	0.19

operating return on assets in year -1 was within 10% of the parent company's performance. Consistent with the comparisons across sub-samples in Table IV, the change in operating performance is negatively related to the ownership stake retained by the parent four years after the carve-out. The magnitude of the coefficient implies that holding an additional 25% of the subsidiary stock (for example, from 10% to 35%) is associated with roughly a 1.2% decrease in the change in parent's adjusted performance. The second regression adds the squared value of parent company's ownership in year 4. There is no evidence of a nonlinear relation between ownership and performance.

The third regression uses dummy variables in place of continuous variables for parent's ownership. The categories for the dummy variables are parent ownership in year 4 greater than zero and parent ownership greater than 50%. Consistent with the earlier comparison between categories, performance of parents that retain more than 50% ownership is less than that of parents with no retention of ownership. We note that for parents that maintain

Table VI. Regression Analysis of Changes in Operating Performance Following Equity Carve-Outs (*Continued*)

Panel B. Dependent Variable is the Performance-Adjusted Change in Return on Assets for the Subsidiary Company

Independent Variables	(1)	(2)	(3)	(4)
Constant	-0.054	-0.049	-0.044	-0.177
	(0.04)	(0.08)	(0.12)	(0.08)
Parent's ownership stake in the subsidiary in year 4	0.068	-0.062		
	(0.18)	(0.78)		
Parent's squared ownership stake in year 4		0.002		
		(0.55)		
Parent Ownership > 0 Dummy			-0.012	-0.089
			(0.83)	(0.29)
Parent Ownership ≥ 50% Dummy			0.052	0.073
			(0.34)	(0.19)
Fama-French Industry Dummy				-0.038
				(0.62)
Subsidiary Assets/ Total Assets, Year 0				0.013
				(0.83)
Use of proceeds				0.085
				(0.04)
Log of subsidiary's assets in year 0				0.026
				(0.04)
Adjusted R-square	0.01	0.00	-0.01	0.11
P-value of F-statistic	0.18	0.35	0.50	0.05

a majority stake in the subsidiary, the performance benchmark change in the return on assets from year -1 to year 5 is 0.057 less than for the parent companies that retained no ownership. The regression indicates significant differences in performance between the parents retain no ownership and parents that retain 50% or more ownership. We conclude that the performance of parent firms suffers following a carve-out particularly when the parent retains majority ownership in the carved-out subsidiary.

The fourth regression in Table VI controls for characteristics of the equity carve-outs beyond the parent's ownership. One variable is a dummy that takes on the value of one when the parent and subsidiary are in different industries and the parent retains no ownership. We hypothesize that the benefits from improved focus will be greatest in these cases.

We also control for the size of the subsidiary relative to the size of the pre-carve-out assets and for whether the proceeds from the equity carve-out are paid out to investors. We also control for the size of the parent at the end of the year of the carve-out. Although the dummy variable indicating ownership is greater than 50% is statistically significant, the regression as a whole turns out to be statistically insignificant.

We also estimate regressions that examine the operating performance of the subsidiary firms following the carve-out. Panel B of Table VI reports the results from these regressions. Consistent with the univariate comparisons presented earlier, the different regression specifications reported for the parent companies reveal no significant effects of parent's ownership stake on the subsidiary's performance. Differences in parent companies' ownership stakes affect only parent companies performance.

Only the last regression on subsidiary firms' performance is significant. However, the variation in performance is not explained by the parent's ownership stake. In the last regression

the change in the subsidiary's performance is related positively to the size of the subsidiary firm and greater if the proceeds from the carve-out are paid out as dividends, interest, or principal.

F. Robustness Checks to Regression Analysis

We estimate several alternative specifications of the regressions. Although not reported, we find that the inferences from the regressions do not change if we adjust performance for the median of firms in the same industry group. We also find that the inferences from the regressions in Table VI are largely the same if we measure the change in performance from year -1 to year 4, and if we measure parent's ownership stake as of the end of year 3. The one exception is the last regression for subsidiary firms, using ownership at the end of year 3, which shows higher subsidiary performance when the parent retains 50% or more ownership and lower subsidiary performance when the parent retains between 0% and 50% ownership. The inferences from Table VI are also unaffected when we measure performance relative to assets net of cash holdings.

For six observations in our sample firms, the fraction of the subsidiary votes held by the parent differs from the fraction of shares that it owns. We re-estimate the regressions by replacing the fraction of shares retained by the parent with the fraction of votes retained. We find that the fraction of votes retained by the parent is also negatively associated with the change in its operating performance.

Some changes to the regressions change the inferences. The regressions become statistically insignificant when we measure performance from year -1 to year 3 and when we measure parent ownership in year 2. Similarly, the regression is insignificant when we measure performance as operating income scaled by sales. Thus, some tests show no relation between parent companies' ownership and changes in operating performance.

IV. An Analysis of Tracking Stock Operating Performance

As a final step in our analysis, we study the operating performance of companies after an alternative form of restructuring, the creation of tracking stock. The issuance of a tracking stock creates a specialized equity claim on a unit of a company, and the parent company retains control of the unit.

A leading argument for creating tracking stocks is that specialized equity enables the parent company's board to compensate the subsidiary unit's managers with equity directly linked to the performance of the unit. Tracking stock differs from the equity created in carve-outs because the parent and subsidiary remain one legal entity rather than become two separate firms. The parent firm always retains ownership control over the subsidiary.[4]

We examine the change in operating performance of the parent and the subsidiary unit around the issuance of 11 tracking stocks that were issued prior to 1998. We exclude cases in which tracking stock is created as part of a merger. We also require that data for both the parent and the subsidiary unit are in Compustat. Because the majority of these tracking stocks were issued in the late 1990s, our analysis focuses on the operating return on assets

[4]The owner of tracking stock for a subsidiary unit generally has limited voting power for the unit. In some cases (e.g., DLJdirect), the owner of the tracking stock does not have any voting rights. Also, as discussed by Haas (1996), the claims that the owner of a tracking stock for a subsidiary has in the case of a sale of the subsidiary unit are often vague. However, in general the shareholders of the parent company will receive the majority of the proceeds from the sale of the subsidiary unit. For a more extensive description of the characteristics of tracking stocks see Murphy (1989), Logue et al. (1996), D'Souza and Jacob (2000), and Harper and Madura (2002).

Table VII. Median Change in Operating Performance Following the Issuance Of Tracking Stock

The table presents the return on assets for a sample of 11 tracking stocks issued prior to 1999 that were not accompanied by a merger or acquisition. To be included in the sample both the parent and the subsidiary must have financial data in Compustat. The years shown in the table are relative to the year of the tracking stock issue. Change in operating performance is relative to the year prior to issuance of the tracking stock, year -1. We match the performance benchmark on the operating performance for the year prior to the issuance of the tracking stock. P-values based on a sign-rank test appear in parentheses.

Panel A. Median Unadjusted Change in Return on Assets		
Year Relative to Creation of Tracking Stock	**Parent Company**	**Tracking Stock Unit**
1	-0.006	-0.003
	(0.43)	(0.90)
2	0.010	-0.001
	(0.99)	(0.85)
Panel B. Median Performance Benchmark Adjusted Change in Return on Assets		
1	-0.011	-0.028
	(0.82)	(0.76)
2	0.007	-0.015
	(0.57)	(0.77)

from the year before through two years after the tracking stock issue.

Table VII shows the change in the parent's operating return on assets during this four year window around the issue of a tracking stock. The change in operating return on assets is roughly half the change in the return on assets that we reported earlier for parents around the complete divestiture of the subsidiary as the result of an equity carve-out. None of the changes is statistically significant. However, our ability to detect a statistically change in performance is limited by the small sample size. These findings imply that the creation of a specialized equity claim by itself does not lead to an improvement in operating performance.

V. Summary and Conclusion

We examine whether and how the change in operating performance following an equity carve-out is affected by the ownership stake retained by the parent. We find that improvements in operating performance following equity carve-outs are limited to the parent firms that completely divest their ownership stake in the subsidiary. We find no evidence of improvements in operating performance among parent firms that maintain a stake in the subsidiary unit. For a relatively small sample of creations of tracking stock, which by design maintain parent control over subsidiary assets, we find no change in operating performance. Our results indicate that parent firms that create specialized equity claims on a subsidiary without giving up control of the unit do not realize improvement in operating performance.

Although we cannot identify why the change in the operating performance of the parent is associated with its ownership stake in the subsidiary, the results support the notion that increased managerial focus is an important source of the gains from restructuring. Our regression tests, however, do not show the largest improvement in performance for the parent companies when the parent and subsidiary are in different lines of business and the parent relinquishes all control. Therefore, the gains from disposing of all ownership in a subsidiary appear to apply to carve-outs in general.■

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