

# Is there shareholder expropriation in the U.S.? An analysis of publicly-traded subsidiaries

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## **Abstract**

We study the association between the performance of publicly-traded subsidiaries and the ownership stake of parent companies. The performance of subsidiaries varies substantially and depends on the ownership stake of the parent company. Subsidiaries in which a parent owns a minority stake realize negative abnormal stock returns and peer-adjusted operating performance. Majority-owned and fully-divested subsidiaries have no abnormal stock returns or operating performance. Moreover, there is a significant decrease in subsidiary peer-adjusted operating performance when a parent's ownership in a subsidiary changes from a majority to a minority stake. The results support arguments that shareholders of U.S. publicly-traded subsidiaries face the risk of expropriation by the parent companies, both from tunneling and market timing. Parent ownership levels and accounting choices exacerbate this risk.

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## 1. Introduction

Fama and Jensen (1983) and others argue that controlling shareholders can act opportunistically to extract gains at the expense of minority shareholders. Recent work by Johnson et al (2000), Nenova (2002), Dyck and Zingales (2004), Atanasov (2005), and Cheung, Rau, and Stouraitis (2006) offer direct and indirect empirical evidence that supports this claim. These studies focus on firms outside the U.S. and find indications of expropriation by controlling shareholders, particularly in emerging markets.

The evidence on expropriation from minority shareholders in the U.S. is less clear. Although Barclay and Holderness (1989) posit that premiums paid for large blockholdings in public firms reflect private benefits that accrue exclusively to the blockholders, studies of U.S. majority-owned companies by Holderness and Sheehan (1988, 2000) and Bates, Lemmon, and Linck (2006) find little evidence of wide-spread minority shareholder expropriation. These papers attribute the lack of expropriation in the U.S. to generally strong legal constraints on the behavior of controlling blockholders and protection of ownership rights. Indeed, Reece and Weisbach (2002) and Doidge, Karolyi, and Stulz (2004) argue that one reason non-U.S. firms cross-list on U.S. stock exchanges is to increase shareholder protections and limit the ability of controlling shareholders to extract private benefits.

In this study we investigate the risk of expropriation for minority shareholders of U.S. publicly-traded subsidiaries by examining whether the extent of a parent firm's ownership stake matters. Our approach differs from some of the prior studies of shareholder expropriation in a couple of different ways. First, existing studies like Barclay and Holderness (1989) and Holderness and Sheehan (1988) either group all blockholders together regardless of the ownership level, or focus only on majority shareholders. We separate firms by whether a parent owns a minority or majority stake, allowing us to determine how ownership affects subsidiary performance. Second, unlike Amit and Villalonga (2006), the focus of our analysis is on subsidiaries of corporate parents rather than subsidiaries controlled by families or individuals.

For subsidiaries controlled by corporate parents, of particular concern are agency problems that can arise between the outside shareholders of the subsidiary and the managers of the parent firm. The compensation of parent firm managers is generally conditioned on the performance measures of the parent rather than the subsidiary. As discussed by Murphy (1999), both stock return based and accounting based performance measures are important determinants of executive compensation. Therefore, by engaging in intercompany transactions at unfair terms and other activities that expropriate wealth from subsidiaries, a parent's managers can potentially improve determinants of their wealth and job security.

The effect of expropriation activities on a parent's financial statements varies depending on the parent's ownership stake. Based on U.S. accounting rules, when a parent owns a majority stake of a subsidiary, it is required to fully consolidate the performance of the subsidiary in its financial statements. As a result, activities that transfer assets or cash flows between the parent and the subsidiary generally will not improve the parent's financial statements, potentially limiting parent manager's incentives to deal unfairly with the subsidiary. In contrast, when a

parent owns less than a majority stake of a subsidiary it is not required to fully consolidate the performance of the subsidiary in its financial statements.<sup>1</sup> As discussed by La Porta et al. (1998, 1999) and Zwiebel (1995) ownership far below 50 percent is usually sufficient to control a firm. Therefore, parent companies with a minority stake potentially have both the ability and the incentive to enter into activities that expropriate from the subsidiary's shareholders. Based on these arguments, and assuming that financial statements affect managerial decisions, subsidiary shareholders face the greatest risk of expropriation when the parent retains a minority stake of the subsidiary.

To conduct our study, we form a sample of subsidiaries that separate from their parent via initial public offerings, called equity carve-outs. Several factors make carve-outs an ideal setting for studying shareholder expropriation in publicly-traded subsidiaries. First, carve-outs are easy to identify in major data sources like SDC Platinum. Alternatively, examining all partially-owned subsidiaries would require scanning the annual proxy statements of all U.S. public companies, making it difficult to identify when a subsidiary's relationship with the parent began. Second, because carve-outs were previously fully-owned divisions, the parent firms commonly continue conducting business with them after the IPO and retain significant presence on the carve-out firm's management and board. The parent involvement with the carve-out creates potential avenues to expropriate wealth from the subsidiary shareholders via intercompany transactions and the executive control to enact them. Finally, compared to partial acquisitions, which are usually a transient step on the way to a complete acquisition of a company, many

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<sup>1</sup> In contrast, when a parent owns less than a majority stake of a subsidiary, it is not required to fully consolidate the performance of the subsidiary in its financial statements, and asset transfers can improve at least some operating performance measures of the parent.

parent companies retain long term ownership in their carve-out subsidiaries, allowing us to study long-term subsidiary performance.

An example of the type of arrangement we study involves beverage bottler Coca-Cola Enterprises (CCE) and its parent Coca-Cola Co. (KO). Since selling off 51 percent of its ownership in CCE through an equity carve-out in 1986, KO has retained a large, but minority stake in CCE. KO has also maintained extensive business dealings with CCE. During this time, KO has been accused of transactions ranging from the sale of syrup and other assets to CCE at above market prices to pressuring CCE to reduce soft drink prices to increase the volume of KO's syrup sales, see Meyer and Owsen (1997), Meyer, Owsen, and Brozovsky (1998). These types of transactions can potentially expropriate wealth from the shareholders of CCE and improve the accounting performance of KO while hurting the accounting performance of CCE. Consistent with these concerns, CCE's average annual peer-adjusted operating return on assets is roughly -4% during the four years following the carve-out.

We consider two different ways that expropriation can take place. The first is expropriation via intercompany transactions, referred to as operational tunneling. A second is expropriation done passively through market timing. As discussed by Nanda (1991), Powers (2003), and Hand and Skantz (1999), a parent can time the sale of a subsidiary's shares to take advantage of its superior information about the future poor performance of the subsidiary. If the parent anticipates that the subsidiary will underperform, the parent can reduce its ownership stake to the point in which it is no longer required to fully consolidate the subsidiary's performance.

We examine these expropriation issues by studying the performance of 264 subsidiaries created via equity carve-outs between 1985 and 2000. We follow subsidiaries through four years

after the carve-out and group them based on the fraction of shares owned by the parent and identify year to year changes in ownership. The ownership groups each year are: 1) parent owns a majority stake in subsidiary (50 to 99 percent); 2) parent owns a minority stake (5 to 49 percent); and 3) parent completely divests of ownership stake (less than 5 percent).

We find that minority-owned subsidiaries perform poorly. Relative to peers, minority-owned subsidiaries have negative abnormal operating ROA beginning in the second year following the carve-out and continue to underperform during the third and fourth years. In contrast, majority-owned and completely-divested subsidiaries perform comparably to their peers. We also find a significant decrease in operating performance for subsidiaries when their ownership structure changes from being majority- to minority-owned following the carve-out. The results indicate that the transfer of income, reassignment of liabilities, and other operational tunneling activities are common forms of expropriation for minority-owned subsidiaries.

The results provide less support for market timing. In contrast to predictions about market timing, completely divested subsidiaries outperform firms in which the parent retains a minority stake and must include a portion of the subsidiary's performance in its financial statements. We cannot rule out, however, the possibility that parents time the sale of subsidiary equity, yet still retain control over the subsidiary. This situation would arise when the parent believes the benefits of control exceed the costs of reporting the poor performance of the subsidiary.

Finally, in addition to underperforming operations, the minority-owned subsidiaries have poor stock returns. Subsidiaries in which the parent retains a minority stake realize average abnormal returns of -17% in the year following the carve-out. If the parent retains a majority stake in the subsidiary at the time of the carve-out and subsequently reduces its ownership to a

minority stake, subsidiary shareholders realize average abnormal returns of -31% in the year of this change. When a parent firm either completely divests or retains a majority stake in a subsidiary, their average abnormal returns are insignificantly different from zero. The results indicate that shareholders largely anticipate the expropriation risk once the parent's ownership drops to minority stake, although *ex ante* they are not able to fully anticipate whether such a change in ownership will occur.

In sum, our findings show that subsidiaries perform poorly when a parent company owns a minority stake. There is no evidence of abnormal performance among firms in which the parent company owns a majority stake or completely divests of its stake. These results indicate that although expropriation might not necessarily be widespread in the U.S., it can still be a substantial risk.

The pattern of performance across parent company ownership groups supports arguments that accounting rules can affect the incentives for controlling shareholders to expropriate from minority shareholders. The results indicate that basic accounting rules for consolidation can substantially reduce the risk of expropriation in companies with a corporate blockholder. Therefore, the results have implications for accounting policy choices and show how these choices can interact with financial policy decisions.

The findings also have implications for the literature on corporate restructuring. Previous studies such as Vijh (1999) report no abnormal average long-term stock performance of equity carve-outs. Our results show that in studying these events, important insights can be gained by examining the variation in the terms of the restructuring. For example, we do not detect the agency problems that can arise from these events until we separate our sample by the parental ownership after the restructuring.

The remainder of the paper is structured as follows. Section 2 provides some institutional details about the rules of consolidation, outlines the specifics of carve-outs and develops our hypotheses. Section 3 describes the data and reports summary statistics. The results of the empirical analysis are in Section 4, while Section 5 concludes.

## **2. Background and Development of Hypotheses**

In this section we discuss our hypotheses and empirical tests. We describe the opportunities for parent managers to manipulate parent financial statements using intercompany transactions with controlled subsidiaries. We give particular emphasis to the differences between the equity and consolidation method of accounting for subsidiary performance.

### *2.1. Opportunities to Manipulate Parent Financials and the Accounting for Equity Investments*

The rules for the consolidation of a subsidiary on a parent's financial statements are of particular importance for our analysis because they can influence the incentives of parent managers to set up transactions that expropriate minority shareholder wealth. U.S. accounting rules dictate standards for reporting income or other effects from the investment of a parent company in a publicly-traded subsidiary. There are three accounting methods that a parent can use, depending on the extent of control they have on a subsidiary – fair value, equity, and consolidation.<sup>2</sup>

If the parent has a small ownership stake (less than 20 percent) of the subsidiary, it generally accounts for its ownership in another company using the fair-value method. This method treats the ownership as any investment in a marketable security. In this situation, the

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<sup>2</sup> The rules for accounting for the subsidiary are described in Financial Accounting Standards (FAS) 115 and 94, Accounting Principles Board (APB) 18, and Accounting Review Bulletin (ARB) 51.

parent must only report dividends received or gains and losses on the sale of equity investments. The fair-value method provides parent managers with the ability to improve parent performance measures at the expense of the subsidiary because intercompany transactions would be reported on the parent financials. Still, the parent ownership in the subsidiary is relatively small and the parent might not be able to control the terms of these transactions.

When the parent owns more than a 20 percent stake of the subsidiary, it must use either the equity or consolidation method to account for its stake. The equity method is to be used when the parent has significant stake in subsidiary, but does not control the subsidiary. This method requires that the parent only recognize a proportionate share of the subsidiary's earnings, and otherwise allows the subsidiary's assets and liabilities to be excluded from the parent's balance sheet. Parent companies that own less than a majority stake of a subsidiary typically argue that they no longer control the subsidiary. Consequently, the equity method is used almost exclusively by parents to account for their stake in the subsidiaries when their ownership falls between 20 and 50 percent.

With the consolidation method, the parent firm combines the items on the subsidiary's income statement, balance sheet, and statement of cash flows into its own financial statements. Under this approach both companies are reported as a single accounting entity. Parents use this method almost exclusively when they own a majority stake of the subsidiary, although there were a few notable exceptions that allowed majority-owning parents to avoid consolidating their subsidiaries if the subsidiaries operated in a different business than the parent – mostly financial and insurance companies.<sup>3</sup>

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<sup>3</sup> In effort to improve the informativeness of financial statements and reduce the off-balance-sheet financing problems, the FASB issued FAS 94 that removed most of the exceptions to the majority rule. For research on the effect of FAS 94 on parent financials see Mian and Smith (1990) and Wiedman and Wier (1999).

Despite the spirit of these accounting rules, the choice of accounting methods often does not reflect the reality of whether the parent controls the subsidiary. An ownership block of less than 50 percent, in an otherwise widely-held corporation, can still provide the shareholder with de-facto control over the corporation. La Porta et al (1998, 1999) and Zwiebel (1995) argue that even an ownership block of 20 percent could be sufficient for a parent to exercise complete control of a subsidiary. Moreover, business transactions and representation on the subsidiary's board can provide the parent with additional means to control the subsidiary. Consequently, the accounting method the parent chooses to report its share of subsidiary earnings might not adequately reflect the actual control it has over the subsidiary.

As shown in Table I, control without full consolidation provides a wide range of ways for a parent to expropriate from subsidiary shareholders. Many of these activities will have no effect on the net income the parent reports. However, these activities can inflate the parent's sales, operating cash flow (EBITDA), and other accounting-based performance measures, all at the cost to the subsidiary's financial performance.

The incentive for parent managers to expropriate largely depends on the extent to which their compensation is based on the performance of the accounting measures that are affected by expropriation. It is not possible to completely identify the accounting measures companies use in determining a manager's compensation. However, it seems reasonable to expect that the measures that can be inflated via expropriation are also important determinants of managerial compensation, thereby creating substantial incentives for managers to expropriate. For example, using a proprietary data set of executive compensation policies, Murphy (1999) reports that the most widely used accounting based performance measures for compensation are earnings per share and return on assets, both of which are based on net income numbers. However, net

income-based measures are often used in conjunction with EBITDA, sales growth, economic value added, or other accounting based performance measures that can be increased through transactions with the subsidiary.

Under full consolidation, the parent managers' incentives to engage in these intercompany transactions are less apparent. Because the parent's financial statements combine the performance of the subsidiary, dealings between the two will not have an effect on the parent's financial statements or accounting performance. Consistent with this argument, Francis (1986) and Whittred (1987) show that consolidation can protect subsidiary debt holders from detrimental asset transfers by the parent. Based on these rules for accounting, we expect that the incentives for expropriation are greatest when the parent owns a minority stake in the subsidiary. Therefore, if expropriation does indeed take place, we expect that it will show up as poor performance of the minority- owned subsidiaries.

## *2.2. Hypotheses*

Our primary hypothesis is that parent firms will expropriate from minority-owned subsidiaries. Based on this hypothesis we expect that minority-owned subsidiaries will underperform relative to their peers.

Our second hypothesis focuses on how expropriation takes place. A controlling shareholder can expropriate from minority shareholders in a variety of ways. As discussed by Johnson et al (2000), Bates, Lemmon, and Linck (2006), and Atanasov, Black, Ciccotello, and Gyoshev (2006), a parent can transfer wealth via negotiated sales of control at a premium not shared with minority shareholders, minority shareholder freeze-out at below fair value, or ongoing diversion of firm cash flows. Our analysis allows us to examine expropriation via ongoing diversion cash flow that we will label as "operational tunneling." Operational tunneling

includes transactions and transfers between the subsidiary and parent that are not conducted on arms-length basis, but are intended to favor the parent.

Another way that a controlling shareholder can expropriate from existing or future investors, as discussed by Powers (2003), Nanda (1991), and Hand and Skantz (1999), is through market timing. Under this form of expropriation, the parent managers choose to sell subsidiary stock to take advantage of non-public information about the subsidiary's future underperformance. In such cases the parent liquidates or reduces its ownership in the subsidiary before the information becomes public, allowing the parent to report better future performance than if it retained a majority stake of the subsidiary.

The predictions of the operational tunneling and market timing hypotheses are summarized in Table II. Based on the arguments for operational tunneling, we expect that the subsidiaries of minority-owned firms will underperform relative to peers. When the subsidiary is majority owned, however, the parent does not have the incentive to tunnel. Moreover, when the parent completely divests of the subsidiary, it loses ability to control tunneling activities. Therefore, under the tunneling hypothesis we expect that majority-owned and completely divested subsidiaries should perform normally.

If market timing is the primary form of expropriation, we expect that subsidiary performance would be positively correlated with the parent's ownership. In this scenario the minority-owned subsidiaries would be expected to underperform, but the worst performing subsidiaries would be the ones that were completely divested. Majority-owned subsidiary would perform normally. The operational tunneling and market timing hypotheses are contrasted with the null hypothesis that no expropriation takes place and all carve-out subsidiaries have zero peer-adjusted performance regardless of parent ownership.

To test these hypotheses, it would be ideal to examine market's reaction to the announcement of transactions between the parent and subsidiary and to changes in the parent's ownership stake, similar to the approach used in a study of tunneling in Hong Kong by Cheung, Rau, and Stouraitis (2006). However, except for large changes or transactions, rarely are announcements made regarding these activities. More typically disclosure of the parent's ownership stake and intercompany transactions between the parent and the subsidiary is generally only made on an annual basis. When intercompany transactions are disclosed, the specific terms of the transactions are not provided.

In the Appendix we provide several examples of the types of intercompany transactions that took place between parents and subsidiaries to provide a flavor of their relationship. Transactions range from loans, contractual agreements to provide services, to asset sales. These activities often accounted for a substantial part of the subsidiary's operations.

Because we cannot rely on announcements of ongoing activities between and subsidiary, we investigate their effect using the subsidiary's operating and stock returns. First we compare the returns on assets of fully divested, unconsolidated, and consolidated subsidiaries. Second we examine the change in operating return on assets following adjustments in parent ownership in a subsidiary.

### **3. Data**

Equity carve-outs offer a sample of publicly-traded subsidiaries in which public parent corporations choose to hold a wide range of ownership levels. The variation in ownership is necessary to address the effects of different ownership and accounting decisions on subsidiary performance. Further, because both the parent and subsidiary are public, we are able to collect

detailed information about their ownership structure and accounting and stock performance. Finally, because the carved-out subsidiary was initially a division of the parent, carve-outs are often associated with significant number of parent-subsidary relationships like product agreements, joint marketing and R&D, and debt guarantees. As discussed by Hoyle, Shaefer, and Douplik (2004), such relationships generate substantial intercompany asset transactions and also opportunities for the parent to exert control over the subsidiary beyond its ownership stake.

Parent firm ownership following the subsidiaries' IPO ranges from zero to 95 percent. After the carve-out, the parent has the ability to alter its ownership stake by buying, selling, or distributing shares of the subsidiary. As shown by Boone (2002), the parent often retains its stake for at least four years after the carve-out. Therefore, the subsidiaries' ownership structure can vary cross-sectionally and across time.

### *3.1. Sample Selection*

We obtain prospective equity carve-outs for the period 1985-2000 from a list of initial public offerings (IPOs) compiled by the Securities Data Corporation (SDC). An initial screen excludes unit offerings, non-U.S. firms, and firms with an offering price of less than \$5. We augment this list of firms by including any additional IPOs that *Mergers & Acquisitions* lists as carve-outs. Additionally, we require that the parent firm be a U.S. publicly-traded company. These two sources generate a total list of 349 potential carve-outs. We eliminate firms from the sample that were a joint-venture with another firm or were constructed as a limited partnership. Finally, we drop any observations when either the parent or subsidiary does not have sufficient stock price or accounting information. Imposing these criteria reduces the final sample to 264

equity carve-outs from 232 parent firms.<sup>4</sup> We follow all subsidiaries for a four-year period, which allows time for parents to adjust their level of ownership if they choose.

### *3.2. Summary Statistics*

Table III reports the distribution of the sample by year. The greatest number of carve-outs occurs in 1996 with 35 and the least occurs in 1990 with eight. The table shows that these subsidiaries are quite large, averaging about \$2.2 billion in assets at the time of the IPO. Therefore, any expropriation of wealth of these firms would amount to large dollar losses for minority shareholders. Table III indicates that, on average, the parent firm retains a majority stake in the subsidiary immediately following the carve-out. Of the 264 observations in our sample, there are 199 observations in which the parent retains a majority stake immediately after the carve-out. Initially, there are only 44 observations in which the parents retain a minority stake and 21 cases in which the parent completely divests of its stake. These findings are consistent with Allen and McConnell (1998) and Schipper and Smith (1986). Finally, there is often an industry overlap between the parent and the subsidiary. Table III shows that 40 percent of the parents and their subsidiaries are in the same Fama-French (1997) industry group.

From Table IV and Figure 1 we can see that the parent's stake in the subsidiary often changes in the four years following the initial carve-out. By the end of Year 4, 176 of the 264 subsidiaries are still publicly traded, of which the parent completely divests 81 and holds a partial stake in the other 96. Among the 96 carve-outs with parent ownership in Year 4, 26 are

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<sup>4</sup> AT&T, Enron, Equitable Companies, Freeport-McMoRan, H&R Block, Healthdyne, Intermedia, Kmart, Morrison Knudsen, National Intergroup, RR Donnelley, Santa Fe Pacific Corp., Sears, Roebuck & Co., The Henley Group, The Limited Inc., and W.R. Grace each conducted two carve-outs, while American Express, Atlantic Richfield, Lincoln National, Telephone & Data Systems, each conducted three carve-outs. Thermo Electron and its various subsidiaries accounted for 10 carve-outs.

minority-owned subsidiaries. The ratio of minority to majority-owned subsidiaries is similar in the prior years.

We are also interested in the distribution of ownership in our sample. While tax considerations help explain the choice of parent ownership above 80 percent, we observe that parents choose a wide range of other ownership levels. The clustering of ownership above and below the 50 percent level is consistent with parents trading off the benefits of retaining majority control, but being required to consolidate the subsidiary versus the benefits of lower control and not being required to consolidate the subsidiary. Figure 1 shows that within this ownership region parents are more likely to keep minority ownership. In untabulated results, we find that at the end of Year 1 parent ownership falls between 40 and 60 percent for 70 subsidiaries. Among this group, 45 firms are minority-owned (between 40 and 49 percent) and 25 firms are majority-owned (between 50 and 60 percent). Similarly at the end of Year 2, the ownership of 57 subsidiaries falls within this 40 to 60 percent region, 21 of these firms are majority-owned and 36 are minority-owned.

Finally, we inspect the financial statements for the group of parent firms that hold a minority stake of the subsidiary. We find that many of the parents continue to have business and financial dealings with the subsidiary, and often have directors who sit on the subsidiaries' boards. Still, during our sample period none of the parents chose to consolidate the subsidiary in their financial statements.

#### **4. Analysis and Results**

We examine the expropriation of wealth from minority shareholders by focusing on the abnormal operating and stock performance following the equity carve-out. Although the hypotheses offer clear predictions for the subsidiaries, predictions are less clear for the parent.

As discussed above, a parent firm's managers might have the incentive to expropriate even in cases in which these efforts are unlikely to result in superior performance for their shareholders. Predictions for the performance of the parent firm are further clouded by the endogenous nature of the incentive to expropriate and the manager's outlook for the parent firm's future performance. For example, parent managers might have a greater incentive to expropriate to meet performance objectives if their outlook for the parent is otherwise unfavorable. Therefore, although our analysis begins with an examination of the performance of the parent relative to the subsidiary, the tests of expropriation focus on the performance of subsidiaries and their shareholders.

#### *4.1. Cross-Sectional Operating Performance*

The main tests of our hypotheses involve measures of abnormal performance for the unconsolidated subsidiaries compared to consolidated or completely divested subsidiaries. Because concerns about accounting rules for consolidation can affect the parent's ownership choice – and the probability that expropriation will occur – we divide the sample into three ownership categories: fully divested, ownership below 50% (unconsolidated), and ownership above 50% (consolidated).

We measure operating performance using operating return on assets. This variable is defined as operating cash flow (Compustat Data item 13) divided by Total Assets (Compustat Data item 6). We compute the operating ROA for the parent and the subsidiary each year following the carve-out and calculate the difference between the two numbers (subsidiary operating ROA minus parent operating ROA). We assume that ROA provides a more direct test of subsidiary performance and the effect of intercompany transactions than earnings. Earnings are also affected by taxes and depreciation, both of which are less likely to be affected by these

activities. Analysis of ROA is shown in Table V. The mean and median differences in operating ROA between the subsidiary and the parent are shown for Years 1 to 4 based on the three parent ownership categories.

The results in Table V show that the relative performance of the subsidiary to the parent in the year following the carve-out is positive regardless of parent ownership. After Year 1, the relative performance of the subsidiary is generally positive in cases where the parent either fully divests or consolidates the subsidiary. In contrast, the relative performance of the subsidiary to the parent decreases with the number of years following the carve-out when the parent owns a minority stake and does not fully consolidate the subsidiary. By Year 3, the subsidiary relative performance becomes negative and statistically significant. This performance of unconsolidated subsidiaries is statistically different from the relative performance of consolidated subsidiaries.

The above results provide preliminary evidence that accounting choices involving consolidation are associated with the expropriation risk faced by subsidiary shareholders. We further investigate this issue by analyzing the abnormal performance of subsidiaries using peer-adjusted operating ROA. Following Lie (2001) and Barber and Lyon (1996), we make this adjustment by first matching each of the carve-outs in our sample to companies in the same Fama-French (1997) industry group with the closest operating ROA in the year of the carve-out (Year 0).<sup>5</sup> The peer-adjusted operating ROA for the years following the carve-out is computed by subtracting the average operating ROA of these peers from the raw operating ROA of the subsidiary.

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<sup>5</sup> More specifically, we construct the benchmark portfolios using at least five matching firms. We initially identify firms in the industry with a operating ROA in Year 0 that is within ten percent of the sample firms (i.e., if the sample firm's operating ROA is 5%, we look for comparable firms with an operating ROA between 4.5% and 5.5%). If less than five companies meet these criteria, we look for firms that are within one percentage point of the sample firm's operating ROA (i.e., 4% and 6%). If less than five companies fall within this band, we expand the band by a percent point. We continue to increase this band until five matching firms are identified.

In Table VI we show the mean and median operating ROA for the four years following the carve-out. We sort the subsidiaries based on the level of parent ownership at the end of the each year. To mitigate the influence of outliers on these statistics, we winsorize peer-adjusted operating ROA by setting the values in the bottom and top one percentiles to the values of the 1<sup>st</sup> and 99<sup>th</sup> percentiles, respectively.

The results in Table VI show that minority-owned subsidiaries underperform their peers beginning in the third year after the equity carve-out. The median subsidiary's operating ROA falls roughly 4.5 percent points below its peers in Year 3 and in Year 4. The mean shortfall in operating ROA is even greater. Consolidated or completely-divested subsidiaries do not exhibit any significant abnormal performance during this period. Furthermore, the abnormal operating ROA for median minority-owned subsidiary is less than that of majority-owned subsidiary in Years 2, 3, and 4 after the carve-out.

The underperformance of unconsolidated subsidiaries is large in economic terms. When we convert the peer-adjusted operating ROA into dollar terms by multiplying it by the value of subsidiary assets, for Years 2 to 4 after the carve-out we get an average underperformance of \$25.2 million (median \$7.9 million). This underperformance is on average equal to 73% (median 23%) of subsidiary operating income. On average, these values translate to a total dollar amount of peer-adjusted underperformance for the unconsolidated subsidiaries of more than \$500 million a year.

We next explore the cross-sectional variation in operating performance of subsidiaries relative to their peers. In Table VII we show results from regressions on the peer-adjusted operating ROA for each of the four years following the carve-out. We include a dummy variable (ownership49) equal to one when the subsidiary is minority-owned and another dummy variable

equal to one (ownership50) when the subsidiary is majority-owned. The comparison category consists of subsidiaries that are completely divested (parent's ownership stake is less than five percent).<sup>6</sup> The other variables in the regression control for subsidiary size (book value of total assets) and whether the parent and subsidiary are in the same industry.

Looking at Panel A, the coefficient on the ownership49 dummy is statistically insignificant in Year 1, but significantly negative in Years 2 to 4, ranging from -5% in Year 2 to -10% in Year 4. Similar to the results in Table VI, the abnormal performance of unconsolidated subsidiaries is increasingly more negative each year. The coefficient on the ownership50 variable is insignificant for each year but significantly greater than the coefficient on the ownership49 variable in Years 3 and 4. The other variables in the regressions are generally statistically insignificant, with the exception of the firm's total assets which is positively associated with subsidiary operating ROA.

We next document at the effect of executive overlap between subsidiary and parent on subsidiary peer-adjusted performance. We define executive overlap as a dummy variable equal to one if one of the top three subsidiary executives (CEO, Chairman of the Board, or President) is also executives of the parent. We add this dummy variable to the regressions in Table VII. And also interact it with the dummies ownership49 and ownership50 to detect whether executive overlap has a different effect for consolidated vs. unconsolidated subsidiaries. The results from these regressions are reported in Panel B of Table VI. The coefficient on the executive overlap dummy is insignificant in all four regressions, which suggest that executive overlap does not

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<sup>6</sup> As discussed in section 2.1 the rules for accounting for the subsidiary performance change once the parent's ownership stake drops below the 20% level. However, very few firms in our sample fall into the category of ownership between 5 and 20 percent level. Because predictions for our analysis are similar for firms that fall into this range as other firms in which the parent owns a minority stake, we include these observations with the ownership49 group.

affect the performance of the reference group (fully divested subsidiaries). In contrast the interaction between executive overlap and ownership<sup>49</sup> is negative and large in magnitude in Years 3 and 4. Based on the results, we can conclude that all of the negative peer-adjusted performance of unconsolidated subsidiaries in Years 3 and 4 following the carve-out occurs in subsidiaries which top executives are also affiliated with the parent. It appears that the dual role of subsidiary executives is associated with poor performance, perhaps because the incentives for these executives are more closely aligned with parent and not with subsidiary performance.

The relative size of a subsidiary compared to its parent size may also influence the ability of the parent to transfer wealth from the subsidiary. In unreported tests we replace the size variable in the Table VII regressions with a relative size variable defined as the ratio of Subsidiary Total Assets and Parent Total Assets for unconsolidated subsidiaries and Subsidiary Total Assets and (Parent Total Assets – Subsidiary Total Assets) for consolidated subsidiaries. The results from these regressions are similar to the findings in Table VII. Unconsolidated subsidiaries (and especially subsidiaries with executives who also work for the parent) still have statistically significant negative peer-adjusted performance in contrast with consolidated subsidiaries which have zero peer-adjusted performance.

We extend our analysis of ownership structure and operating performance by examining this relation on a continuous basis. To conduct this analysis, we no longer aggregate the publicly-traded subsidiaries into the three ownership categories (i.e., majority ownership, minority-owned, fully divested), and instead use the actual fraction of subsidiary shares owned by the parent. Following a methodology suggested by Cleveland (1979), we show the association between locally smoothed peer-adjusted operating ROA and parent ownership. First, we estimate OLS regressions in which the dependent variable is the subsidiary's peer-adjusted

operating ROA and the independent variable is the fraction of shares owned by the parent. Each regression uses the 30 percent of the observations that are closest to a particular level of ownership. Next, based on the coefficients of from these regressions, we compute the predicted operating ROA in this vicinity of ownership.

Figure 2 shows the predicted level of performance from this analysis. Consistent with the results from our earlier analysis, the worst performance is for minority ownership, particularly around 25 percent. For firms with ownership in this region, the peer-adjusted operating ROA is estimated at negative five percent. Peer-adjusted operating ROA is negative up to the point of zero ownership by the parent. The best performing subsidiaries are those in which the parents' ownership stake exceeds 80 percent.

The poor performance of minority-owned subsidiaries reported in Tables VI and VII, and Figure 2 supports arguments that minority-owned subsidiaries risk expropriation from parent managers. The avenue of expropriation is less obvious. Based on the predications in Table I, the fact that fully divested subsidiaries do not underperform is more consistent with operational tunneling rather than market timing. However, it is not entirely clear how operational tunneling occurs between the parent and subsidiary. For example, performance does not seem to be worse when the parent has direct avenues for expropriation such as regularly ongoing business or financial relationship or among subsidiaries operating in the same industry. One interpretation of these results is that tunneling takes place through less regular activities such as periodic asset sales. Another explanation is that the nature of these intercompany transactions are often poorly disclosed or not disclosed at all, possibly limiting our ability to use disclosed transactions to detect tunneling.

Though the normal performance for the fully-divested subsidiaries does not support the market timing arguments, we can not completely rule it out as a form of expropriation. A possibility is that parent manager's time the market by selling some, but not all, of their subsidiary ownership, resulting in a shift from holding a majority to a minority stake. These parents might be willing to bear the costs of keeping the poorly performing division on its books in exchange for preserving certain benefits, such as retaining the ability to tunnel.

#### *4.2. Time-Series Operating Performance*

To further investigate whether a parent is expropriating from subsidiary shareholders, we study a subset of subsidiaries in which the parents' ownership stake changes between the ownership groups. The tests center on the changes in the subsidiary's performance around the ownership altering event. We examine changes in performance around three types of alterations in ownership: majority ownership to minority ownership (22 observations), minority ownership to complete divestiture (26 firms), and majority ownership to complete divestiture (37 firms). For these tests we compute the change in the subsidiary's peer-adjusted operating ROA in the years after ownership switch minus its peer-adjusted operating ROA before the switch.

According to arguments of expropriation, a decrease in the parent's ownership from a majority stake would be accompanied by a subsequent decline in subsidiary performance. There are also predictions for this analysis based on how parental expropriation takes place. The tunneling argument predicts that the decrease in performance would be greatest when parent ownership changes from a majority to a minority stake. Market timing arguments predict that the decrease in performance would be greatest when parent ownership drops from a majority stake to a complete divestiture. A switch from minority to complete divestiture is also expected to be accompanied by a decrease in performance.

The results from this analysis are shown in Table VIII. The findings support claims of expropriation. The subsidiaries in which the parent reduces ownership from a majority stake to minority stake, yet retains some ownership till the end of Year 4, exhibit a reduction in operating ROA of 9.5 percent, on average. If we also include companies that are completely divested by the end of Year 4, the decrease in performance is 7.4 percent. The fact that the worst drop off in subsidiary performance occurs when the parent drops from majority to minority owner is consistent with tunneling.

#### *4.3. Stock Return Performance*

The pattern of operating performance among subsidiaries is consistent with expropriation. However, the effect of these activities on the wealth of subsidiary shareholders depends on the extent to which these activities were initially incorporated into the price of the subsidiary's stock. For example, if at the time of subsidiary's IPO the subsidiary shareholders fully anticipate that expropriation will take place, we should not find abnormal stock returns for the subsidiary, regardless of the parent's ownership stake. We examine the wealth effects of expropriation for subsidiary shareholders by analyzing the subsidiaries' 12-month buy-and-hold abnormal returns (BHARs) for each year following the carve-out. We compute a subsidiary's BHARs as the difference between the 12-month buy-and-hold return for the subsidiary and the 12-month buy-and-hold return of a portfolio of firms that are similar to the subsidiary in terms of size and book-to-market ratio.<sup>7</sup> We sort the BHARs for the subsidiaries by the level of the parents' ownership and report the mean and median values in Table IX.

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<sup>7</sup> We use the 5x5 B/M and Size grid from Kenneth French's data library. See [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)

The Table IX numbers indicate that minority-owned subsidiaries have negative returns in the year of the IPO and in the year following the IPO. The magnitude of these BHARs is large. For example in Year 2, the mean BHAR for minority-owned subsidiaries is -12.6% and the median is -26.7%. In contrast, majority-owned or completely-divested subsidiaries have BHARs that are close to zero. When we pool all observations, the average BHAR for minority-owned subsidiaries is -9.8% and less than the average BHAR for majority-owned subsidiaries, which is essentially zero.

We extend our analysis of shareholder returns by focusing on the BHAR in the year of an ownership alteration. This analysis is similar to our study of operating performance around changes in ownership in Table VIII. Again, we identify three possible ownership changes: majority to minority ownership (19 observations), minority ownership to complete divestiture (24 firms), and majority ownership to complete divestiture (23 firms).<sup>8</sup> We estimate a regression on BHARs in which the independent variables include a dummy indicating the year of the ownership change and firm fixed effects. The results from these regressions are reported in Table X.

Table X shows that the magnitude of the BHARs when a parent reduces ownership from majority to minority holding is -31%. In contrast, the BHARs of the other two ownership changes are positive and around +15%. However, none of the values are statistically different from zero. The insignificance is at least partially due to the low number of observations we have in each group.

The results in Table IX, and to a lesser extent in Table X, show that minority-owned subsidiary shareholders anticipate expropriation. However, this risk is not fully incorporated into

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<sup>8</sup> The number of observations shown in Table 9 is less than that in Table 8 because of the additional requirement of firms to be included in CRSP as well as COMPUSTAT.

the subsidiary's stock price until after the change in ownership takes place, possibly because there is often uncertainty regarding whether the subsidiary will become minority-owned. Although many of the majority-owned subsidiaries became minority-owned, other initially majority-owned subsidiaries remained majority-owned or were completely divested. Furthermore, some of the minority-owned subsidiaries at the time of the equity carve-out were quickly divested, leaving little time for expropriation. In any case, based on the magnitude of the shareholder returns, expropriation can be of substantial cost to minority-owned shareholders.

## **5. Conclusion**

This paper examines the agency problems that can arise when parent firms control publicly-traded subsidiaries. We argue that when a parent firm controls – but does not fully account for the performance of its subsidiary – the subsidiary's shareholders risk expropriation. We find that subsidiaries, in which the parent retains a minority stake and only partially accounts for the performance of the subsidiary, perform poorly both terms of operating return on assets and stock returns. For example, a change in parent ownership from a majority to a minority stake is associated with more than 7% abnormal drop in operating return on assets from the years prior to the ownership change to the years following the ownership change. Abnormal stock returns for minority-owned subsidiaries are -17 % percent in the year of a carve-out and -13% in the year following the carve-out. We find no evidence of abnormal performance for subsidiaries when the parents retain majority ownership or completely divest their stake. The results are consistent with parents expropriating their subsidiaries through tunneling activities, although it is difficult to identify specific ways that these transactions take place.

Our finding of shareholder expropriation in the U.S. differs from earlier work. One potential reason for this difference is that expropriation is not particularly widespread in the U.S.

Accounting rules and other regulations can be effective in reducing the incentive for a controlling shareholder to expropriate. Consistent with previous work by Boone, Haushalter and Mikkelson (2003) and Vijh (1999), an analysis of our sample that groups all subsidiaries with controlling shareholders together (i.e., both majority and minority-owned subsidiaries) shows no evidence of expropriation. Abnormal performance for subsidiaries is only detected when subsidiaries are separated into groups by the extent of the parent corporation's ownership stake.

Moreover, in cases in which there is little incentive for controlling shareholders to expropriate, controlling shareholders can increase the minority shareholder wealth. As discussed by Shleifer and Vishny (1986) large outside blockholders in publicly-held corporations are often viewed positively because they provide valuable monitoring services and promote the transfer of control. Similarly, Allen and Phillips (2000) and Fee, Hadlock, and Thomas (2006) argue that ownership stakes by corporations in other publicly-traded companies increase incentives to invest in product market agreements and relationship-specific assets, which in turn reduces contracting and monitoring costs. The benefits from these types of activities can be offset by the costs of expropriation, making it difficult to find expropriation using a broad sample.

A second reason for the difference of our results from earlier studies is that operational tunneling could be more difficult to detect than other forms of potential expropriation. For example, the terms a controlling shareholders offer to minority shareholders during an acquisition such as the freeze-outs studied by Bates, Lemmon, and Link (2006) are more obvious to minority shareholders and regulators (as well as lawyers) than the terms of intercompany transactions between a parent firm and its subsidiary. Therefore, although the incentives to expropriate might be similar to other studies, the setting we study affords controlling shareholders a more effective means for doing so.

## **APPENDIX**

This section examines the types of arrangements that exist between parents and their publicly traded subsidiaries. Rarely are there public announcements of transactions between a parent and its subsidiary at the time of the transaction. Transactions that are disclosed in financial filings are often vague and only provided on an annual basis. Stakeholder lawsuits (usually filed by the shareholders or creditors of the minority firm) often offer the most detailed descriptions of the dealings between a parent and a subsidiary. Therefore, we take information from the press on lawsuits, supplemented with details from financial filings, to show the types of arrangements that can lead to minority shareholder expropriation.

### **Motorola and Iridium**

Motorola owned roughly 18 percent of Iridium after spinning it off. Although Motorola was not required to fully consolidate Iridium's operations, there were strong ties between the two companies. The Chairman of Iridium was previously the executive vice president of Motorola. According to creditors, Motorola had approval rights over all of Iridium's security filings.

Transactions between the companies were also extensive. Motorola was Iridium's primary supplier. In Iridium's 1998 10k alone, Motorola is mentioned 515 times. In total, Iridium paid Motorola almost \$5 billion to help it build and maintain a satellite network.

In less than three years after going public, Iridium filed for bankruptcy. Creditors contend that the satellite system they were left with was worth only a fraction of the payments made to Motorola. They argue that the purpose of the arrangement was to fund the development of

projects that Motorola could sell elsewhere, while passing most of the risks of the project onto outside investors (Iridium's shareholders.)<sup>9</sup>

### **Beeba's Creations and Body Drama**

Beeba's Creations retained a 51% stake in Body Drama after carving it out in an IPO in 1991. Because it retained a majority stake of Body Drama, Beeba's was required to fully consolidate the performance of Body Drama in its financial statements. Therefore, intercompany affected Body Drama's financial statements but not Beeba's.

Contractual agreements between Body Drama and Beeba's required Body Drama to rely on Beeba's for management, information services, payroll processing, warehousing, and other services. Beeba's is accused of often setting the prices that it would receive from Body Drama for these services. In others words, Beeba's was able to name its own price. Between 1991 and 1993, Body Drama's selling, general and administrative expenses increased by 163% although revenues only increased by 17%.

In 1994 Beeba's repurchased the remaining 49% of Body Drama at a price that was roughly a third of its IPO price.<sup>10</sup>

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<sup>9</sup> Sources: Iridium's 1998 10k and proxy statement, "Motorola may find itself on the hook for debt of railed venture iridium," Wall Street Journal, September 27, 2006, Section C, page 1. "Iridium LLC," case 9-200-039, Harvard Business School.

<sup>10</sup> "Body Drama Saga includes tinge of financial intrigue," Los Angeles Times, August 17, 1994, Section D, page 3.

## **Enron and Enron Global Power and Pipelines**

Enron held a 58% stake in Enron Pipelines following Enron Pipelines' IPO in 1994. As a result of this ownership stake, subsequent intercompany transactions were fully consolidated in Enron's filings but not in Enron Pipeline's.

In the years following the offering, the majority of Enron Pipeline's board members were affiliated with Enron (four of seven directors).

Transactions between Enron and Enron Pipeline include loans. The terms of the loans depended on direction. For example, in financial filings in 1997, Enron Pipeline reported that it was indebted to Enron for an aggregate amount of \$59.1 million from contractual obligations, the construction of projects, and the acquisition of partial interest in assets. Although terms are not disclosed for the entire amount of this indebtedness, Enron Pipeline does state that the interest rate on \$6.3 million of this debt ranges from 9% to 12%. The same filing notes that Enron is also indebted to Enron Pipelines for \$7.25 million. However, this debt was an interest free advance.

Intercompany transactions also include Enron Pipeline buying partial interest in Enron's assets, the scale of these transactions were sometimes substantial. For example, Enron's sale of a 48% interest in its power plant in the Dominican Republic to Enron Pipeline accounted for roughly 14 percent of Enron Pipeline's total assets.

Finally Enron also provided services through contractual arrangement for Enron Pipelines. These services include administrative and commercial support, operations and maintenance, technical support, and fuel and management services. In 1996, total payments from Enron Pipelines to Enron for these services totaled \$66.7 million, or almost 20 percent of Enron

Pipeline's Total Assets. (Reporting makes it difficult to determine their total revenues or expenses).<sup>11</sup>

In November, 1997, Enron reacquired Enron Pipelines in a stock for stock transaction.

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<sup>11</sup> Sources: Enron Global Power and Pipelines LLC, Def 14A, May 14 1997, 10k March 19, 1997, 8k, June 18, 1996. "Enron's child may play hide-n-seek: Spin-off's Independent Directors could push for big bump," Mergers and Acquisitions Report (Security Data Publishing), May 26, 1997.

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**Table I**  
**Opportunities for Managing Parent Financials Using Intercompany Transactions with**  
**Controlled but not Consolidated Subsidiaries**

This table shows how certain transactions can increase reported parent firm performance at the expense of worse reported performance by the subsidiary firm.

Parent's Objective	Transaction	Effect for Subsidiary
Increase parent EPS	Subsidiary issues equity in a SEO	Likely drop in market value
	Parent sells equity to subsidiary at inflated price	Likely drop in market value
	Parent sells long-term assets at inflated prices	Drop in future income due to depreciation Increased asset base Drop in ROA/operating ROA
Increase parent EBITDA or Operating Income	Transfer current assets at inflated prices	Drop in EBITDA
	Purchase subsidiary current assets at deflated prices	Drop in EBITDA
Increase parent ROA/operating ROA	All of the EBITDA increasing transactions above	See above
	Sell parent long-term assets to subsidiary at inflated prices	Drop in Net Income ROA/operating ROA decreases
	Transfer unproductive assets to subsidiary	ROA/operating ROA decreases
Lower parent cost of capital	Transfer bad liabilities to subsidiary	Increased debt to equity ratio Drop in interest coverage Increase in cost of debt/cost of capital
Increase EVA	Any of the EBITDA and ROA/operating ROA increasing transactions and the cost of capital lowering transactions above	See above
Increase parent stock price	Any of the transactions above may have an effect on parent stock price	Potential drop in subsidiary market value

**Table II**  
**Empirical Predictions of the Operational Tunneling and Market Timing Hypotheses vs. the Null Hypothesis of No Expropriation by Parent Companies**

This table summarizes the empirical predictions of the operational tunneling and market timing hypotheses tested in this paper with regard the subsidiaries' abnormal performance and parent firm ownership. The operational tunneling hypothesis predicts that the parents will have an incentive to retain a minority stake in the subsidiary to maximize the impact of wealth transfers on the parent firms' financials. The worst performance would occur in the minority stake sample. The market timing hypothesis predicts that parent firms will own fewer shares when they anticipate that their subsidiaries' performance will decline. The worst performance would occur in the fully divested sample.

	No Expropriation	Tunneling Hypothesis	Market Timing Hypothesis
<i>Cross-sectional comparison of performance</i>			
Fully Divested	Zero	Zero	Large negative
Parent owns a minority stake	Zero	Large negative	Small negative
Parent owns a majority stake	Zero	Small negative/zero	Zero/positive
<i>Performance changes after changes in ownership</i>			
Parent ownership drops from majority to zero	Zero	Zero/Small Positive	Large negative
Parent ownership drops from majority to minority	Zero	Large negative	Small negative
Parent ownership drops from minority to zero	Zero	Small Positive	Small negative

**Table III**  
**Descriptive Statistics for Equity Carve-outs at Time of Initial Public Offering**

This table shows summary statistics for 264 equity carve-outs taken public in the years 1985-2000. Carve-outs are identified from a list of IPOs obtained from the Securities Data Company (SDC) and from *Mergers and Acquisitions* magazine. Both the carve-out and the parent must have available stock returns and accounting data. The table reports the total number of carve-outs occurring in each year, the type of ownership stake held by the parent immediately after the IPO, the size of the subsidiaries' assets in the year they went public, and the percent of parents and subsidiaries in the same Fama-French industry. Asset size is reported as the mean of the sample.

Year	Sample Size	Fully Divested	Minority Stake	Majority Stake	Subsidiary Asset Size (\$millions)	Parent and Subsidiary in Same Industry
1985	7	0	1	6	1240.9	29%
1986	16	2	1	13	448.8	44%
1987	17	1	0	16	4316.8	29%
1988	14	0	2	12	689.5	50%
1989	12	1	1	10	473.0	25%
1990	8	0	3	5	275.8	25%
1991	20	1	9	10	623.4	40%
1992	20	3	4	13	1261.4	35%
1993	23	2	6	15	2403.9	43%
1994	26	7	4	15	1008.4	35%
1995	15	0	4	11	4403.8	60%
1996	35	1	5	29	3895.7	54%
1997	12	2	1	9	1101.6	50%
1998	11	1	0	10	4011.4	36%
1999	16	0	2	14	3021.4	44%
2000	12	0	1	11	1377.7	23%
Full Sample	264	21	44	199	2264.4	40%

**Table IV**  
**Status of Subsidiaries Four Years Following the IPO**

This table shows the ownership status for 264 equity carve-outs taken public in the years 1985-2000 four years following the IPO. Carve-outs are identified from a list of IPOs obtained from the Securities Data Company (SDC) and from *Mergers and Acquisitions* magazine. Both the carve-out and the parent must have available stock returns and accounting data. Panel A reports the status of those firms that are still publicly traded by how much ownership the parent firm retains. Panel B reports the status of those subsidiaries that are no longer publicly traded by what happened to the firm and whether the parent held any ownership immediately preceding this event. *Majority-Held* indicates that the parent held 50 percent or more of the subsidiary equity; *Minority Held* indicates that the parent held between 5% and 49% of the subsidiary equity; and *Fully Divested* indicates that the parent owns less than 5% of the subsidiary. For subsidiaries with dual-class shares we measure parent ownership as the percentage of total subsidiary voting rights. *Reacquired by Parent* includes those subsidiaries in which the parent buys all outstanding shares and takes the company private. *Acquired by Third-Party* includes subsidiaries that were taken private by a company or party that was not the original parent firm. *Delisted or Bankrupt* includes subsidiaries that were delisted by the exchanges due to poor performance or filed for bankruptcy prior to the end of the four-year study period.

Subsidiary Status Four Years Following the IPO	Number	Percent of Sample
<i>Panel A: Subsidiary is Still Publicly Traded</i>		
Fully Divested, Still Publicly Traded	81	31%
Parent Holds Minority Stake	26	10%
Parent Holds Majority Stake	69	26%
<i>Panel B: Subsidiary is No Longer Publicly Traded</i>		
Reacquired by Parent	27	10%
Majority-held	27	
Acquired by Third Party	53	20%
Majority-held	24	
Minority-held	11	
Fully-divested	18	
Delisted or Bankrupt	8	3%
Majority-held	3	
Minority-held	5	

**Table V**

**Difference in Accounting Performance (Operating ROA) of Parents versus Subsidiaries by Ownership Level on a Year-by-Year Basis**

For Years 1 to 4 following the carve-out, the sample of subsidiaries that remain publicly traded are separated into three groups based on the fraction of shares owned by the parent at the end of year: Fully Divested, Ownership below 50%, and Ownership above 50%. Fully Divested includes all carve-outs in which the parent retains less than 5% ownership stake. Ownership below 50% includes all minority-owned carve-outs in which the parent keeps ownership below 50%, but above 5%, while ownership above 50% is in which the parent retains a majority stake in the subsidiary. We measure operating performance as operating ROA, which equals the ratio of Operating Cash Flow (Compustat Data item 13) divided by Total Assets (Compustat Data item 6). The difference of operating ROA (ROAdif) is computed as the operating ROA of the subsidiary minus the operating ROA of the parent. We winsorize ROAdif by setting the values in the bottom and top one percentiles to the values of the 1st and 99th percentiles, respectively. P-values for the t-test that the means equal zero and the rank test that the medians equal zero are in parentheses. Below the p-values we report the number of observations that are used to compute each mean and median.

Year Out from Carve-out	Fully Divested		Ownership below 50%		Ownership above 50%		P-value for ROAdif below 50% different from ROAdif above 50%	
	Mean ROAdif	Median ROAdif	Mean ROAdif	Median ROAdif	Mean ROAdif	Median ROAdif	Mean	Median
1	0.0968 (0.003) 33	0.0540 (0.006)	0.0419 (0.138) 40	0.0540 (0.042)	0.0307 (0.037) 131	0.0118 (0.013)	0.713	0.281
2	0.0589 (0.014) 57	0.0273 (0.039)	-0.0093 (0.769) 25	-0.0114 (0.989)	0.0366 (0.010) 89	0.0255 (0.005)	0.142	0.187
3	0.0456 (0.026) 55	0.0173 (0.149)	-0.0464 (0.165) 24	-0.0218 (0.103)	0.0297 (0.127) 72	0.0162 (0.022)	<b>0.049</b>	<b>0.009</b>
4	0.0186 (0.313) 56	-0.0090 (0.945)	-0.0645 (0.096) 19	-0.0324 (0.029)	0.0322 (0.062) 57	0.0096 (0.074)	<b>0.009</b>	<b>0.003</b>

**Table VI**  
**Peer-Adjusted Accounting Performance of Subsidiaries by Ownership Level on a Year-by-Year Basis**

For Years 1 to 4 following the carve-out, the sample of subsidiaries that remain publicly traded are separated into three groups based on the fraction of shares owned by the parent at the end of year: Fully Divested, Ownership below 50%, and Ownership above 50%. Fully Divested includes all carve-outs in which the parent retains less than 5% ownership stake. Ownership below 50% includes all carve-outs in which the parent keeps ownership below 50%, while ownership above 50% is when the parent retains a majority stake in the subsidiary. We measure operating performance as operating ROA, which equals the ratio of Operating Cash Flow (Compustat Data item 13) divided by Total Assets (Compustat Data item 6). Operating ROA is peer-adjusted using firms in the same Fama-French industry and the closest operating ROA in Year 0. We winsorize peer-adjusted operating ROA by setting the values in the bottom and top one percentiles to the values of the 1st and 99th percentiles, respectively. P-values for the t-test that the means equal zero and the rank test that the medians equal zero are in parentheses. Below the p-values we report the number of observations that are used to compute each mean and median.

Year Out from Carve-out	Fully Divested		Ownership below 50%		Ownership above 50%		P-value for oper. ROA below 50% different from oper. ROA above 50%	
	Mean ROA	Median ROA	Mean ROA	Median ROA	Mean ROA	Median ROA	Mean	Median
1	0.0123 (0.250)	0.0042 (0.400)	-0.0195 (0.269)	0.0007 (0.961)	-0.0116 (0.278)	0.0028 (0.588)	0.718	0.809
	44		43		144			
2	0.0128 (0.248)	0.0050 (0.144)	-0.0277 (0.174)	-0.0205 (0.229)	0.0095 (0.393)	0.0005 (0.364)	0.112	<b>0.070</b>
	72		27		100			
3	-0.0114 (0.720)	0.0077 (0.226)	<b>-0.0822</b> <b>(0.032)</b>	<b>-0.0439</b> <b>(0.020)</b>	-0.0232 (0.457)	-0.0004 (0.964)	0.326	<b>0.020</b>
	73		24		79			
4	-0.0149 (0.461)	-0.0039 (0.880)	<b>-0.1517</b> <b>(0.055)</b>	<b>-0.0449</b> <b>(0.040)</b>	-0.0057 (0.685)	-0.0055 (0.712)	<b>0.003</b>	<b>0.068</b>
	76		20		62			

**Table VII**  
**Cross-Sectional Regressions of Peer-Adjusted Operating ROA**

The dependent variables are adjusted operating ROA in Year 1, Year 2, Year 3, and Year 4, respectively. We define operating ROA as the ratio of Operating Cash Flow (Compustat Data item 13) divided by Total Assets (Compustat Data item 6). Operating ROAs are peer-adjusted by matching each subsidiary with firms in the same Fama-French industry and similar operating ROA in the IPO year (Year 0). Peer-adjusted operating ROA is winsorized by setting the values in the bottom and top one percentiles to the values of the 1st and 99th percentiles. *Ownership49* is a dummy equal to one if the parent retains less than 50% ownership in the respective year. *Ownership50* is a dummy equal to one if the parent retains more than 50% ownership in the respective year. *Size* equals the log of subsidiary assets. *Same Industry* is a dummy variable equal to one if the parent and subsidiary are in the same Fama-French industry. The measure for Executive overlap used in Panel B regressions is defined as a dummy equal to one if at least one of the subsidiary's CEO, Chairman of the Board, or President one year after the carve-out is also an executive in the parent company. P-values are in parentheses.

*Panel A. No Executive Overlap Dummies*

	Operating ROA1	Operating ROA2	Operating ROA3	Operating ROA4
Ownership49	-0.0151 (0.564)	-0.0437 (0.111)	<b>-0.0743</b> <b>(0.032)</b>	<b>-0.1034</b> <b>(0.005)</b>
Ownership50	-0.0113 (0.593)	-0.0001 (0.996)	-0.0020 (0.931)	0.0099 (0.685)
F-test p-value that Ownership49 is different from Ownership50	0.855	<b>0.096</b>	<b>0.033</b>	<b>0.002</b>
<i>Control Variables</i>				
Size	0.0208 (0.000)	0.0124 (0.004)	0.0147 (0.007)	0.0182 (0.002)
Same Industry	-0.0052 (0.748)	-0.0172 (0.331)	-0.0224 (0.319)	-0.0076 (0.745)
Constant	-0.1084 (0.000)	-0.0532 (0.062)	-0.0700 (0.053)	-0.1098 (0.003)
	N Obs. 230 Adj. R <sup>2</sup> 0.092 F-test 0.000	N Obs. 201 Adj. R <sup>2</sup> 0.043 F-test 0.012	N Obs. 180 Adj. R <sup>2</sup> 0.069 F-test 0.005	N Obs. 161 Adj. R <sup>2</sup> 0.106 F-test 0.001

**Table VII (Cont.)**  
**Cross-Sectional Regressions of Peer-Adjusted Operating ROA**

*Panel B. Executive Overlap Dummies*

	Operating ROA1	Operating ROA2	Operating ROA3	Operating ROA4
Ownership49	-0.0192 (0.565)	<b>-0.0794</b> <b>(0.040)</b>	0.0133 (0.785)	-0.0485 (0.298)
Ownership50	-0.0373 (0.191)	-0.0045 (0.877)	-0.0035 (0.928)	-0.0149 (0.745)
Executive Overlap	0.0072 (0.868)	0.0078 (0.786)	0.0383 (0.253)	0.0100 (0.755)
Executive Overlap & Ownership49	0.0055 (0.922)	0.0673 (0.219)	<b>-0.1681</b> <b>(0.014)</b>	<b>-0.1350</b> <b>(0.064)</b>
Executive Overlap & Ownership50	0.0317 (0.516)	0.0028 (0.942)	-0.0139 (0.782)	0.0269 (0.630)
F-test p-value that Exec. Overlap&Ownership49 is different from Exec. Overlap&Ownership50	0.5423	0.234	<b>0.030</b>	<b>0.042</b>
<i>Control Variables</i>				
Size	0.0210 (0.000)	0.0125 (0.004)	0.0150 (0.006)	0.0186 (0.001)
Same Industry	-0.0074 (0.648)	-0.0181 (0.313)	-0.0305 (0.180)	-0.0104 (0.658)
Constant	-0.1108 (0.001)	-0.0566 (0.075)	-0.0849 (0.030)	-0.1159 (0.004)
	N Obs. 230 Adj. R <sup>2</sup> 0.092 F-test 0.000	N Obs. 201 Adj. R <sup>2</sup> 0.042 F-test 0.029	N Obs. 180 Adj. R <sup>2</sup> 0.078 F-test 0.003	N Obs. 161 Adj. R <sup>2</sup> 0.114 F-test 0.000

**Table VIII**  
**Differences in Peer-Adjusted Operating ROA Performance Following Changes in Ownership and Accounting Method**

The table shows changes in operating ROA from Year-1 to Year +1 relative to a change in the parent's ownership stake that alters the parent's method to account for subsidiary performance. The first ownership altering event shown in the table is for 22 parents that during the four years following the equity carve-out reduce ownership from a majority to a minority stake, and therefore stop fully accounting for subsidiary performance. Fourteen of these parents retain their minority holding to the end of Year 4 (denoted as "*Retain Minority Holding*"). The remaining eight parents drop ownership from majority to minority first and eventually divest all ownership (denoted by "*Transitional Divest*"). The second ownership altering event shown is a reduction of a minority holding to zero. Of the 26 parents, 18 start with a minority ownership in the subsidiary in the year of the carve-out and divest their ownership within four years (denoted by "*Divest Minority Holding*"). The other eight firms are the same "*Transitional Divest*" firms analyzed in the previous ownership altering event, because the drop from a majority to minority holding is followed by a drop from a minority holding to zero ownership in the subsidiary. The final ownership altering event shown is a reduction from a majority holding to zero. Of the 37 firms that experience such ownership change, 29 parents held a majority ownership in the subsidiaries immediately following the carve-out and completely divest this ownership without dropping to a minority ownership first (these are denoted by "*Divest Majority Holding*"). The remaining eight firms are the "*Transitional Divest*" firms analyzed in the previous two ownership change cases. The *Difference in operating ROA* measures the difference in peer-adjusted operating ROA before the ownership change to after the ownership change. We winsorize peer-adjusted operating ROA by setting the values in the bottom and top one percentiles to the values of the 1st and 99th percentiles. The difference is estimated by running an OLS regression with firm dummies and a dummy equal to 1 for the period after the ownership change. P-values for the hypotheses that the coefficient of this dummy equals zero are in parentheses.

Ownership Altering Event	Firm Type	Difference in operating ROA
Ownership reduction from majority (>50%) to minority holding (<50%)	All firms	-0.0739
	(firms = 22)	(0.010)
	Retain Minority Holding	-0.0956
	(firms = 14)	(0.008)
	Transitional Divest	-0.0064
	(firms = 8)	(0.748)
Ownership reduction from minority holding (<50%) to zero (0%)	All firms	-0.0253
	(firms = 26)	(0.135)
	Divest Minority Holding	-0.0278
	(firms = 18)	(0.187)
	Transitional Divest	-0.0300
	(firms = 8)	(0.059)
Ownership reduction from majority holding (>50%) to zero (0%)	All firms	-0.0049
	(firms = 37)	(0.867)
	Divest Majority Holding	0.0046
	(firms = 29)	(0.897)
	Transitional Divest	-0.0456
	(firms = 8)	(0.048)

**Table IX**  
**Twelve-month Buy-and-Hold Abnormal Returns of Carve-out Subsidiaries by Ownership**

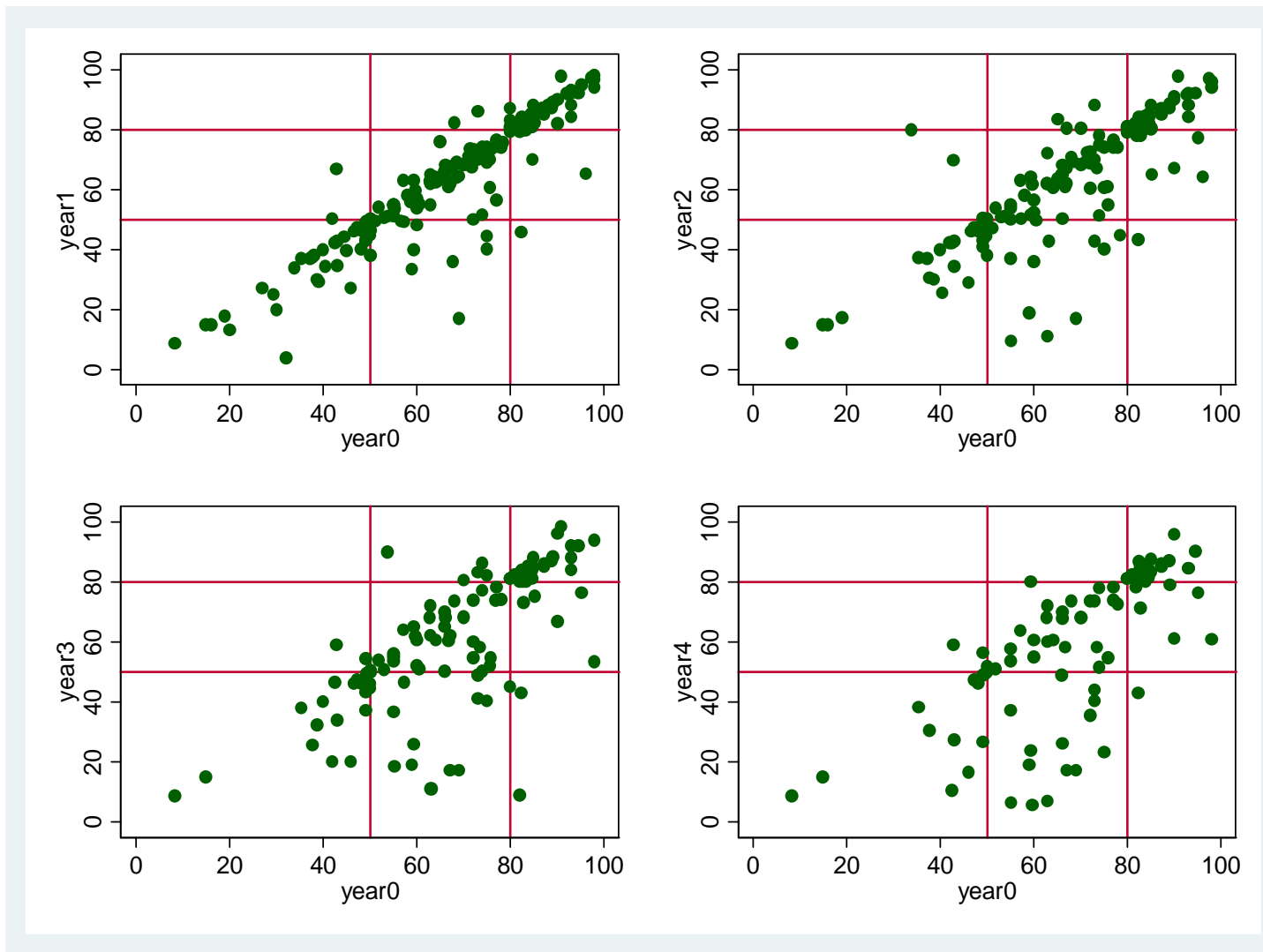
For Years 1 to 4 following the carve-out, the sample of subsidiaries that remain publicly traded are separated into three groups based on the fraction of shares owned by the parent at the end of year: Fully Divested, Ownership below 50%, and Ownership above 50%. *Fully Divested* includes all carve-outs in which the parent retains less than 5% ownership stake. *Ownership below 50%* includes all carve-outs in which the parent keeps ownership below 50% but above 5%. *Ownership above 50%* is when the parent retains a majority stake in the subsidiary. The risk-adjusted returns (BHAR) are computed as the 12-month buy-and-hold return for the subsidiary minus the 12-month buy-and-hold return of a portfolio of firms of the same book-to-market (B/M) and size as the sample firms. We use the 25 B/M and Size Fama-French portfolios from the Kenneth French web site. P-values for the t-test that the mean BHARs equal zero and the rank test that the median BHARs equal zero are in parentheses. Below the p-values are number of observations in each category and year.

Year Out	Fully Divested		Ownership below 50%		Ownership above 50%		P-value for BHAR below 50% different from BHAR above 50%	
	Mean BHAR	Median BHAR	Mean BHAR	Median BHAR	Mean BHAR	Median BHAR	Mean	Median
1	-0.0423 (0.612)	-0.0138 (0.334)	-0.1756 (0.012)	-0.1353 (0.004)	-0.0858 (0.080)	-0.1353 (0.001)	0.330	0.513
	45		40		130			
2	0.0649 (0.405)	0.0444 (0.659)	-0.1263 (0.075)	-0.2671 (0.016)	0.0254 (0.680)	-0.0602 (0.403)	0.105	0.193
	65		27		94			
3	0.0485 (0.477)	0.0121 (0.914)	-0.0675 (0.624)	-0.1736 (0.116)	-0.0035 (0.988)	-0.0416 (0.603)	0.646	0.245
	65		24		73			
4	0.0752 (0.323)	-0.0335 (0.805)	0.0738 (0.538)	-0.0441 (0.982)	0.0496 (0.552)	-0.0247 (0.759)	0.882	0.835
	63		18		58			
All	0.0429 (0.257)	0.0014 (0.938)	-0.0984 (0.037)	-0.1507 (0.000)	-0.0163 (0.595)	-0.0884 (0.006)	0.090	0.142
	238		109		355			

**Table X**  
**Twelve-month Buy-and-Hold Abnormal Returns around Changes in**  
**Ownership and Accounting Method**

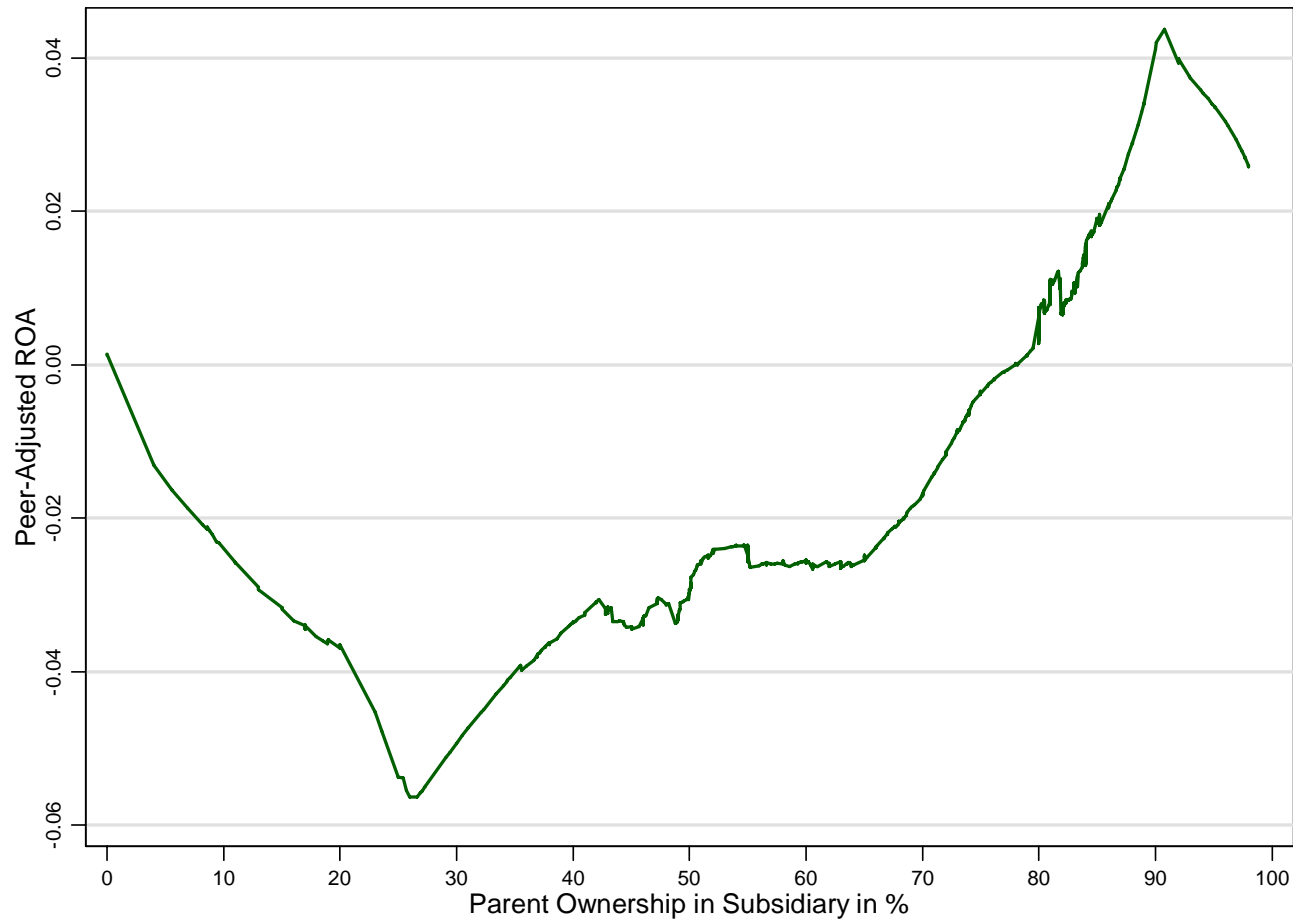
The table shows excess stock returns in the year of a change in the parent's ownership stake that alters the parent's method to account for subsidiary performance. To be included in the analysis the subsidiary is required to have non-missing returns in CRSP for the year of the change and sufficient data to compute the Book-to-Market ratio and Market Capitalization. The first set of ownership altering events shown are for 19 parents that between Year 1 and 4 after the equity carve-out reduced ownership from a majority stake to a minority stake, and consequently stop fully consolidating subsidiary performance. The second set of ownership altering events shown is for 24 parents that change from a minority stake in the subsidiary to full divestiture of their ownership within four years. The third set of ownership altering events includes 23 parents with a majority ownership stake of the subsidiary at the time of the carve-out that completely divest of the subsidiary within four years without ending a year with minority stake. The 12-month BHAR column measures the BHAR of the calendar year when the ownership change happened. The risk-adjusted returns (BHAR) are computed as the 12-month buy-and-hold return for the subsidiary minus the 12-month buy-and-hold return of a portfolio of firms of the same book-to-market (B/M) and size as the sample firms. We use the 25 B/M and Size Fama-French portfolios from the Kenneth French's data library. We winsorize BHARs by setting the values in the bottom and top one percentiles to the values of the 1st and 99th percentiles. The average 12-month BHAR is estimated by running an OLS regression with firm dummies and a dummy equal to 1 for the calendar year of the respective ownership change. P-values for the hypotheses that the coefficient of this dummy equals zero are in parentheses.

Ownership Altering Event	12-month BHAR in Year of Ownership Change
Ownership reduction from majority (>50%) to minority holding (<50%) (19 firms)	-0.3179 (0.112)
Ownership reduction from minority holding (<50%) to zero (0%) (24 firms)	0.1562 (0.353)
Ownership reduction from majority holding (>50%) to zero (0%) (23 firms)	0.1482 (0.454)



**Figure 1. Scatter plots of ownership of parent in carve-out subsidiaries from the IPO year and Year 1, 2, 3, and 4 after IPO**

The graphs exclude divested and reacquired subsidiaries. On the X-axis are ownership levels at the IPO. On the Y-axis are ownership level at one, two, three, and four years after the IPO. The ownership levels are hand-collected from the subsidiary proxy statements.



**Figure 2. Locally Smoothed Peer-Adjusted Operating ROA**

The graph is based on pooled observations for Years 1 to 4 for all carve-out subsidiaries. On the X-axis is the parent ownership level in the subsidiary. The ownership levels are hand-collected from the subsidiary proxy statements. On the Y-axis is the locally smoothed peer-adjusted operating ROA. We calculate operating ROA as the ratio of Operating Cash Flow (Compustat Data item 13) divided by Total Assets (Compustat Data item 6). The smoothing is done using the Cleveland (1979) approach implemented in Stata 9.1 *lowess* procedure with a bandwidth parameter equal to 0.3.