

Corporate Restructuring*

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Abstract

We survey the empirical literature on corporate financial restructuring, including breakup transactions (divestitures, spin-offs, equity carveouts, tracking stocks), leveraged recapitalizations, and leveraged buyouts (LBOs). For each transaction type, we survey techniques, deal financing, transaction volume, valuation effects and potential sources of restructuring gains. Many breakup transactions are a response to excessive conglomeration and reverse costly diversification discounts. The empirical evidence shows that the typical restructuring creates substantial value for shareholders. The value-drivers include elimination of costly cross-subsidizations characterizing internal capital markets, reduction in financing costs for subsidiaries through asset securitization and increased divisional transparency, improved (and more focused) investment programs, reduction in agency costs of free cash flow, implementation of executive compensation schemes with greater pay-performance sensitivity, and increased monitoring by lenders and LBO sponsors. Buyouts after the turn of the century created value similar to LBOs of the 1980s. Recent developments include consortiums of private equity funds (club deals), exits through secondary buyouts (sale to another LBO fund), and evidence of persistence in fund returns. LBO deal financing has evolved towards lower leverage ratios. In Europe, recent deals are financed with less leveraged loans and mezzanine debt and more high-yield debt than before. Future research challenges include integrating analyses across transaction types and financing mixes, and producing unbiased estimates of the expected return from buyout investments in the presence of limited data on portfolio companies that do not return to public status.

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Contents

1	Introduction	1
2	Restructuring and the boundary of the firm	2
2.1	Breakups and the “conglomerate discount”	2
2.2	Highly leveraged transactions	5
3	Divestitures	7
3.1	Transaction volume	8
3.2	Valuation effects	8
3.3	Drivers of value-creation in divestitures	10
3.3.1	Increase in corporate focus	10
3.3.2	Elimination of negative synergies	11
3.3.3	Better fit with the buyer	12
3.4	Corporate governance	13
3.4.1	Agency issues	13
3.4.2	Financial distress	14
4	Spinoffs	15
4.1	Transaction volume	16
4.2	Valuation effects	17
4.3	Drivers of value-creation in spinoffs	18
4.3.1	Increased corporate focus	18
4.3.2	Elimination of negative synergies	19
4.3.3	Wealth transfer from bondholders	20
4.3.4	Information asymmetries	21
4.3.5	Clientele effects	22
4.3.6	Increased probability of a takeover	22
4.4	Corporate governance	23
4.5	Splitoffs	24
5	Equity carveouts	25
5.1	Transaction volume	26
5.2	Valuation effects	26
5.3	Drivers of value creation in equity carveouts	27
5.3.1	Increased focus	27
5.3.2	Financing subsidiary growth	28
5.3.3	Wealth transfers and information asymmetries	29
5.3.4	Follow-on events	30
5.4	Agency issues	31

6	Tracking stocks	32
6.1	Transaction volume	32
6.2	Valuation effects	33
6.3	Drivers of value creation in tracking stock	33
6.4	Agency issues	34
7	Leveraged recapitalizations	35
7.1	Transaction volume	36
7.2	Valuation effects	37
7.3	Drivers of value creation in leveraged recapitalizations	38
8	Leveraged buyouts (LBOs)	39
8.1	Transaction volume	40
8.2	The LBO capital structure	42
8.2.1	The LBO debt	42
8.2.2	The LBO equity and sponsor compensation	45
8.2.3	Price multiples and LBO debt levels	47
8.3	Value creation in LBOs	49
8.4	Drivers of value creation in LBOs	52
8.4.1	Operating efficiency	52
8.4.2	Employment	56
8.4.3	Corporate governance	57
8.4.4	Wealth transfers from target debtholders	60
8.4.5	Wealth transfers from target shareholders	62
8.4.6	Taxes	66
8.5	Industry effects	66
8.6	Organizational longevity and exit	68
9	Conclusions	70

1 Introduction

Shocks to the corporate economic environment may give rise to severe organizational inefficiencies. For example, a vertically integrated firm may find that long-term contracts and/or spot market purchases of a key input have become more efficient. Or increased general capital market liquidity may have rendered internal capital markets a relatively costly divisional funding mechanism for conglomerates. High leverage may be optimal as financial innovations and expertise make it less expensive to manage financial distress. Financial innovations and general market liquidity may also render it optimal to securitize an entire division. The result is increased divisional managerial focus. In this survey, we collectively refer to the transactions that implement these and other changes in asset composition, financial contracting, and ownership structure as "corporate restructuring".

We focus the survey on two broad groups of corporate restructuring procedures: corporate breakups and highly leveraged transactions. Corporate breakups include techniques to sell off and/or securitize part of the firm. They include divestitures, spinoffs, equity carve-outs and, for a brief period, tracking stock. Highly leveraged transactions involve a significant increase of debt in the firm's capital structure, either through a debt-financed special dividend in a leveraged recapitalization, or in a leveraged buyouts (LBOs), in which the entire firm is acquired by a financial buyer (a buyout fund).

In order to limit the scope of the survey, we do not review recapitalizations that do not involve extensive use of leverage. Examples include state privatizations (Megginson and Netter, 2001), conversions from mutual to stock companies (Masulis, 1987), and stock repurchases (Kalay and Lemmon, 2008). Moreover, for a review of the broader literature on corporate takeovers and takeover bidding involving strategic buyers, see Betton, Eckbo, and Thorburn (2008). Also, we address distressed restructuring only tangentially (Hotchkiss, John, Mooradian, and Thorburn, 2008; Senbet and Wang, 2012).

As surveyed below, corporate restructuring may be initiated by top-level management, by divisional managers, or by outside sponsors like buyout funds. Occasionally, the restructuring is defensive, arising in response to a control threat from the market for corporate control. Regardless of who initiates the transaction, the parties are likely seeking to improve operating efficiency, increase cash flow, and ultimately, enhance firm profitability. In breakup transactions, the evi-

dence suggests that assets are transferred to higher-value users, while highly leveraged transactions involve optimizing capital structure, improving managerial incentives and achieving tax efficiency.

The survey is organized as follows. Chapter 2 introduces the so-called diversification discount and the potential costs of diversification, which motivate many breakup transactions. Chapter 3 through Chapter 6 then details the frequency, structure and economic effect of various types of breakup transactions, beginning with divestitures (Chapter 3), spin-offs (Chapter 4), equity carve-outs (Chapter 5), and ending with tracking stock (Chapter 6). Next, we review highly leveraged transactions, including leveraged recapitalizations (Chapter 7), and we provide an extensive discussion of the empirical evidence on LBOs (Chapter 8). Chapter 9 concludes the survey.

2 Restructuring and the boundary of the firm

2.1 Breakups and the “conglomerate discount”

The economic boundary of the firm may be defined as the point where within-firm transactions start to become more costly than arms-length (across market) transactions. There are numerous theories for why within-firm transactions may economically dominate market transactions, ranging from transactions costs (Coase, 1937) to agency costs and costs of imperfect contracting and moral hazard.¹

Alternatives to outright ownership of resources include renting (long- or short-term contracts) and “spot” market transactions to ensure continued operations of the firm. These organizational alternatives have different implications for corporate taxes, firm-specific resource specialization and development of appropriable quasi-rents (which in turn lead to bargaining issues and potential for opportunistic behavior), investment decisions, risk-sharing and financing costs.

An asset such as an operating plant may have greater value as a division of a conglomerate than as a stand-alone “pure play” entity. As emphasized by Maksimovic and Phillips (2007), implicit in the belief that conglomerates create value is the idea that industries differ materially in the skills and resources which are required to operate efficiently, and that this diversity of operating environments affects the cost of performing transactions within the firm. These costs could be due

¹See, e.g., Jensen and Meckling (1976), Klein, Crawford, and Alchian (1978), Williamson (1985), Grossman and Hart (1986), Jensen (1986), Hart and Moore (1990).

to financial externalities across industries, such as improved risk sharing within the firm, or real externalities that could arise due to the use of a shared factor of production.

The value of using shared resources, such as managerial time and internal capital, differs across firms and industries as well as through time as the boundaries of the firm change. For example, Comment and Jarrell (1995) document an increase in corporate focus in the 1980s. They show that 56% of exchange listed firms had a single business segment in 1988 compared to 38% in 1979. Breakup transactions create value when such synergies from conglomeration become negative, i.e., when the costs of keeping the company's assets together exceed the benefits from doing so.

The corporate finance literature on diversification took off with the discovery of the "conglomerate discount" by Lang and Stulz (1994) and Berger and Ofek (1995). The discount is measured as the difference between the market value of the diversified firm and the sum of the estimated values of the (non-traded) divisions. The latter are estimated using multiples from single-segment ("pure play") competitors. Berger and Ofek (1995) report a diversification discount of 13-15% for US publicly traded firms in the 1986–1991 period.

Internationally, Lins and Servaes (1999) analyze publicly traded firms from Germany, Japan and the UK in 1992 and 1994. They report a significant discount of 10% in Japan and 15% in the UK, but do not find evidence of a discount in Germany. Their study suggests that, for Japan, the conglomerate discount only appears for firms with a strong Keiretsu affiliation. Fauver, Houston, and Naranjo (2003) study more than 8,000 firms from 35 countries and find that the financial, legal, and regulatory environments each have an important influence on the value of diversification.

Empirical research has extended and reinterpreted the early results on the conglomerate discount. Lamont and Polk (2002) and Campa and Kedia (2002) make the point that, since firms endogenously choose to diversify, exogenous variation in diversification is required to draw inferences about its causal effect on firm value. Lamont and Polk (2002) find that exogenous changes in corporate "diversity" (defined as the within-firm dispersion of industry investment) are negatively related to firm value. Thus, they argue that diversification destroys value. However, Campa and Kedia (2002) find that firms with low value are more likely to diversify. Controlling for this self-selection, the diversification discount drops and sometimes turns into a premium.

Maksimovic and Phillips (2007) conclude that diversified firms predominantly behave like value maximizers given their productivity and that internal capital markets tend to facilitate the efficient

transfer of resources. However, they also point to ambiguities reflecting econometric issues of endogeneity and self-selection, as well as choice of data and industry classifications, at various steps of the overall test strategy. They further conclude that “there is some evidence that conglomerate firms that are busted up had investment patterns that varied from the neoclassical model” (p. 472). A sample of diversified firms that divested one or more divisions is more likely to be facing significant diversification costs than a random sample of conglomerates.

The literature on breakup transactions provides several examples of diversification costs and how they may distort investment. Scharfstein and Stein (2000) describe conditions under which top management inefficiently allocates too much funds to divisions with poor investment opportunities (cross-subsidization). Rajan, Servaes, and Zingales (2000) argue that investment choices may be distorted because top management cannot commit to future distribution of funds until a surplus has been realized. Goldman (2004) models the resource allocation inside a multi-division firm of a manager with stock-based compensation, and shows that the investment incentives improve after a spinoff of a division.

Another potential cost of diversification is related to executive compensation: the division being a private entity, it is difficult to tie divisional manager compensation directly to the underlying value of the operations under their control. Stock-based compensation policies may be critical to induce optimal investment decisions, and to retain managerial talent in a competitive labor market. A separate listing of subsidiary stock resolves such compensation issues, lowering agency costs and increasing market value.²

Yet another motivation for breakup transactions is that conglomeration accentuates information asymmetries between investors and corporate insiders. Nanda and Narayanan (1999) model a diversified firm’s decision to divest a division that is undervalued by the market. Outside investors observe the aggregated (conglomerate) cash flow only, while management also observes the divisional cash flows. Without detailed divisional information, the market rationally assigns an average performance to each division. This pooling results in undervaluation of the well-performing division and overvaluation of the poorly performing division. In this situation, it may be optimal to divest the overvalued (underperforming) division in order to lower the cost of capital for the undervalued division.

²See Aron (1991) for a model of this effect in the context of spinoffs.

A related information-based argument is that conglomerates operating in a wide range of industries are more difficult for analysts to value. This is true both because analysts tend to specialize in certain industries and because divisions may be relatively opaque in terms of financial information. A breakup may lead to increased analyst following and improved quality of the information available to investors. Liu (2005) also argues that a breakup allows outsiders to discover firm value at a lower cost. He presents an equilibrium in which high-value firms break up to separate themselves from low-value firms, predicting a positive market reaction to breakup announcements.

The breakup motivations discussed above are all consistent with firm value maximization. However, Boot (1992) argues that self-interested managers are reluctant to sell assets because a divestiture may signal poor managerial quality. He claims that there are too few divestitures in reality, compared to the level that is optimal for shareholder wealth. Boot (1992) proposes that corporate control transactions play a critical role in enforcing more divestitures, for example by forcing managers to sell a “crown jewel” to prevent a takeover of the firm. Lang, Poulsen, and Stulz (1995) also argue that managers value control and won’t sell assets to promote operating efficiency alone. They suggest that assets are sold only when the firm is financially constrained and a divestiture is the least expensive way to raise capital.

These arguments emphasize how breakups create value by reversing negative synergies. However, a divisional or asset sale may also be the result of the demand side: the assets may simply be worth more under the buyer’s control. That is, the buyer may be a higher-quality manager and the divisional resources may offer a greater potential for synergies when merged with the acquiring firm. Also, corporate breakups may be forced by regulatory actions such as antitrust or by bankruptcy court.

2.2 Highly leveraged transactions

In a highly leveraged transaction, the focus of the restructuring is on the economic effects of the leverage increase. Whether undertaking a debt-financed dividend (leveraged recap), or a leveraged purchase of a division or the entire firm (LBO, where the firm goes private), it is the leverage increase rather than any concomitant asset restructuring that provides the main economic motivation for the transaction. As a result, LBOs tend to involve financial (as opposed to strategic) buyers, such as buyout funds.

The literature points to several possible sources of gains in leverage-increasing transactions. Under the classical trade-off theory of debt, firms move to a higher level of debt in order to capitalize on the corporate debt tax shield provided by the (U.S.) tax law.³ In addition to the potential for corporate tax benefits, the literature emphasizes beneficial managerial incentive and monitoring effects of higher leverage. Some highly leveraged firms may also gain a strategic advantage in product markets. On the other hand, high leverage is not for everyone: under conditions of financial distress, a debt overhang tends to prevent efficient investments (Myers, 1977).

In terms of managerial incentives, Ross (1977) presents a signaling model in which managers who face personal bankruptcy costs signal their private information about higher future expected cash flows by committing to a greater corporate debt level. In the vernacular of Jensen (1986), entrenched managers prefer to overinvest rather than pay out the firm's "free cash flow" as dividends (where free cash flow is defined as corporate liquid funds in excess of what is required to fund all positive net present value projects).

A leveraged recapitalization, where the firm increases its debt without retaining the proceeds (thus increasing leverage ratios), reduces Jensen's overinvestment problem by precommitting to disgorge future cash flows in the form of interest payment. Jensen (1986) further argues that the greater risk of financial distress associated with higher leverage also helps discipline managerial investment policies. Stulz (1990) formalizes this intuition and shows that high leverage is particularly valuable when investment opportunities are poor, even if the free cash flow is negative.

Increasing leverage also allows wealth constrained managers to hold a greater percentage of total equity after the transaction is completed. For example, in a leveraged recapitalization, the debt may be paid out as cash dividend to non-managerial stockholders and as a stock dividend (or a cash dividend that is immediately reinvested in the firm) to managers. In an LBO, the managers may roll over their equity investment, while other equity-holders are paid out, again increasing managers' fractional equity ownership. The incentive effect of such greater managerial equity ownership helps reduce manager-shareholder conflicts of interest. Garvey (1992, 1995) explore the conditions under which leverage and management equity ownership are complementary in reducing the overinvestment problem of free cash flow.

Highly leveraged transactions may also lead to improved monitoring by banks, and by the

³Frank and Goyal (2008) and Parsons and Titman (2008) review corporate leverage policies.

LBO sponsor who has its own money at risk in the transaction. Jensen (1989) argues that active governance by buyout sponsors and high-powered managerial incentives, combined with the pressure from high leverage, provides an incentive structure that is superior to that of public firms with dispersed ownership and weak governance. He suggests that the LBO organizational form may "eclipse" the traditional corporate form, a prediction that has yet to be proven (Kaplan and Stromberg, 2009).

Moreover, highly leveraged transactions may cause wealth transfers across the firm's various constituencies. For example, bonds that lack protective covenants may become more junior in the capital structure, resulting in a bondholder loss (benefiting shareholders). It is also possible that incumbent managers participating in a leveraged buyout have inside information about the firm's future prospects, expropriating selling shareholders. Muller and Panunzi (2004) argue that the LBO sponsor may be in a position to expropriate minority shareholders by merging the firm with the raider's leveraged acquisition subsidiary. Perotti and Spier (1993) present a model in which the firm gains bargaining power in contracting renegotiations by temporarily increasing leverage. Specifically, after retiring equity through a junior debt issue, shareholders threaten to underinvest in valuable new projects unless employees concede to wage reductions. Finally, there is a growing literature linking leverage to the firm's strategic position in product markets. See Maksimovic (1995) and Parsons and Titman (2008) for reviews of this literature.

We now turn to a detailed description of the empirical evidence on breakups and highly leveraged transactions. In the course of discussing the evidence, we return to several of the hypotheses outlined above.

3 Divestitures

A divestiture is the sale of a portion of the firm's assets to a third party—typically another company or a buyout fund—in a private transaction. The assets that are sold may be a division, segment, subsidiary, or product line. In return, the seller typically receives cash, but sometimes also securities or a combination of both. The proceeds from the sale are reinvested in the remaining business or distributed to the firm's claim holders. While eliminating a fraction of its assets, the selling firm continues to exist in essentially the same form as before. Divestitures may trigger a substantial tax

liability: the difference between the proceeds from the sale and the firm's tax basis in the assets is a capital gain or capital loss, which is taxed at the corporate tax rate.

3.1 Transaction volume

In 2011, U.S. corporations announced 2,919 divestitures with a total deal value of \$320 billion (source: Mergerstat Review). 377 of these transactions had a deal value exceeding \$100 billion, while 71 transactions had a value of \$1 trillion or more. The line in Panel A of Figure 1 shows the annual number and the bars show the annual dollar volume of U.S. divestitures over the period 1980–2011. The number of transactions was relatively stable between 1980 and 1995. Since the mid 1990s, however, the divestiture activity tripled and reached record high levels in 2005–2006. After a drop in deal activity through the financial crises, the level of divestitures recovered quite well in 2010 and 2011.

The most aggressive U.S. divesters of subsidiaries and divisions in 2011 was General Electric (12 divestitures), followed by Bank of America (11), Exxon Mobil (11), Citigroup (10), and asset management firm The Carlyle Group (11). Two of these sellers—General Electric and Citigroup—were also among the most aggressive divesters in 2010. In addition, General Electric was on the Mergerstat Review list of aggressive buyers in 2011, with 27 acquisitions.

The total divestiture activity tracks closely the merger and acquisition (M&A) activity in the economy. Panel B of Figure 1 shows the annual number of U.S. divestitures as a percentage of all U.S. takeovers from 1970 and forward. While the number of divestitures increased sharply in the second half of the 1990s, it fell behind the even greater increase in M&A volume over the same period. This trend was reversed once the takeover activity slowed after the turn of the century. In 2011, divestitures made up 31% of all M&A transactions, somewhat below the annual average of 37% over the whole 1970–2011 period.

3.2 Valuation effects

Panel A of Table 1 shows the stock price reaction of the divesting firm for 24 studies of divestiture announcements in the period 1963-2005. The studies generally report the cumulative abnormal

stock return (CAR) over the two-day interval $(-1, 0)$ where day 0 is the announcement day.⁴ More recent studies often include day +1 as well, to capture the effect of an announcement after the closing of the stock exchange or misreporting of the announcement date. The average CAR for the announcements are positive—ranging from 0.3% to 3.4% across the different samples—and almost all of the estimates are statistically significant at the 1%-level (two-sided t-test against zero). The sample-size-weighted average CAR for the combined sample of 7,544 divestitures is 1.2%. In sum, the evidence indicates that the average divestiture increases the value of the selling firm.

As further shown in the table, firms sell one-fifth of their total assets in the average transaction. Several studies find that the seller firm announcement returns are increasing in the relative size of the divested assets (Zaima and Hearsh, 1985; Klein, 1986; Mulherin and Boone, 2000). It is possible that the returns on asset sales are independent of the size of the assets, so that relatively larger assets have a greater impact on the parent firm’s return. This is similar to the effect of the relative size of the target on bidder returns documented in the takeover literature and reviewed in Betton, Eckbo, and Thorburn (2008).

Klein (1986) reports that the disclosure of the sales price is central to the market’s assessment of the transaction. She finds a positive seller stock price reaction only when the price is disclosed at the initial divestiture announcement. Firms that fail to announce the transaction price have CARs close to zero. The significance of price disclosure is confirmed by Afshar, Taffler, and Sudarsanam (1992) and Sicherman and Pettway (1992). Clubb and Stouraitis (2002) find that the announcement returns tend to increase with the difference between the sales price and an estimated value of the assets in their current use. Overall, this suggests that the market’s valuation of the transaction depends on the sales price relative to the value of the assets when operated by the firm.

The abnormal returns on divestiture announcements are positive also for buyers. For eight studies with data for the period 1963–2002 and listed in Panel B, the average buyer announcement CAR ranges from 0.0% to 2.3%. The sample-size-weighted buyer average CAR (ACAR) is 1.2% for the combined sample of 2,300 divestiture announcements. Note, however, that the study by Benou, Madua, and Ngo (2008) of 872 high-tech divestitures in the period 1981-2001 generates

⁴A typical approach is to estimate the parameters using a single-factor market model over approximately a year prior to the event: $R_{jt} = \alpha_j + \beta_j R_{mt} + \epsilon_{jt}$, where R_{jt} is the stock return of firm j and R_{mt} is the market return on day t . The abnormal return $AR_{j\tau}$ over event day τ is computed as $AR_{j\tau} = R_{j\tau} - (\hat{\alpha}_j + \hat{\beta}_j R_{m\tau})$, where $\hat{\alpha}_j$ and $\hat{\beta}_j$ are the coefficient estimates from the time series regression. The cumulative abnormal return is $CAR(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} AR_{j\tau}$, where τ_1 and τ_2 define the event window relative to the announcement day 0.

much larger buyer returns than prior studies. Excluding this study from the total sample reduces buyer returns to a sample-size weighted average of 0.5%—still positive, but of a smaller magnitude than for sellers. Sicherman and Pettway (1992) document a size effect in the buyer’s stock price reaction similar to that of sellers, i.e. buyer returns tend to increase with the relative size of the acquired assets.

While both sellers and buyers appear to gain from a divestiture, the division of the total gains depends on the relative bargaining strength of the two parties. Sicherman and Pettway (1992) use a debt downgrade prior to the asset sale as an indication of a weaker bargaining position vis-a-vis the buyer. As expected, they find significantly lower CARs for sellers who’s debt was downgraded prior to the transaction. Moreover, the value creation is conditional on the successful completion of the divestiture. Hite, Owers, and Rogers (1987) show that the seller stock price drops back to its initial level if a previously announced divestiture is canceled. In addition, announcement returns are positive for buyers completing the transaction, but insignificant for buyers in transactions that subsequently fail.

3.3 Drivers of value-creation in divestitures

The positive announcement returns for sellers and buyers indicate that divestitures generally create value. We now turn to the evidence on the potential reasons for this value creation.

3.3.1 Increase in corporate focus

The typical divestiture involves sales of assets that are outside of the diversified firm’s core business, and it results in an increased focus of the remaining operations. John and Ofek (1995) show that three-quarters of divested segments are unrelated to the seller’s core business, defined as its primary four-digit Standard Industry Classification (SIC) code. Moreover, using various measures for firm focus, they find that sellers become more focused after the divestiture. Their focus measures include a sales-based Herfindahl index across the firm’s business segments, the total number of business lines reported by the firm, and whether the divested division is outside the firm’s core business.

Schlingemann, Stulz, and Walkling (2002) find that firms tend to divest non-core segments that are relatively small. Maksimovic and Phillips (2001) and Kaplan and Weisback (1992) show that firms are more likely to sell peripheral assets. Kaiser and Stouraitis (2001b) describe how Thorn

EMI successfully raised cash by selling unrelated assets, reinvesting the proceeds in the company's core business. In sum, divested assets are typically outside the firm's core business and the asset sales result in an increased focus of the firm's remaining operations.

An increase in corporate focus may create value if it allows management to focus their attention on the core business and therefore run the firm more efficiently. John and Ofek (1995) find that the divestment announcement returns are positively related to measures capturing the increase in focus. Moreover, the operating profitability of the remaining assets increases after a divestiture, but only for the firms that become more focused. Denis and Shome (2005) show that large firms downsizing their assets become more focused and increase their operating performance. Berger and Ofek (1999) document average CARs of 7% for focusing-related announcements by diversified firms. Overall, there is substantial evidence that the value creation from divestitures is related to the resulting increase in business focus of the divesting firm.

3.3.2 Elimination of negative synergies

If the divested segment has negative synergies with other divisions of the diversified firms, the divestiture will create value simply by eliminating these negative synergies. Dittmar and Shivdasani (2003) examine the investment efficiency of divesting firms. They find that the sale of a business segment is associated with a reduction of the diversification discount. Moreover, they document significant improvements in the investment decisions of the firm's remaining segments after the divestiture. Specifically, the investment level increases for segments that underinvest relative to single-segment firms and decreases for segments that overinvest relative to their peers. They also find that the announcement returns are higher the greater the subsequent reduction in the diversification discount and the greater the improvement in segment investments. Overall, their evidence suggests that divestitures create value by reducing costly cross-subsidization of inefficient investments in the diversified firm.

Colak and Whited (2007) reach a very different conclusion, addressing the endogeneity of breakup decisions. They confirm that firms selecting a divestiture or spinoff are different from their peers: the firms that restructure are typically larger and more diversified, and are in relatively fast-growing industries. Controlling for these differences, they show that although spinoffs and divestitures are associated with improved investment efficiency, these improvements are not

directly caused by the restructuring itself.

Kaplan and Weisback (1992) examine whether divestitures are evidence of failed acquisitions. Studying a sample of 271 large firms acquired between 1971 and 1982, they find that 44% of the targets were sold by the end of 1989. Only one-third of the divested segments are classified as failed acquisitions, however, based on accounting profitability and comments by managers and the business press. Kaplan and Weisback (1992) conclude that acquirers sell businesses that they have improved or that they once had synergies with but no longer do.⁵

3.3.3 Better fit with the buyer

As discussed above, a divestiture will create value if the assets are worth more to the buyer than the value in their current use. A buyer could, for example, have substantial synergies or superior management skills. John and Ofek (1995) find that seller announcement returns are higher when the buyer have some comparative advantage in managing the assets, such as a buyer operating in the same industry as the divested division or a leveraged buyout group.

Using U.S. Bureau of Census data, Maksimovic and Phillips (2001) examine the effect of asset sales on the productivity at the plant level. They show that divestitures are more likely in business cycle upturns, when the assets are less productive than industry benchmarks, when the selling division is less efficient than the buyer, and when the firm has more efficient divisions in other industries. They conclude that most divestitures result in productivity gains by redeploying assets from relatively low-productivity sellers to higher-ability buyers.

Datta, Iskandar-Datta, and Raman (2003) also study the efficiency of the reallocation of assets in divestitures. They use Tobin's q , defined as the ratio between the market value and the replacement cost (here the book value) of the assets, as a proxy for management's capability to manage the assets. They find that the announcement returns are highest for transactions where the buyer has a relatively high q and the seller has a relatively low q , possibly because the assets are transferred to a better managed firm. Overall, the evidence suggests that divestitures create value by transferring assets to higher-valuation buyers.

⁵Fluck and Lynch (1999) model how firms make diversifying acquisitions to help finance marginally profitable projects, to subsequently divest these subsidiaries once the projects are profitable and can generate the necessary funds internally.

3.4 Corporate governance

3.4.1 Agency issues

Although a divestiture may be necessary to maximize shareholder wealth, some incumbent managements resist parting from assets. Berger and Ofek (1999) find that announcements of focus-increasing transactions often are preceded by corporate control and incentive-altering events, including management turnover, outside shareholder pressure, changes in management compensation, and unsuccessful takeover attempts. Gillan, Kensinger, and Martin (2000) describe how Sears announced the divestiture of financial services and refocusing on retail first after a long period of poor performance and coincident with substantial pressure from institutional investor activists. This suggests that the restructuring may have been postponed until it could not be delayed any longer.

Consistent with a reluctance to sell assets, the monitoring of and incentives provided to top management are critical to the value created by a divestiture. Tehranian, Travlos, and Waagelein (1987) document significantly higher announcement returns for divesting firms that provide long-term performance plans to their top executives. Hirschey and Zaima (1989) find higher announcement returns for divestitures by companies with concentrated ownership than sales by widely held firms. Also, the returns are higher for firms where insiders are net-buyers of the firm's stock over the preceding six-month period. Hanson and Song (2000) further show that divestiture gains are increasing in the fraction of outside directors on the board and the percentage equity ownership of the management team. Pointing to the importance of banks as monitors, Hirschey, Slovin, and Zaima (1990) find some evidence of higher announcement returns for divestitures by firms with bank debt. Overall, firms with better monitoring and more managerial share ownership seem to make divestiture decisions that create more value.

The proceeds received by the divesting firm may be reinvested in the firm's remaining operations, used to retire debt, or distributed to shareholders. Lang, Poulsen, and Stulz (1995) and Kaiser and Stouraitis (2001a) show that the announcement returns are positive when the proceeds are used to pay back debt, but insignificant for firms that reinvest the proceeds. Slovin, Sushka, and Ferraro (1995) also find higher announcement returns when the proceeds are paid out. Ataullah, Davidson, and Le (2010) show that shareholder announcement returns increase with the shareownership of the CEO for firms that retain the proceeds. This suggests that management may employ the funds

inefficiently if retained by the firm.

Bates (2005) examines the corporate payout and retention decision for 400 large asset sales between 1990 and 1998. He finds that the probability of retaining the cash proceeds increases in the divesting firm's growth opportunities, measured by its market-to-book ratio. However, firms retaining the proceeds consistently overinvest (have higher capital expenditure) relative to their industry peers. Also, the higher the equity ownership of officers and directors, the more likely is it that the sale proceeds are paid out. The evidence is again consistent with investment inefficiencies associated with the retention of proceeds from asset sales.

3.4.2 Financial distress

Several studies indicate that asset sales are used as a way of generating cash when the firm is financially constrained. Divestiture announcements are typically preceded by a period of negative stock returns (Alexander, Benson, and Kampmeyer, 1984; Jain, 1985; Hanson and Song, 2003) and poor operating performance (Lang, Poulsen, and Stulz, 1995; Schlingemann, Stulz, and Walkling, 2002; Brown, James, and Mooradian, 1994). Moreover, firms with high leverage are more likely to sell assets (Ofek, 1993; Kruse, 2002). Officer (2007) shows that divesting firms have lower cash balances, cash flow, and bond ratings than size- and industry-matched control firms, all of which suggest that the sellers are liquidity constrained. Also, Nixon, Roenfeldt, and Sicherman (2000) find that financially distressed firms prefer a divestiture to a spinoff, which does not generate cash. In addition, Asquith, Gertner, and Scharfstein (1992), Ofek (1993) and other show that firms in financial distress frequently sell assets as part of the restructuring process.

The optimal use of proceeds from asset sales change when the firm is in financial distress. The firm's ability to pay dividends to shareholders is typically limited by debt covenants at this point, and the choice stands between reinvestment in the business or repayment of debt. For a sample of distressed firms, Brown, James, and Mooradian (1994) show that shareholder announcement returns are significantly higher when the proceeds are retained by the firm rather than used to repay debt. Also as expected, bondholder announcement returns are higher when the proceeds are used to pay off debt. Brown, James, and Mooradian (1994) suggest that creditor influence over distressed firms may force asset sales that benefits the firm's creditors to the detriment of shareholders. Datta and Iskandar-Datta (1996) find that divestitures by financially distressed firms

generate positive announcement returns for bondholders, but not for shareholders.

Shleifer and Vishny (1992) argue that financially distressed firms sell assets at depressed prices to lower-valuation industry outsiders because higher-valuation industry insiders are liquidity constrained. Consistent with this argument, Pulvino (1998) finds that financially constrained airlines sell aircrafts at lower prices than their unconstrained competitors. Moreover, Officer (2007) shows that acquisition multiples are lower when the parent firm has experienced negative abnormal stock returns over the year leading up to the sale and when the corporate loan spread above treasury rates are high. Also, Ramey and Shapiro (2001) show that more specialized assets sell at greater discounts, and that discounts are greater when assets are sold to industry outsiders than to industry insiders. Examining firms auctioned in Swedish bankruptcy, however, Eckbo and Thorburn (2008) reject the fire-sale hypothesis: they find little evidence of fire-sale discounts when assets are sold as going concerns.⁶

Liquidity may be a factor in the decision to sell assets. Kim (1998) documents that managers sell their most liquid assets first, before selling more illiquid assets. Moreover, Mulherin and Boone (2000) and Schlingemann, Stulz, and Walkling (2002) show that breakup transactions tend to cluster in industries where the aggregate corporate transaction volume is large, i.e. in industries with relatively liquid markets for corporate assets.

4 Spinoffs

In a spinoff, a public company distributes its equity ownership in a subsidiary to its shareholders. The distribution is a pro-rata dividend and parent shareholders receive subsidiary stock in proportion to their ownership in the parent firm. The spinoff involves a complete separation of the two firms. After the spinoff, the subsidiary becomes a publicly traded company with a unique ticker symbol and an independent board of directors. In contrast to a divestiture, a spinoff does not generate any cash proceeds for the parent company. Also, since the spinoff involves a public listing of shares, it has higher transaction costs and takes longer time than a divestiture.

A spinoff may be structured as a tax free transaction if it qualifies under Section 355 of the Internal Revenue Code. Among the most important requirements under Section 355 are (i) the

⁶See Hotchkiss, John, Mooradian, and Thorburn (2008) for a more detailed review of asset restructurings by financially distressed firms.

parent must have control of the subsidiary (own at least 80% of the voting rights) prior to the distribution; (ii) the parent must distribute control (at least 80% of the votes) to shareholders and retain no practical control of the subsidiary; (iii) the spinoff must have a valid business purpose; and (iv) the parent or the subsidiary cannot be acquired within two years after the spinoff. If the spinoff qualifies under Section 355, there is no tax on the distribution of stock, neither at the parent nor at the shareholder level. Most spinoffs in the United States are structured as tax free transactions.

If a spinoff does not qualify under section 355, however, the distribution is taxed as a property dividend. The parent recognizes a gain equal to the difference between the fair market value of the subsidiary and the parent's tax basis in the subsidiary, similar to a capital gain. This imputed gain is taxed at the corporate tax rate. Moreover, shareholders pay a dividend tax on the fair market value of the subsidiary (the distributed subsidiary stock).

The condition under Section 355 requiring that the subsidiary is not acquired within two years of the spinoff is outside the parent company's control. Yet, a potential acquisition of the subsidiary after a tax free spinoff would trigger an often substantial tax liability at the parent company level. To transfer the cost of this potential liability to the subsidiary and thus ultimately the acquirer, it is common practice that the subsidiary contractually commits to pay any such future tax liability of the parent, would the subsidiary be acquired within two years of the spinoff.

Maydew, Schipper, and Vincent (1999) compare 52 tax free spinoffs with 218 divestitures in the period 1987-1995. They find that tax costs average 8% of the divested assets. They suggest that managers prefer a taxable assets sale when the sales price is high enough to offset the associated tax cost.

4.1 Transaction volume

Using data from Thompson SDC Platinum (SDC), Panel A of Figure 2 plots the total deal value (bars) and annual number (line) of spinoffs announced worldwide between 1985 and 2012.⁷ The number of spinoffs soared in the second half of the 1990s, and reached a peak in year 2000 with over 200 transactions and a total market value of \$225 billion. Many companies tried to take advantage

⁷Only 56% of the announced spinoffs are coded by SDC as completed. The rest are classified largely as pending (27%), unknown (5%) or withdrawn (10%). Since many older spinoffs are coded as still pending, we ignore the deal status and report statistics for all announced spinoffs.

of the higher valuation multiple investors were willing to pay for activities in the technology and internet sector by splitting off subsidiaries and divisions in that space.

While the interest for spinoffs plummeted with the burst of the internet bubble, the deal activity recovered through 2006 and 2007. The spinoff dollar deal volume fell again drastically with the onset of the financial crises and reached a trough in 2009, but has recovered through 2010 and 2011. In 2012, there were a total of 172 spinoffs announced globally for a combined value of \$16 billion.

The largest U.S. transactions announced in 2012 were the spinoffs of The WhiteWave Foods from Dean Foods (\$1.9 billion), Liberty Spinco from Liberty Media (\$1.7 billion) and Sears Hometown and Outlet Stores from Sears Holdings (\$0.7 billion). Internationally, the largest transactions were the spinoff of the tire manufacturer Hankook Tire, Korea (\$5.4 billion); the separation of two mines in Sibanye Gold from Gold Fields, South Africa (\$1.1 billion); and the split of PetroBakken Energy from Petrobank, Canada (\$1.1 billion).

4.2 Valuation effects

The results from 24 selected studies estimating shareholder gains from spinoff announcements are listed in Table 2. The samples contain a total of 2,957 spinoffs announced between 1962 and 2007. Shareholder average cumulative abnormal returns are significantly positive and ranges from 1.7–5.6% across the various studies. The lowest average CAR of 1.7% is for a sample of 156 European spinoffs announced in 1987–2000 and examined by Veld and Veld-Merkoulova (2004). Combining the 24 studies, the sample-size-weighted abnormal announcement return is 3.3%.

The average CAR of 3.3% in spinoffs is higher than the 1.2% average CAR for divestitures reported above. Recall, however, that also buyers tend to experience positive announcement returns in divestitures (average CAR of 1.2%). In contrast, the total gains from a spinoff is reflected in the parent company stock. Thus, some of the difference in announcement returns between spinoffs and divestitures could be explained by buyers sharing in the value creation from the latter transaction.

Table 2 further shows that the market value of the subsidiary is about one-quarter of that of its parent in the average spinoff. As for divestitures, the announcement returns for spinoffs are increasing in the relative size of the subsidiary. Miles and Rosenfeld (1983) show that shareholder CARs are on average greater in spinoffs of subsidiaries with a market value exceeding 10% of the parent company's market value compared to spinoffs of relatively small subsidiaries. In addition,

Alli, Ramirez, and Yung (2001) find insignificant announcement returns for 47 spinoffs that are subsequently withdrawn, as if the market anticipates the withdrawal at the time of the announcement. See also Harris and Madura (2011) for more recent evidence on withdrawn spinoffs.

The evidence of positive announcement returns for spinoffs is compelling. Some studies also report long-term returns following spinoffs. Cusatis, Miles, and Woolridge (1993) estimate the buy-and-hold stock returns for parents and subsidiaries spun off in the 1965–1988 period. They find positive average returns for holding periods of 24 and 36 months compared with portfolios of industry-and size-matched stocks. McConnell, Ozbilgin, and Wahal (2001) investigate portfolios of parents and subsidiaries in 89 spinoffs between 1989 and 1995. In contrast to the earlier work, they find little evidence of higher average buy-and-hold returns compared to portfolios matched on size and book-to-market. Also, using the Fama and French (1993) three factor model as a benchmark, they reject the hypothesis that portfolios of spinoff companies exhibit abnormal returns. Klein and Rosenfeld (2010) show that “sponsored” spinoffs, where an outside investor purchases a substantial equity stake in the newly created firm around the spinoff date, perform worse than “conventional” spinoffs over a three-year period following the transaction.

4.3 Drivers of value-creation in spinoffs

4.3.1 Increased corporate focus

As with divestitures, a potential source of value creation in spinoffs is the increase in corporate focus resulting from the elimination of unrelated divisions. Daley, Mehrotra, and Sivakumar (1997) report that the positive announcement returns are limited to spinoffs that increase corporate focus, defined as the parent and subsidiary having different two-digit SIC industry codes. They document substantial improvements in the return on assets for parents in focus-increasing spinoffs, but not for parents where the spun off subsidiary is in a related industry. Moreover, Desai and Jain (1999) find that focus-increasing spinoffs have significantly higher announcement returns, long-run abnormal stock returns, and improvements in operating performance than do non-focus increasing spinoffs.

Burch and Nanda (2003) estimate the change in the parent firm’s diversification discount from the year prior to the year after the spinoff. They find that the diversification discount is reduced when the spinoff increases corporate focus, but not otherwise. Overall, the evidence suggests that

shareholder gains in spinoffs are associated with a subsequent increase in firm focus.

Jain, Kini, and Shenoy (2011) investigate firms' decision to vertically disintegrate through a spinoff or an equity carveout. They find that the likelihood of vertical disintegration increases with positive subsidiary industry demand shocks and financing conditions, and decreases with parent firm relative productivity. They find significantly positive announcement returns for parent firms, their rivals and subsidiary supplier firms, suggesting that vertical divestitures result in efficiency gains to parent firms due to enhanced focus.

Dittmar (2004) examines the capital structure choice of spunoff firms and their former parents. She shows that subsidiary debt levels are closer to (although still higher than) that of their industry rivals. Moreover, small subsidiaries with high growth opportunities have lower leverage ratios, while large subsidiaries with high collateral value have higher leverage ratios than do their parents. Thus, it appears that a spinoff allows the spunoff entities to adopt a more suitable capital structure.

4.3.2 Elimination of negative synergies

The separation of an unrelated business segment may further reduce any negative synergies that exist between the subsidiary and the rest of the firm. Gertner, Powers, and Scharstein (2002) examine whether spinoffs help eliminate value-reducing cross-subsidization in diversified firms. They show that the subsidiary's investment decisions become much more sensitive to the firm's investment opportunities after the spinoff. Specifically, the total capital expenditure decreases for firms in low Tobin's q industries and increases for firms in high q industries. These changes take place primarily for subsidiaries whose operations are unrelated to the parent's core business and in spinoffs generating higher announcement returns.

Ahn and Denis (2004) further find that, prior to the spinoff, parent firms trade at a discount to and invest less in their high-growth (high q) divisions than do their stand-alone peers. Following the spinoff, however, the diversification discount is eliminated and investments have increased for the high-growth segments. Also, McNeil and Moore (2005) show that subsidiary capital expenditures move toward industry levels after the spinoff, both for previously rationed and subsidized divisions. Announcement returns are greater when parent firms previously allocated capital in a seemingly inefficient way, defined as rationing high q and subsidizing low q spunoff divisions, as is the reduction in the diversification discount.

Using plant level data from the Longitudinal Research Database, Chemmanur and Nandy (2009) show that total factor productivity of plants remaining with the parent firm increases on average immediately after the spinoff. This productivity improvement can be attributed to cost savings and remains for the following five years. Overall, the evidence indicates that spinoffs create value by improving the investment decisions in diversified firms.⁸

Allen, Lummer, McConnell, and Reed (1995) propose that spinoffs provide a way to unwind unsuccessful prior acquisitions. They examine a sample of 94 spinoffs in which the spunoff entity previously had been acquired by the parent firm. Their evidence suggests that the original acquisition was value destroying: the average acquisition announcement return is negative both for the acquirer and for the target and bidder combined. Moreover, the spinoff announcement return is positive and negatively correlated to the acquisitions return, i.e. the greater the anticipated loss from the acquisition, the larger the expected gain from the spinoff. While not identifying a unique source for the value creation in spinoffs, these results are consistent with the elimination of negative synergies between the parent and the subsidiary.

4.3.3 Wealth transfer from bondholders

A spinoff may increase shareholder value at the expense of the parent firm's creditors by reducing the total assets of the firm. Also, if the spinoff increases the volatility of the cash flows of the two separate firms the expected payoff to debtholders will decrease, with a corresponding gain to shareholders (Galai and Masulis, 1976). MacMinn and Brockett (1995) further argue that a spinoff could transfer wealth from liability claimants by removing corporate assets from their reach. Nevertheless, the impact of a spinoff on debtholders is limited by the existence of restrictive debt covenants. Hite and Owers (1983) find insignificant bondholder abnormal returns for a sample of 31 spinoff announcements in 1963–1981, as do Schipper and Smith (1983). For a more recent sample from the period 1995–2002, Veld and Veld-Merkulova (2008) find small but significantly *positive* average bondholder returns around the spinoff announcement of 0.1% (median 0%).

In a case study of Marriott, however, Parrino (1997) documents a significant drop in the value of Marriott's bonds following its spinoff announcement. At the same time, shareholder announcement

⁸See also Fulghieri and Sevilir (2011) for a model of firms in industries with high human capital intensity, showing that multidivisional firms can improve employee incentives to innovate through a spinoff.

returns were positive, suggesting a wealth transfer from bondholders. Maxwell and Rao (2003) examine monthly bond return data for a sample of 80 spinoffs between 1976 and 1997. They find that parent bondholders tend to experience a price decline after the spinoff announcement. The average abnormal bond return (adjusted for the treasury rate) in the month of the spinoff is -0.9%, and decreasing in the relative size of the spinoff subsidiary. Consistent with a bondholder loss, credit ratings are more likely to be downgraded than upgraded subsequent to the spinoff. They find, however, that the combined value of the publicly traded debt and equity increases, suggesting that a wealth transfer from bondholders could only explain part of the shareholder gains.

4.3.4 Information asymmetries

The aggregation of financial data across divisions may exacerbate informational asymmetries between outside investors and insiders for diversified firms. Krishnaswami and Subramaniam (1999) examine whether spinoffs reduce such information gaps, using the dispersion in analysts' forecasts and analysts' forecast error as a measure for the information asymmetry. They find that spinoffs are more common for firms with relatively high levels of information asymmetry compared to their industry rivals. The announcement returns are higher for firms with a greater degree of information asymmetry, and the information gap tends to decrease after the spinoff. Best, Best, and Agapos (1998) also find that spinoff announcement returns are increasing in financial analysts' earnings forecast errors. Overall, this suggests that one source of value creation in spinoffs is the mitigation of information asymmetries.

Analysts play an important role in producing and disseminating information about the firm. Gilson, Healy, Noe, and Palepu (2001) study changes in the coverage by financial analysts for a sample of 103 focus-increasing spinoffs and equity carveouts over 1990–1995. They document a 45% increase in analysts coverage in the three years following a breakup. The new analysts tend to be specialists in the subsidiary's industry. Moreover, the accuracy of the earnings forecast improves by 30-50%, and in particular for the industry specialists. In sum, increases in corporate focus seem to improve the information provided by analysts, both in quality and quantity.

Huson and MacKinnon (2003) further show that analysts tend to revise upwards their short-term earnings forecast in response to a spinoff. Also, idiosyncratic stock return volatility increases following a spinoff, and more so when the spinoff subsidiary is unrelated to the parent firm. They

conclude that the stock price becomes more sensitive to firm-specific information, which benefits informed traders relative to uninformed traders.⁹

4.3.5 Clientele effects

Previously combined into a single security, the spinoff creates an opportunity to hold the subsidiary stock separately. This expansion of investors' opportunity set increases liquidity and opportunities for investor diversification. In a sample of 113 spinoffs during 1964 to 1990, Vijh (1994) finds abnormal stock returns of 3.0% on the spinoff ex date, i.e. the day that the subsidiary starts trading separately, accompanied by an increased trading volume. He attributes the positive returns to higher demand for the parent and subsidiary stocks once they have been separated.

Abarbanell, Bushee, and Ready (2003) show that institutional investors rebalance their portfolio holdings in parents and their spunoff subsidiaries dependent on the fund's investment style and fiduciary restrictions. However, they find little evidence that such rebalancing trades lead to abnormal price pressures for parents or subsidiaries around the spinoff. Chemmanur and He (2007) examine the trading of institutional investors in 66 spinoffs between 1999 and 2004. They find large imbalances in the post-spinoff trading of parent and subsidiary stock: 46% of the trades are in the opposite direction and trades in the same direction are heavily concentrated in one of the firms. This imbalance increases in the measure of information asymmetry and the difference in beta risk and growth rates between the parent and subsidiary. See also Bardong, Bartram, and Yadav (2008) for evidence on the market microstructure environment for spinoffs. Overall, spinoffs seem to relax a trading constraint that existed prior to the distribution of the subsidiary stock.

4.3.6 Increased probability of a takeover

The fact that it is now possible to acquire control of the division through a stock purchase increases the likelihood that the division will become a future takeover target. The spinoff may also increase the probability that the parent will become a target as the parent is now a smaller and more focused firm. Cusatis, Miles, and Woolridge (1993) examine 146 tax free spinoffs over the period 1965-1988 and show that both the parent and the spun off subsidiary are indeed more likely to

⁹See also Chemmanur and Liu (2011) for a model where the increased information production by institutional investors affects firms' choice of breakup transaction.

become takeover targets, compared to a set of control firms matched on size and industry. They suggest that the two pure plays created by a spinoff are more attractive as targets than the combined company. Most of the takeovers occur two to three years after the spinoff, possibly to protect the tax free status of the spinoff. Given the large premiums typically paid in control transactions, they attribute the positive abnormal stock returns at the time of the spinoff to the increased probability of being acquired. This inference is supported by Harris and Glegg (2008), who find that cross-border spinoff announcements are higher when the subsidiary is located in a country with a more active takeover market.

Chemmanur and Yan (2004) formalize this idea in a model where all shareholders benefit if incumbent management loses control of a division to a more able rival. A spinoff forces the manager either to work harder in running the firm or to relinquish control of one of the firms resulting from the spinoff. Either outcome leads to an increase in the combined equity value of the two firms resulting from the spinoff.

4.4 Corporate governance

Self-interested managers may be reluctant to downsize assets under their control. Ahn and Walker (2007) study the importance of effective corporate governance for firms' decision to spin off a subsidiary. Their sample is 102 spinoffs between 1981 and 1997. They find that firms conducting a spinoff have greater stock ownership by outside board members, and smaller and more heterogeneous boards relative to their peers. Following the spinoff, parent firms increase their market-to-book ratios and reduce the diversification discount. They conclude that effective governance increases the likelihood of a spinoff, which is a value-increasing strategy.

Wruck and Wruck (2002) examine the management team of the spunoff subsidiary. They show that 21% of spinoff top managers are outsiders, while 48% of the insiders are parent company top managers rather than division heads. They argue that subsidiary managers lack the corporate governance expertise required when the former division becomes publicly traded. Announcement returns are highest for spunoff subsidiaries led by a parent firm top manager and a division head, combining corporate governance and operating expertise.

In a spinoff, the parent management can design the governance structure of the subsidiary without seeking approval from shareholders. Daines and Kausner (2004) find that the charters of

spunoff subsidiaries include substantially more takeover defenses than do the charters of a sample of size- and industry-matched IPO firms, where shareholders have a say on the corporate charter. Moreover, the spunoff firms tend to have more takeover protection than do their parents. Chemmanur, Jordan, Liu, and Wu (2010) find that parent firms with more antitakeover provisions have significantly higher announcement returns and greater improvements in operating performance after the spinoff. While these firms tend to reduce the number of antitakeover provisions after the spinoff, the unit that the CEO continues to run has more antitakeover provisions than the other firms resulting from the spinoff. See also Harris and Madura (2010) for evidence on poison pill adoptions by spunoff subsidiaries. Overall, it appears that managers prefer more takeover defenses than shareholders do.

Pyo (2007) find that pay-performance sensitivity increases for subsidiary CEOs after a spinoff. The higher the pay-performance sensitivity, the greater the improvements in operating performance post-spinoff. Seward and Walsh (1995) propose that the likelihood of becoming a takeover target should be higher for spunoff firms with little CEO equity incentives. They find that the takeover probability—hostile as well as friendly—increases with the CEO’s stock and option ownership in the spunoff subsidiary. While not discussed by Seward and Walsh (1995), it is possible that CEOs with relatively low pay-performance sensitivity also adopt more takeover defenses in the spunoff firm.

Allen (2001) examines the post-spinoff trades of senior managers, directors and blockholders in 193 public subsidiaries and their parents over the period 1978–1991. He finds that insiders who trade during the first year following the spinoff earn excess returns of 36% over the subsequent 12-month period. He suggests that insiders take advantage of the spinoff as an opportunity to use private information on the relative prospects of the parent and the subsidiary.

4.5 Splitoffs

A splitoff is similar to a spinoff in that the subsidiary becomes an independent company with a separate stock listing. The splitoff, however, involves an exchange offer, where shareholders are offered to exchange parent company stock for subsidiary stock. Thus, the splitoff effectively resembles a stock repurchase, where the parent company buys back its own shares using subsidiary stock as consideration. As a result of the exchange offer, the ownership structure in the parent

and the subsidiary are different post-splitoff (depending on the extent to which parent shareholders participate in the exchange offer). Similar to a spinoff, a splitoff does not generate any new cash to the parent company. The tax treatment is also the same as for a spinoff.

Splitoffs are rare, partly because the valuation of the subsidiary stock is critical for the exchange offer. A splitoff is therefore always preceded by an equity carveout, which helps establish the market value of the subsidiary stock. High-profile splitoffs include McDonald's splitoff of 51% of its interest in Chipotle Mexican Grill, announced in April 2006 and valued at \$660 million; Viacom's splitoff of Blockbuster in 2004; and General Motors splitoff of Hughes Electronics in 2003. In May 2011, Cargill Inc. completed a splitoff worth \$14.9 billion of its majority stake in Mosaic Co. Furthermore, Liberty Media Corp. (former Liberty CapStarz Inc.) was split off from Liberty Interactive Corp. in September 2011.

We are unaware of any systematic empirical evidence on splitoffs—reflecting the limited number of transactions.¹⁰ Given the similarity with spinoffs, the research on spinoffs is likely relevant for splitoffs as well. In addition, there may be some value created in splitoffs from the repurchase of parent stock, for example by signaling that the parent stock is undervalued (Kalay and Lemmon, 2008).

5 Equity carveouts

An equity carveout is an initial public offering (IPO) of a fraction of the stock in a subsidiary. The subsidiary gets its own management team and a separate board of directors. It becomes subject to all financial and other reporting requirements of public companies, such as 10-K reports and proxy statements filed with the Securities and Exchange Commission (SEC).¹¹

The parent company often retains a controlling interest, creating a public minority interest in the subsidiary. There are several reasons for the retention of a majority ownership of the voting rights: Retention of at least 80% allows consolidation for tax purposes and the opportunity to subsequently undertake a tax free spinoff, while retention of 50% or more permits consolidation for accounting purposes. Allen and McConnell (1998) show that parent firms on average retains 69%

¹⁰For a case study, see E.I. du Pont de Nemours and Company: the Conoco split-off (A), HBS 9-202-005.

¹¹See Hand and Skantz (1998) for an analysis of the accounting choice for equity carveouts under SAB 51. Allen (1998) describes the equity carveout strategy of Thermo Electron, which carved out 11 subsidiaries during 1983–1995.

(median 80%) of the subsidiary's shares, while Vijh (2002) reports a median parent ownership of 72%. Of course, since the subsidiary becomes a publicly traded company of its own, the carveout does reduce the parent's control over its former wholly-owned subsidiary.

The shares offered in the IPO may be sold either by the subsidiary itself (a primary issue) or by the parent company (a secondary issue). A primary issue has no tax consequence, while a secondary issue is taxable to the parent as a capital gain. Because of this difference in tax treatment, the majority of equity carveouts are primary issues. The parent company may leave the proceeds from the IPO in the subsidiary or require that they are paid out to the parent. To minimize taxes, the proceeds are streamed back to the parent typically using the following procedure: (i) prior to the carveout, the subsidiary issues a tax-free dividend to the parent in the form of a note (debt obligation); (ii) after the carveout, the proceeds from the IPO are used to repay the note.

5.1 Transaction volume

Panel B of Figure 2 shows the annual distribution of equity carveout announcements worldwide from 1985 to 2012, using data from SDC. The carveout volume peaked in the first half of the 1990s, both in numbers and dollar values. The total market value of subsidiary IPOs reached \$80 billion in 1993 and there was over 500 announced equity carveout transactions in 1994. The turn of the century saw a second surge in the dollar volume of carveouts (\$70 billion in 1999), however, without a corresponding increase in the number of transactions. In recent years, only a handful of equity carveout transactions have been announced each year.

Since the mid 1990s, most carveouts have taken place outside the United States. The way SDC classifies carveouts, this transaction category also contains subsidiaries carved out by the government (state privatizations). The largest equity carveout in 2012 was the listing of the food processing company Ninh Hoa Sugar on the HCM City Stock Exchange, Vietnam (\$ 1.8 billion).

5.2 Valuation effects

Equity carveouts are viewed favorably by the market. Table 3 shows the parent cumulative abnormal announcement stock return for ten selected studies of equity carveouts over the period 1965–2007. The average announcement return is positive and significant across all samples, ranging from 0.5% to 2.7%. The sample-size-weighted average is 1.8% for the total of 1,251 cases. The

lowest average announcement returns of 0.5% are found in a sample of 136 Taiwanese firms (Sun and Shu, 2011). The announcement returns for a sample of 71 German firms average 1.7%, which is similar to the returns for U.S. firms (Wagner, 2004). Interestingly, the positive returns found for equity carveouts are in stark contrast to announcements of seasoned equity offerings, upon which the parent stock price typically falls.¹²

The average carved out subsidiary across the studies in Table 3 has a market value of about one-third of that of its parent. As for other breakup transactions, the announcement returns are found to be increasing in the relative size of the carved out subsidiary (Allen and McConnell, 1998; Vijh, 2002). Vijh (1999) estimates long-term (three-year) abnormal stock returns for both parent companies and the carved out subsidiaries, and finds that these are insignificantly different from zero using a variety of benchmarks. Thus, the value creation from the carveout is captured in the parent stock price at the time of the announcement.

5.3 Drivers of value creation in equity carveouts

Equity carveouts separate the subsidiary from its parent. After the carveout, transactions between the two companies must take place at arms length. As a result, many of the sources of value creation in spinoffs may also create value in carveouts. In addition, the partial control retained by the parent may allow for further sources of value creation, including wealth transfers from new equity holders and information about the subsidiary generated by the market.

5.3.1 Increased focus

Vijh (2002) examines a sample of 336 equity carveouts between 1980 and 1997. A majority of the motives offered for the carveout by the parent company involve lack of fit and focus, and a desire to restructure the operations. He shows that parents and subsidiaries in carveouts are typically in different industries, and documents that announcement returns on average are higher for carveouts of non-related subsidiaries.

The evidence on improvements in operating performance following carveouts is mixed. Hulburt, Miles, and Woolridge (2002) find that both parents and subsidiaries improve their operating performance relative to their industry peers in the year after the carveout. In contrast, Powers (2003) and

¹²See Eckbo, Masulis, and Norli (2007) for a review of security offerings.

Boone, Haushalter, and Mikkelsen (2003) show that the subsidiary operating performance declines after the carveout. Interestingly, Boone, Haushalter, and Mikkelsen (2003) further find that the operating performance of the parent company improves only when it has completely divested its ownership in the subsidiary after four years.

5.3.2 Financing subsidiary growth

Information asymmetries between the firm and outside investors tend to increase the cost of capital (Myers and Majluf, 1984). Prior to the carveout, outside investors have access to the parent company's financial information, with information at the divisional level being less accessible. This opaqueness may increase the cost of funding divisional-level capital expenditures. Because a public listing of the subsidiary increases the quality of the financial information available to investors, Schipper and Smith (1986) suggest that equity carveouts help finance high-growth subsidiaries. Their data bears this out: in their sample, a frequently stated motive for the carveout is to enable the subsidiary to finance future growth. They also show that carved out subsidiaries typically have higher price-earnings ratios than their parents, indicating higher growth rates.¹³

Chen and Guo (2005) also report that parent firms prefer equity carveouts and divestitures to spinoffs when revenue growth and book-to-market ratios are high. Vijh (2002) further finds that, over a subsequent three-year period, both parents and their carved out subsidiaries do a greater number of seasoned equity offerings than control firms matched by industry and size. In addition, the capital expenditures of the subsidiaries exceed those of their control firms. Overall, it appears that equity carveouts are used to increase financing opportunities and reduce financing costs for high-growth subsidiaries.

Michaely and Shaw (1995) document investment banking fees of 7% for carveouts and 2% for spinoffs in a sample of 61 carveouts and 30 spinoffs between 1981 and 1988. They attribute the higher costs of carveouts to the greater scrutiny and more stringent disclosure standard associated with the continued control by the parent company. They also suggest that, because of the higher costs, carveouts are more attractive to firms with relatively low leverage that hold high-quality assets. Consistent with this, they find that larger less-leveraged parents with relatively large and

¹³Bayar, Chemmanur, and Liu (2011) present a model where equity carve-outs are used to fund new projects when outsiders are more optimistic than insiders about the project's cash flows.

low-risk subsidiaries tend to prefer a carveout to a spinoff.

5.3.3 Wealth transfers and information asymmetries

Carveouts have the potential for transferring wealth to shareholders from other claimholders. For example, the separation of assets from the parent possibly reduces the cash flow and collateral available to bondholders. Allen and McConnell (1998) find, however, positive excess bond returns when firms announce a carveout, thus rejecting the bondholder wealth transfer hypothesis.

Nanda (1991) models an equity carveout using the adverse selection framework of Myers and Majluf (1984). In equilibrium, only undervalued parents with overvalued subsidiaries perform carveouts. Thus, carveouts cause a positive announcement effect on average (and there are no wealth transfers).¹⁴ Slovin, Sushka, and Ferraro (1995) examine industry rivals of equity carveout firms. They postulate that the market's misvaluation may apply to all firms in the industry. For a sample of 32 carveouts between 1980 and 1991, they show that industry rivals of the carved-out subsidiaries experience negative announcement returns, consistent with the overvaluation argument. They also report insignificant abnormal returns to parent-company rivals. However, Hulburt, Miles, and Woolridge (2002) find negative returns for parent-company rivals as well, using a sample of 185 equity carveout announcements over 1981–1994. They argue this is evidence against the proposition the parents of carveouts tend to be undervalued.

Vijh (2006) examines the announcement returns to the seasoned equity offering (SEO) of 90 subsidiaries and 37 parents following equity carveouts. He documents negative returns to the issuer, but insignificant returns to the non-issuer, whether parent or subsidiary. Using a sample of equity carveouts from 1995-2002, Baltin and Brettel (2007) detect traces of market timing for the 1998-2000 “hot-market” period. Overall, the proposition that equity carveouts are designed to sell overvalued equity in the subsidiary receives mixed support.

Several studies examine first-day returns when the carved-out subsidiary is listed. Prezas, Tarimcilar, and Vasudevan (2000) and Hogan and Olson (2004) document lower initial returns in carveouts than in traditional initial public offerings. See also Benveniste, Fu, Sequin, and Yu (2008) and Thompson (2010) for evidence on underpricing in initial public offerings of carved out

¹⁴By assuming the carveout's assets in place are sufficiently small relative to those of the parent, Nanda (1991) rules out the possibility that the parent of the carveout is also overvalued (which would result in a negative announcement effect of the carveout). Overvalued parents always prefer to issue their own shares.

subsidiaries, and Lamont and Thaler (2003) for evidence on mispricing between the subsidiary and parent company following tech stock carveouts.

5.3.4 Follow-on events

Equity carveouts appear to be a temporary organizational form. A majority of equity carveouts are followed by a subsequent event. In Schipper and Smith (1986), two-thirds of 76 carved out subsidiaries were later reacquired by the parent (23), divested entirely (17), spunoff (4), or liquidated (4). Moreover, Klein, Rosenfeld, and Beranek (1991) find that 44 of 52 carveouts (85%) are followed by a second event: 25 reacquisitions, 17 selloffs and two spinoffs. Divestitures take place sooner than reacquisitions: three-quarter of the divestitures occur within three years of the carveout, compared to one-third of the reacquisitions. Also, the likelihood of reacquisition is greater when the parent retains 80% or more of the subsidiary shares. Desai, Klock, and Mansi (2011) further show that the reacquisition probability is higher when the parent and subsidiary are linked through product-market agreements.

Klein, Rosenfeld, and Beranek (1991) argue that an equity carveout may be the first stage in a divestiture of a subsidiary. As noted above, the listing of subsidiary's shares reduces informational asymmetries and expose the subsidiary to the market for corporate control. Perotti and Rossetto (2007) model equity carveouts as a way for the parent to obtain information from the market on the value of the subsidiary as an independent entity. While costly, the listing generates information about the optimal allocation of ownership of the subsidiary. Thus, the carveout improves the decision to exercise the option to sell or reacquire control, explaining the temporary nature of carveouts.

Gleason, Madura, and Pennathur (2006) document insignificant announcement returns for carveouts that are later reacquired. However, Klein, Rosenfeld, and Beranek (1991) show that parents experience significantly positive announcement returns when the follow-on event is a sell-off, both at the initial equity carveout and at the subsequent divestiture. Moreover, the probability of becoming a target is higher for carved-out subsidiaries than for a sample of matched firms (Hulburt, 2003). Chahine and Goergen (2011) argue that there is more pre-offer publicity in equity carveouts that are followed by a spinoff in order to attract retail investors and prevent the emergence of new blocks, which could reduce the value of the subsidiary. Overall, the evidence is

consistent with equity carveouts creating value by facilitating future corporate control events.

5.4 Agency issues

Allen and McConnell (1998) argue that some managers avoid selling off assets because their compensation (both tangible and intangible) is tied to the size of the assets that they manage. When the financing of investments requires an asset sale, management prefers to sell a minority stake in a subsidiary, maintaining assets under control. For a sample of 188 equity carveouts, they find that parent firms perform relatively poorly prior to initiating a carveout: parents have lower interest coverage ratios, higher leverage, lower operating profitability, and lower return on assets than their industry rivals. In sum, the sample parents of the carveouts were poor performers and cash constrained.

Allen and McConnell (1998) also find that the stock market's reaction to the carveout announcement is determined by the use of the proceeds. Firms announcing that the proceeds will be reinvested in the firm experience insignificant announcement returns, while the average CAR is a significant 7% for firms that will use the proceeds for debt repayment or a dividend. This suggests that the stock market may be concerned with inefficient investment decisions if the firm retains the proceeds. Schipper and Smith (1986) provide further evidence on managers' reluctance to relinquish control of the subsidiary. They document that, in a majority of cases, the President or CEO of the carved-out subsidiary is also a parent company manager.

Powers (2003) suggests that managers use their inside information about the subsidiary's prospects in determining what fraction of subsidiary shares to sell to the public. He shows that the subsequent improvement in subsidiary operating performance tend to increase in the size of the ownership stake retained by the parent. Similarly, Atanasov, Boone, and Haushalter (2005) show that carved-out subsidiaries tend to have lower operating performance than their peers only when parents retain less than 50% ownership. Their interpretation is very different, however. They suggest that parent managers self-select the carveout either to avoid consolidating the subsidiary's financial results, or to transfer wealth from the minority shareholders in non-consolidated subsidiaries through intercorporate transactions ex post.

6 Tracking stocks

Tracking stock—also called targeted stock or letter stock—is a separate class of parent company common stock whose dividends track the performance of a given division. That is, the holders of the tracking stock are entitled to the cash flow generated by this division, hence determining the value of the stock. The diversified company retains its legal form as one consolidated entity, however, with one and the same board of directors and top management team. There is no legal separation or transfer of assets, and the parent retains control of the division. As a result, the voting rights of the tracking stock is in the parent firm and not in the tracked division. These voting rights typically vary in proportion to the market value of the underlying division, but could also be fixed at the issue of the tracking stock.

There are several ways to distribute tracking stock. It can be issued to current shareholders as a dividend or used as payment in an acquisition. The most common way is, however, is to sell the tracking stock in a public offering, raising cash for the parent firm. Once the tracking stock is listed, the underlying division files separate financial statements with the SEC. Thus, tracking stock creates a type of quasi-pure play, where the tracked division files its own financial statements and has its own stock, while still being part of the diversified firm. Since tracking stock is an issue of the company's own stock, it has no tax implications.

6.1 Transaction volume

The first tracking stock was issued by General Motors (GM) in 1984 as part of the payment for Electronic Data Systems (EDS). The new stock, GM-E, allowed the selling shareholders—most notably Ross Perot, who continued in a management position—to participate in the upside of EDS, despite being part of a much larger company going forward. GM issued its second class of tracking stock, GM-H, in 1985 when acquiring Hughes Aircraft. The next company to issue tracking stock was USX, separating its steel division from its oil division (Marathon) in 1991.

In total, 32 U.S. companies have issued some 50 different tracking stocks to date, most of them in the 1990s. The market seems to have lost its appetite for tracking stock since the turn of the century. The most recent issues of tracking stock include Sprint PCS and CarMax Group in 2001, and AT&T Wireless and Disney's Go.Com in 2000. Carolina Group announced an issue in 2002

that was subsequently withdrawn. Internationally, there has been only a handful tracking stock issues, including Sony Communication Network in 2001 (Japan) and Alcatel Optronics (France) in 2000.

6.2 Valuation effects

Announcements of tracking stock are received positively by the market. D'Souza and Jacob (2000) document an average abnormal two-day announcement return of 3.7% for 37 tracking stocks issued by 14 U.S. companies between 1984 and 1999. Billett and Mauer (2000), Elder and Westra (2000), Chemmanur and Paeglis (2001), and Harper and Madura (2002) also report positive tracking stock announcement ACARs of 2 to 3%. Notice, however, that, given the limited number of tracking stock issues, these studies use largely the same data.

The evidence on the long-run performance of tracking stock is inconclusive. Examining 19 firms issuing tracking stock, Chemmanur and Paeglis (2001) find that the stock of parent firms underperform industry indexes over a subsequent three-year period, while the average subsidiary outperforms its industry index. In contrast, Billett and Vijh (2004) document negative buy-and-hold returns for subsidiaries, but insignificant long-term excess returns for parents. Clayton and Qian (2004) further report insignificant long-run stock performance for tracking stock issuers. As discussed below, however, the strongest testament to a poor performance of tracking stock is the fact that they have almost entirely disappeared from the marketplace.

6.3 Drivers of value creation in tracking stock

A tracking stock is akin to a "quasi-pure play." On the one hand, tracking stock allows the firm to retain its internal capital market, file a joint tax return, and share certain fixed costs and resources (Billett and Mauer, 2000; Danielova, 2008). On the other hand, the requirement to file separate financial statements with the SEC provides some degree of separation between a division and its parent. Also, the tracking stock makes it possible to give stock-based compensation to subsidiary managers.

Clayton and Qian (2004) examine whether the separate listings increase the demand for the parent and subsidiary stocks. They document an ex-date abnormal return of 3% for the parent company, suggesting that the quasi pure-play created by the tracking stock increases investor

interest in the firm. However, Elder, Jain, and Kim (2005) fail to find any increase in the liquidity of the parent firm after the tracking stock issue. Instead, firms issuing tracking stock have relatively low stock-market liquidity and greater bid-ask spreads than comparable control firms. Overall, the evidence is inconclusive as to whether tracking stock increases investor demand to hold the diversified firm.

Logue, Seward, and Walsh (1996) argue that tracking stock is most useful for firms where the benefits of consolidation and integration outweigh the benefits from a complete separation. However, it is questionable whether tracking stock separates the divisions sufficiently to successfully create a pure-play stock. Not surprisingly, D’Souza and Jacob (2000) show that the returns of tracking stocks are more highly correlated with other common stocks of the same company than with other firms in the same four-digit SIC industry as the tracked division. We now turn to a discussion of the major failure of tracking stock.

6.4 Agency issues

Under U.S. corporate law, the board of directors has full discretion to transfer assets between wholly owned divisions (within any limits set by debt covenants). The assets underlying a tracking stock therefore lack legal protection from expropriation by the parent company.¹⁵ Toward the end of the 1990s, firms issuing tracking stock started to explicitly warn investors of the risk of expropriation. For example, in its 1999 prospectus for tracking stock in its online broker, Donaldson, Lufkin, & Jenrette (DLJ) warned of a conflict of interest: "The board of directors may make decisions that favor DLJ at the expense of DLJdirect."

There are several examples of expropriation taking place. When GM in August 1995 announced its plan to spin off its tracking stock in EDS (GM-E), it first required EDS to make a one-time contribution of \$500 million to the parent (GM). EDS shareholders challenged this payment in Delaware court—and lost: the court’s decision was that the board of directors has full discretion to transfer money within the corporation—tracking stock or not. Similarly, before U.S. Steel spun off the tracking stock in its oil division Marathon in 2001, it first transferred \$900 million of debt to Marathon. Not surprisingly, the stock of the steel division soared 19% on the day of this

¹⁵Hass (1996) provides an in-depth discussion of the fiduciary duties of the company’s directors as they relate to tracking stock.

announcement.

The poor legal protection of the assets underlying a tracking stock is likely the major reason for the near-disappearance of this security. In fact, most of the tracking stocks have been reversed over the last decade. In a press release issued on December 16, 1999, Kerry Hoggard, chairman of Fletcher Challenge Ltd., said: "It is clear the the Group's capital structure is seen as complex by investors, is perceived to raise governance issues, and has resulted in a significant structural discount being applied to all our stocks. We cannot allow this to continue, and will move as quickly as possible to a full dismantling of the target share structure."

Billett and Vijh (2004) examine 11 announcements to remove the tracking stock structure. They find significant and positive excess stock returns of 14% to the dismantling announcement. Tracking stock in its current form may very well be a phenomenon of the past.

7 Leveraged recapitalizations

A leveraged recapitalization (a "recap") is a significant payout to shareholders financed by new debt borrowed against the firm's future cash flow. The company remains publicly traded, but with a substantially higher debt level. For a sample of 27 firms completing leveraged recaps over the period 1984–1988, Gupta and Rosenthal (1991) find a threefold increase in the average debt-to-total-capital ratio, from 22% of to 67%. Denis and Denis (1993) document that the median ratio of total debt to total assets increases from 45 to 86% for a sample of 39 recaps in 1984–1988. Moreover, studying 42 leveraged recaps between 1985 and 1989, Handa and Radhakrishnan (1991) report that the proposed payout averages 60% of the pre-recap market value of equity.

The cash distribution to shareholders is typically structured as a large, special, one-time dividend. Alternatively, the distribution could be in the form of a share repurchase or exchange offer. Management often forfeits the cash distribution on their shareholdings and instead takes additional stock. Consequently, leveraged recaps typically result in a substantial increase in managerial equity ownership. Handa and Radhakrishnan (1991) document that insider equity ownership increases by three times, while Gupta and Rosenthal (1991) report a doubling of the insider ownership (from 3.8 to 8.4%). In Denis and Denis (1993), the median ownership of officers, directors, and employees soars from 6 to 15%.

Prior to the widespread use of poison pills, leveraged recaps were sometimes used as a defense against a hostile takeover threat. See Denis (1990) for an analysis of leveraged recapitalizations as a takeover defense.

A leveraged recapitalization triggers a tax liability at the investor level. The tax depends on how the payout to shareholders is structured. For a special dividend, the amount distributed from the firm's retained earnings is taxed as a dividend. If the special dividend exceeds the retained earnings on the firm's balance sheet, the remaining cash distribution is a return of capital, treated as a capital gain. If the recap is structured as a share repurchase, the entire distribution is taxed as a capital gain.

The financial accounting for leveraged recapitalizations does not require any step-up of the company's assets. As a result, if the new debt exceeds the book value of the firm's equity, the company's book equity becomes negative following the recap. What appears like a leveraged buyout by a private equity sponsor is sometimes structured as a recap. Recap accounting can be used if the buyer acquires less than 94.9% of the firm's stock, and the owners of the minority interest, which must be widely held, are independent from the buyer.

7.1 Transaction volume

There was a substantial number of large leveraged recapitalizations in the late 1980s, apparently capitalizing on relatively easy access to high-yield financing (Denis and Denis, 1995).¹⁶ Several of these recapitalizations were made in response to a takeover threat. For example, following a hostile takeover offer from Limited, Carter Hawley Hale announced plans to make a special payout of \$325 million. The payout, which was completed in September 1987, increased the firm's total debt to 114% of the book value of the firm's assets. In response to a hostile takeover attempt by the Rales brothers in the fall of 1988, Interco made a special payout of \$2.4 billion in cash and securities, increasing total debt to 157% of the book value of total assets. Other firms making large debt-increasing dividend payments in 1986-1989 include arms producer Colt Industries, Goodyear Tire and Rubber, retail food chain Kroger, building product maker Owens Corning, packaging company Sealed Air, and gypsum board manufacturer USG.

¹⁶We do not have access to public data sources systematically identifying leveraged recapitalizations. SDC flags "recapitalization", however, this flag does not uniquely identify *leveraged* recapitalization which is the focus here.

The economic recession in 1990-1991, combined with regulatory restrictions on investments in high-yield instruments, and a reduction in new lending by commercial banks, ended the wave of highly leveraged transactions in the U.S. Also, the large recaps seen in the 1980s did not return following the revival of the debt markets in the early 2000s.

7.2 Valuation effects

The wealth effects of leveraged recapitalizations are substantial. For a sample of 44 recaps over 1985–1990, Bae and Simet (1998) find a two-day shareholder ACAR of 5.7%. Moreover, Handa and Radhakrishnan (1991) report an average two-day abnormal return of 5.5%, and Gupta and Rosenthal (1991) find an average announcement CAR of 5.9%. Moreover, Balachandran, Faff, and Nguyen (2004) document a three-day average CAR of 4.4% for a sample of 167 leveraged recapitalizations in Australia between 1989 and 2002.

Since the leveraged recapitalization may be a response to a corporate control threat, several studies measure the returns over a longer event window. Denis and Denis (1993) use a window starting 40 days prior to initiation, defined as the first indication of a takeover or the announcement of the recap, through completion of the recap. They estimate an average abnormal return of 32% (median 26%). Kaplan and Stein (1990) compute the cumulative abnormal stock return starting 40 days prior to the recap announcement, or the day of a hostile bid if there is one, through the recap completion. They find an average CAR of 45% (median 47%) for 12 leveraged recapitalizations between 1985 and 1988.

Kaplan and Stein (1990) further estimate the change in systematic risk of the firm's securities after the leveraged recap. The increase in the equity risk is relatively modest. Using daily returns and market-model estimates, the average equity beta increases by 37% from 1.01 to 1.38 after the recapitalization. They then make two different assumptions about the change in total asset risk from the transaction. Assuming that the systematic risk of the assets (asset beta) is constant, the implied debt beta averages 0.65. However, when they assume that the entire market-adjusted premium represents a reduction in fixed costs, the implied debt beta averages 0.40. Overall, leveraged recapitalizations generate substantial shareholder wealth and appears to be associated with a surprisingly small increase in equity systematic risk.

7.3 Drivers of value creation in leveraged recapitalizations

As discussed earlier, the high debt in leveraged recapitalizations reduces the firm's free cash flow and hence managerial discretion over the investment decisions (Jensen, 1986). Denis and Denis (1993) examine the change in operating performance and investments for 29 completed recapitalizations between 1984 and 1988. They document large decreases in the undistributed cash flow (median -31%) and capital expenditures (median -35%), despite improvements in operating performance (median 21%) from the year prior to the year after the recap. Also, the post-recap cash flow covers only two-thirds of the pre-recap capital expenditures, forcing a reduction in the level of investments. They further examine the market reaction for capital expenditure announcements and find a significantly negative ACAR over the five-year period prior to the recapitalization, suggesting a past pattern of overinvestment. Following the recap, the average number of announced investments drops from 1.2 to 0.3 per firm and year, with an average stock market reaction that is insignificantly different from zero. They conclude that the increased debt plays a central role in disciplining managers' investment decisions.

Consistent with these results, Wruck (1994) documents organizational and compensation changes in Sealed Air following its leveraged recapitalization in 1989. She suggests that the financial leverage was used as a tool to improve the internal control systems, which together with the high debt service created an environment that led to enormous performance improvements and value creation.

Peyer and Shivdasani (2001) study the efficiency of the internal allocation of investments after leveraged recapitalizations in 22 multidivisional firms between 1982 and 1994. Prior to the recap, companies allocate investments to high q divisions. Following the recap, however, investments become less sensitive to division q and more sensitive to division cash flow. While this may indicate that the internal allocation of capital becomes less efficient, the total level of capital expenditure declines, as does the firm's diversification discount. Peyer and Shivdasani (2001) conclude that the costs of distorted divisional investments are outweighed by the benefits of lower firm-level investments. Overall, leveraged recapitalizations appear to create value by curbing managerial overinvestment and improving operating performance.

Walker (1998) suggests that the benefits from leveraged recapitalizations are transitory, examining 39 recaps between 1985 and 1989. He finds that the recap firms have higher free cash flow

prior to the recap than matching firms. However, the pre-recap level of capital expenditures is not significantly different from that of its peers. Moreover, operating performance increases from year -1 to +1 relative to the special dividend but reverts in the subsequent years.

A leveraged recapitalization could be used to signal management's private information about the future cash flow of the firm. Healy and Palepu (1995) describe how managers at CUC International successfully undertook a leveraged recap in 1989 to communicate their optimistic beliefs about the firm's future cash flows to investors. Balachandran, Faff, and Nguyen (2004) examine if the positive information conveyed by a recap extends to other firms in the industry. They find insignificant stock returns for competitors of firms announcing a leveraged recapitalization, suggesting that the content of any new information is unique to the recap firm.

A large fraction of the leveraged recapitalizations in the late 1980s subsequently failed. Denis and Denis (1995) report that 9 (one-third) of 27 firms completing a leveraged recap between 1985 and 1988 became financially distressed. They find that the poor operating performance of the nine distressed firms is in line with that of their industry peers. Moreover, the stock market reacts negatively to announcements of asset sales, as well as to economic and regulatory events associated with the demise of the high-yield market. They conclude that the incidence of distress is not related to poorly structured transactions, but rather to unexpected macroeconomic and regulatory developments.

8 Leveraged buyouts (LBOs)

A leveraged buyout is the acquisition of an entire company or a division, financed largely with debt. The buyer is typically a private equity fund—or in large deals sometimes a consortium of funds—managed by an LBO sponsor. The target firm thus becomes a private company after the takeover. The sponsor raises debt to finance the majority of the purchase price and makes an equity investment from the fund. The equity is injected into a shell company, which simultaneously borrows the debt and acquires the target. Management is often required to contribute with a fraction of the equity investment.

The sponsor relies on the cash flow generated by the target company to service the debt, which is paid off as fast as possible. Sometimes asset sales are used to help amortize the debt. The sponsor

monitors firm performance closely, focusing on cash flow and return on investment measures. The objective is to improve the portfolio company's operating efficiency and grow its revenues for a 3-5 year period before divesting the firm. LBO sponsors try to time the market and exit the investment when market conditions are favorable. The exit may be through an IPO, a sale to a strategic buyer, or a sale to another LBO fund. While an IPO typically generates a higher valuation, the drawback is that it usually takes several years for the LBO fund to entirely unwind its holdings through the public markets.

Because of the heavy debt load, a target firm is traditionally characterized by a strong predictable cash flow, supported by a history of profitability. In addition, it is often in a mature industry, with low growth and limited need for additional capital expenditures. The industry scope of leveraged buyouts has increased over time, however, as has the importance of international deals. Also, while the conventional LBO involves a publicly traded target company, a majority of leveraged buyout transactions involve a privately held target firm.

A management buyout (MBO) is a leveraged buyout of a segment, a division or a subsidiary of a large corporation and in which key corporate executives play a critical role. MBOs are generally smaller than traditional LBOs and, depending on the size of the transaction, a sponsor need not be involved. In the following, MBOs are singled out only if this term is explicitly used to characterize a sample.

8.1 Transaction volume

The leverage buyout activity varies considerably over time. Figure 3 shows the total deal value and number of LBOs announced globally between 1985 and 2012, using data from SDC. A first surge in the LBO activity occurred in the late 1980s and took place primarily in the U.S. This is when landmark transactions such as KKR's buyouts of RJR Nabisco (worth \$25 billion) and Safeway (\$4 billion) took place. This first wave of highly leveraged public buyouts in the U.S. ended abruptly with the economic recession in 1990-1991, combined with the bankruptcy of Drexel Burnham Lambert, regulatory restrictions on high-yield investments, and reduced lending by commercial banks.

The number of non-U.S. buyouts grew steadily through the 1990s, when most of the transactions involved private companies and divisions. As large amounts of debt financing became easily

available in the mid-2000s, the public-to-private transaction reappeared in a second buyout boom. The total value of LBO transactions announced worldwide exceeded \$700 billion in both 2006 and 2007. Indeed, in 2006, 19% of the total M&A volume globally came from LBO activity, compared to an annual average of 8% over the period 2001-2012.

Large U.S. buyouts during this second wave include the acquisitions of Equity Office Properties (\$41 billion), hospital chain HCA (\$33 billion), Texas energy giant TXU (\$32 billion), the world's largest casino company Harrah's Entertainment (\$28 billion), media company Clear Channel Communications (\$27 billion), payment processor First Data (\$26 billion), student-loan provider SLM (\$26 billion), pipeline operator Kinder Morgan (\$22 billion) and Hilton Hotels (\$20 billion), to mention a few. Large buyouts announced outside the United States in 2006-2007 include Canadian telephone company BCE (\$51 billion), British pharmacy-led health and beauty group Alliance Boots (\$22 billion), U.K. airport operator BAA (\$22 billion), Spanish cigarette producer Altadis (\$18 billion), U.K. utility group Thames Water (\$15 billion), and Japanese mobile phone company Vodafone KK (\$14 billion).

With the bankruptcies of Freddie Mac and Fannie May in 2007, debt financing for large transactions dried up and put a stop to the mega deals. Over the next couple of years, only a limited number of large, brandname buyouts was undertaken. After relatively low deal volumes in 2008 and 2009, however, the LBO transaction volume has recovered.

In 2012, a total of 1,729 deals worth \$151 billion were announced, reflecting a relatively small deal size: the average size of deals announced in 2012 was \$87 million compared to an average annual deal size of \$130 million over the period 1980-2012. The largest U.S. LBOs announced in 2012 include the Houston pipeline company EP Energy (\$7.1 billion), a management-led buyout of the cable operator Cequel Communications (\$6.6 billion), and Carlyle Group's acquisition of DuPont's car paint unit (\$4.9 billion). The largest non-U.S. LBO deals in 2012 include U.K. housing group Annington Homes (\$5.1 billion), Shanghai-based advertising company Focus Media Holding (\$3.6 billion), and Swedish tool maker Ahlsell (\$2.4 billion).

2013 has started strong with a higher LBO volume in the first four months than that in 2012. With the announcement of leveraged buyouts of computer technology giant Dell (\$24.4 billion) and ketchup maker H.J. Heinz (\$23.5 billion), it appears that the mega deals may be on their way back.

Stromberg (2008) estimates the value of firms acquired in leveraged buyouts between 1970 and

2007 to be a total of \$3.6 trillion, three-quarters of which represents LBOs undertaken after year 2000. This second wave of large LBOs has spurred a renewed interest for leveraged buyouts in academic research—something this survey is benefiting from.

8.2 The LBO capital structure

An LBO is financed with a mix of bank loans, high yield debt, mezzanine debt, and private equity. The pieces differ in many ways: the sources of capital; the ranking in the capital structure; the structure of the coupon or dividend; callability and prepayment; maturity and amortization; fees to underwriters; covenants and legal restrictions; and marketing and the capital raising process. In the following, we describe the main features of the different pieces in the LBO firm’s capital structure.

8.2.1 The LBO debt

The bank debt, referred to as leveraged loans, is secured and most senior in the capital structure. The proportion leveraged loans in the LBO firm’s capital structure varies, but was around 40% for U.S. buyouts closed in 2006-2007, and closer to 45% in more recent transactions.

Leveraged loans are sold via a syndication memorandum (the “bank book”) and are committed at the time of the transaction. Underwriter fees range from 1.5% to 2.5%. While the maturity varies with the firm’s credit profile, it is commonly 5-8 years and always shorter than that of junior debt. The bank debt has to be amortized before any other claimholders are paid off. A unique feature of the bank debt is that it can be prepaid at par at any time without a penalty. Loan covenants require the firm to maintain certain financial ratios, and often include cash sweeps, requiring the firm to use any excess cash flow for accelerated amortization of the bank loans.¹⁷

Panel A of Figure 4 shows the annual volume of U.S. sponsored leveraged loans from 1997 to 2012, using data from Standard & Poor’s (S&P) LCD. The leveraged loan issuance volume took off with the second buyout wave and peaked in 2007 at \$565 billion. The halt in LBO activity through the financial crises led to a record low leveraged loan issuance volume of only \$38 billion in 2009. The leveraged loan market has since recovered, with a U.S. sponsored issuance volume of \$285 billion in 2012.

¹⁷During the lax credit markets in 2006-2007, many lenders waived the cash sweep requirement.

Panel B of Figure 4 shows the annual leveraged loans issuance volume for the U.S. and Europe in 2006-2012. European corporations have traditionally relied more on bank financing than their U.S. peers. While the leveraged loans issuance volume in Europe was roughly half of that in the U.S. in the 2006-2009 period, it has failed to keep up with the growth in the U.S. issuance volume starting in 2010. As a result, in 2012, the leveraged loans issuance volume in Europe was a mere \$37 billion, compared to the \$285 billion of leveraged loans issued in the U.S. In fact, the U.S. total issuance volume of leveraged loans is approaching that of high yield debt, discussed below.

The bank debt is typically structured into several tranches of term loans (A, B, C, and D), where the holders of Tranche A also pro-rata provides a revolving credit facility. Term-loan A (the pro rata tranche) is sold to commercial banks, is senior to the other tranches and has a maturity of 5-6 years. Tranches B, C, and D (the institutional tranches) have minimal front-end amortization and somewhat longer maturity (6-8 years). The institutional tranches are sold to collateralized loan obligations (CLO), loan participation mutual funds, hedge funds, high-yield bond funds, pensions funds, insurance companies, and other proprietary investors. CLOs are special-purpose vehicles that pool a large number of leveraged loans, financed with several tranches of debt sold to institutional investors.

The leveraged loans are usually rated BB to B+ at issue. The interest rate is floating, quoted as a spread above the London Interbank Offering Rate (LIBOR). The spread varies depending on the credit market conditions, seniority, and firm characteristics.¹⁸ Figure 5 shows the quarterly spread above LIBOR for new-issue BB/BB- leveraged loans between the 4th quarter of 1998 and the 2nd quarter of 2012 (source: S&P's LCD). As shown in the graph, interest spreads were around 160 basis points in 2005-2007 and higher when credit market conditions are less favorable. While the institutional tranches have a slightly higher spread than the pro-rata tranche, the spread difference generally decreases when credit spreads are low.

The remaining debt is raised from the subordinated debt markets. High yield debt is subordinated to the bank debt and mostly unsecured. Interest is fixed, based on a spread to treasury bonds that varies with credit quality, and expressed as a coupon. At issue, the high yield debt is rated below investment grade, ranging from B+ to CCC+. This debt has a bullet maturity in 10 years, and is as a rule callable at a premium after a non-callable five-year period ("10NC5").

¹⁸As discussed below, there is also evidence that portfolio companies of brand name sponsors get lower spreads.

In the U.S., the high yield debt is often sold to a select group of investors in a 144A offering. Rule 144A of the U.S. Securities Act of 1933 provides a safe harbor from the registration requirements when the issue is offered to qualified institutional investors (QIB) that own at least \$100 million in investable assets. High-yield investors demand liquidity in an issue, which has typically meant a minimum of issuance size \$150-200 million. Fees to underwriters are higher than for bank debt, and are in the range of 2.0%-3.5% of the amount issued. Selling high yield bonds requires a road show and hence a bond issue takes time to close. It is therefore common practice to finance the high yield portion through a bridge loan at deal closing, repaid within a year with the proceeds from the subsequent bond issue.

Panel A of Figure 6 shows the annual volume of high yield debt issuance in the U.S. from 1995 to 2012 (source: S&P's LCD). Interestingly, the high yield debt markets recovered quickly after the financial crises and reached in 2012 a record high issuance volume of \$346 billion. Panel B shows the time series of the issuance volume of high yield debt for the U.S. and Europe in 2006-2012. The relative importance of high yield debt financing is much smaller in Europe than in the U.S. Over the 2006-2012 period, the European high yield debt issuance volume was roughly 20% of that in the U.S.

As an alternative to high yield debt, which is publicly traded, the market for second lien loans took off in 2003. These loans are privately placed with hedge funds and CLO investors, and are secured in the firm's assets but subordinated to the bank loans. In 2007, the total volume of second lien loans issued in the U.S. reached \$30 billion (source: S&P's LCD). As shown in Panel A of Figure 7, the second lien loan market almost disappeared when the debt markets shut down in 2007, and has since remained a niche market. In 2012, the U.S. issue volume of second lien loans was a mere \$6.8 billion. Second lien loans are typically callable immediately, often for a small premium of 1%-3%.

Panel B of Figure 7 shows annual average debt multiples, defined as the pro forma ratio of total debt to adjusted EBITDA, in LBO transactions between 1997 and the second quarter of 2012 (source: S&P's LCD). Debt multiples were at a historical low in 2001 after the burst of the internet bubble, with the average LBO firm raising debt of 3.5 times EBITDA. The expansion of the debt markets and aggressive lending practices over the following five-year period resulted in an average debt multiple of 6.1 times EBITDA in 2007. After the financing market turmoil in mid-2007,

however, debt multiples fell to a low of 3.7 in 2009. Since 2010, lending has again eased up, and the average debt multiple was 5.3 times EBITDA in the first six months of 2012.

In periods when the access to high yield debt and leveraged loans are limited, sponsors resort to mezzanine financing. The mezzanine debt replaces or is subordinated to the high yield bonds, with tranches that are often too small for a high-yield issue (i.e. below \$150 million). It is sold in a private placement, thus avoiding public filing requirements and roadshow. U.S. mezzanine investors are typically insurance companies and mezzanine funds.

The mezzanine debt is a committed financing with individually negotiated terms. It is structured as a debt contract or preferred equity, with warrants and other “equity kickers” attached to increase its total returns. All or part of the interest expense or dividend is often in the form of additional securities rather than cash, so called pay-in-kind (PIK).

Figure 8 shows the annual issuance of leveraged loans, high-yield debt and mezzanine debt in Europe, 2006-2012 (source: European Mezzanine Review and S&P’s LCD). Banks have historically played a much more important corporate funding role in Europe than in the U.S., where the public capital markets provide three-quarters of all corporate debt. A European bank would typically underwrite and syndicate both a senior secured loan and the subordinated mezzanine tranche, secured with a second lien.

However, as shown in the figure, banks in Europe have been pulling back on extending credit. Leveraged loans issuance has fallen from a peak of EUR 166 billion in 2007 to EUR 29 billion in 2012, and the role of banks in underwriting and syndicating mezzanine tranches has been negligible since 2009. This drop has been in part offset by an increase in European high-yield debt issuance over the last decade. Overall, European below-investment grade debt markets are starting to look more like those in the U.S.—relying more on capital markets debt issuance (high-yield bonds) and less on bank lending (leveraged loans and mezzanine financing).

8.2.2 The LBO equity and sponsor compensation

The private equity is the most junior in the capital structure. It typically has voting rights, but no dividends. This equity is raised in the “alternative investments” market from pension funds, endowments, insurance companies, wealthy individuals, investment banks, and “fund-of-funds” into a fund managed by a private equity partnership (the sponsor). These alternative investments

represent between 3% and 10% of the investors' total portfolio holdings. The capital is raised into a private equity fund managed by an LBO sponsor. Prominent LBO sponsors include Blackstone, Carlyle, and KKR. Panel A in Figure 9 shows the capital raised globally for private equity from 1997 to 2nd quarter of 2012 (source: Preqin).

Capital raised for private equity funds with final close peaked in 2007 and 2008 with \$664 billion and \$679 billion, respectively. As shown in the graph, the fund raising environment for private equity was more difficult in the years following the financial crises. In the first half of 2012, however, private equity funds raised a total of \$252 billion, close to the \$306 billion raised in 2013. The equity is committed, but not paid in until called by the LBO sponsor, typically with a two weeks' notice.

Most sponsors are paid a management fee of 2% on the fund's capital and receive a carried interest of 20% of the profits above a certain benchmark realized by the fund. In addition, many sponsors charge transaction fees and annual monitoring fees to their portfolio companies. For a sample of 6,000 investments made by buyout funds in 1971–2007 in 30 countries, Phalippou (2009) estimates that the average fund charges fees of seven percent per year. He suggests that investors underestimate the impact of fees because the fee contracts are opaque. See Metrick and Yasuda (2010) and Choi, Metrick, and Yasuda (2011) for a detailed description and analysis of the fee structure in LBO funds.

Current fund performance may also have implications for the ability of the general partners to raise buyout capital in the future. Chung, Sensoy, Stern, and Weisbach (2010) present a model which introduces implicit incentives from future fundraising. For a typical first-time fund, they estimate the size of such implicit incentives to be of equal magnitude as the carried interest in the current fund. Accounting for the incentive to fundraise makes the performance-sensitive component of general partner revenue much larger.

Robinson and Sensoy (2011b) investigate the determinants of fund managers' compensation in a mixed sample of 837 buyout and venture capital funds in 1984–2010. The median management fee is 2%, a carry of 20% is the norm, and the median general partner is required to coinvest 1% of the fund's size, corresponding to a \$3.6 billion investment in the typical buyout fund. Controlling for fund size, management fees tend to increase during fundraising booms. Management fees are generally lower in larger funds, while carried interest is higher. Importantly, there is no evidence of

a lower net-of-fee performance for higher-fee funds or funds with a relatively low sponsor coinvestment. In other words, sponsor compensation is largely unrelated to the net cash flow performance. The authors suggest that their evidence is consistent with more skilled general partners earning higher compensation by generating higher gross performance.

Panel A of Figure 10 shows the average equity contribution in LBOs from 1987 through 2nd quarter of 2012 (source: Portfolio Management Data). The deals at the end of the 1980s were extremely highly leveraged, with an average equity portion of 8-10% of the total capital. Since then, there has been a steadily increasing requirement for equity participation in the buyout transactions. Over the last decade, most LBO transactions have had a substantially higher fraction of equity financing, with equity constituting on average between 40% and 50% percent of the capital structure in recent years.

Managers are generally required to co-invest in the buyout equity along with the LBO fund. If a manager has been involved in a prior buyout, she is asked to roll over a portion of her equity in the target firm. If it is a first-time LBO, managers may be offered to buy equity at a discount, or receive additional stock and options conditional on certain performance goals.

8.2.3 Price multiples and LBO debt levels

Price and debt levels in LBOs vary substantially across times. Panel B of Figure 10 shows the average price multiple in LBOs, defined as the ratio of the purchase price to trailing EBITDA, for the period 1997–2nd quarter 2012. The source is Standard & Poor's LCD. Average prices rose from a low average multiple of 6.0 in 2001 to a high of 9.7 in 2007. In the first half of 2012, average purchase multiples were still relatively high at 8.1 times trailing EBITDA. The total funds raised in the buyout transaction are used for the consideration to the seller as well as underwriter fees for the LBO debt and call premiums on existing bonds.

The price multiples in LBOs seem to be driven more by the availability of debt financing than the general market conditions. Axelson, Jenkinson, Stromberg, and Weisbach (2010) investigate the determinants of LBO firms' financial structure for a sample of 1,157 worldwide leveraged buyout deals in 1980–2008. They find that the leverage of LBO firms is unrelated to debt levels of similar public firms. Instead, market-wide credit conditions, measured as the leveraged loan spread over LIBOR, is the main driver of both the quantity and composition of debt of the LBO firms.

Transaction price multiples are positively related to price multiples in public markets, but also to declines in loan spreads. Interestingly, the use of high leverage in the transactions is negatively related to fund returns, after controlling for vintage and a variety of other characteristics. Axelson, Jenkinson, Stromberg, and Weisbach (2010) suggest that agency problems between private equity fund managers and their investors allow credit conditions to drive the use of leverage, which create a pro-cyclical pattern in leveraged buyout activity and at times may hurt investment performance.

Colla and Wagner (2011) also analyze LBO firms' capital structure for a worldwide sample of 238 buyouts in 1997-2008. While Axelson, Jenkinson, Stromberg, and Weisbach (2010) rely on matched public firms, the data of Colla and Wagner (2011) includes firm-specific characteristics. Consistent with prior evidence on public firms, they find that leverage increases with firm profitability and decreases with cash flow volatility. Furthermore, in hot buyout markets, senior lenders become more aggressive, loosening lending conditions and crowding out junior debt.

Shivdasani and Wang (2011) show that the increased bank lending in 2004-2007 was made possible by securitization, which altered banks' access to capital. Banks lending to LBO firms were also active in underwriting CLOs, often used to securitize these loans. Loans offered by originating banks had lower spreads and looser covenant protection. Also, LBO deals funded by these banks relied more on bank debt than deals funded by other banks. Although financing costs were lower, there is little evidence that CLOs were used to fund lower-quality deals. Target firms in CLO driven deals generated more free cash flows and were substantially larger than other deals. Thus, it appears that a primary impact of the CLO channel of funding was to facilitate the financing of much larger LBOs. See also Roden and Lewellen (1995) for further empirical analysis of the structure of the LBO financing package and Axelson, Stromberg, and Weisbach (2009) for a theoretical model explaining the financial structure of buyout firms.

Haddad, Loualiche, and Plosser (2011) introduce the possibility of time variation in investors' discount rates, which alter the value of agency costs plaguing the public firm. They identify 756 buyout transactions in a quarterly panel of public firms from 1980 to 2009. Using pooled probit regressions, they find that the likelihood of a firm going private increases in the risk-free rate and decreases in expected market returns. Interestingly, after controlling for the risk-free rate and the market risk premia, specific variables capturing credit market conditions cannot predict LBO activity. In the cross-section, firms with lower market beta, lower non-systematic risk (measured as

the standard deviation of the residual from the market model), and lower cash-flow volatility are more likely to become LBO targets, perhaps because these firms have more capacity for high debt. See also Cao, Cumming, Qian, and Wang (2010) for a cross-country examination of LBO activity and creditor rights.

8.3 Value creation in LBOs

The total value created in a leveraged buyout is divided between the selling shareholders and the LBO investors. Table 4 shows the premiums paid in 1,058 leveraged buyout transactions between 1973 and 2006 as reported by seven selected studies. The premium is defined as the final offer price in excess of the target stock price 20–60 days prior to the announcement of the bid. As shown in the table, the average premium ranges from 27% to 59% across the seven studies, with a sample-size-weighted average of 37%. The median premium ranges from 27% to 42%, with an average of 32%. It appears that premiums are generally somewhat lower in the 2000s compared to the 1980s. The exception is the study by Renneboog, Simons, and Wright (2007) of 177 buyouts in the United Kingdom between 1997 and 2003. They document an average premium of 40% (median 38%), which is higher than the contemporaneous LBO premiums of 27–29% in the United States (Guo, Hotchkiss, and Song, 2011).

Several studies find two-day average CARs of 16–17% for LBO announcements in the 1980s (DeAngelo, DeAngelo, and Rice, 1984; Lehn and Poulsen, 1989; Slovin, Sushka, and Bendeck, 1991; Van de Gucht and Moore, 1998). For a sample of 641 proposed LBOs in 1980–2001, Brown, Fee, and Thomas (2009) estimate an average announcement CAR of 19%. Studying 115 buyout transactions in Europe, 1997–2005, Andres, Betzer, and Weir (2007) report a two-day announcement return of 13%. The announcement return reflects a combination of the market’s estimate of the target gains from a deal and the likelihood that the deal succeeds. In a sample of large corporate asset sales 1994–2004, Hege, Lovo, Slovin, and Sushka (2011) show that sellers have higher announcement returns when the buyer is a private equity fund rather than a strategic buyer.¹⁹ Overall, the target shareholders tend to make substantial gains in leveraged buyouts.

The second part of the equation is the returns realized by the LBO investors. These returns

¹⁹See also Gorbenko and Malenko (2010) for a structural model of takeover auctions with asymmetries in the valuation of the target across strategic and financial bidders.

have been difficult to estimate since the buyout targets are taken private and often do not return to public ownership. Kaplan (1989a) estimates a median market-adjusted return of 28% (mean 42%) for investors in 25 MBOs that went public after on average 2.7 years. Muscarella and Versuypens (1990) examine the equity returns for 58 LBO firms that returned to public status after on average 2.9 years. Comparing the IPO price with the LBO price, they estimate an average annualized rate of raw return of 268%. This return is, however, not significantly different from the return of a hypothetical levered portfolio of S&P500 firms.

More recently, LBO fund quarterly cash flow has been available through self reporting to Venture Economics by private equity firms and their limited partners.²⁰ Kaplan and Schoar (2005) use this data to investigate the returns in 1980–2001 for 169 LBO funds raised before 1996. Net of fees, the median fund is estimated to *underperform* the stock market index, generating only 80% (mean 97%) of the return on the S&P500. However, the heterogeneity in performance across funds is large. For the subset of sponsors that have been around for at least five years, the median net-of-fee performance exceeds the S&P500 by 50% (mean 80%). Kaplan and Schoar (2005) show that this performance is persistent, and suggest that LBO sponsors may have different skills in managing portfolio companies.

Phallipou and Gottschalg (2009) study the same data set through a slightly extended time period. Specifically, they examine the cash flow data in 1980–2002 for 238 funds raised 1993 or earlier. Supporting the results in Kaplan and Schoar (2005), total net-of-fee cash distributions to investors are surprisingly low. The median cash return is 1.6 times the paid-in capital for U.S. focused funds and 1.2 times paid-in capital for funds focused on buyouts in the European Union. Phallipou and Gottschalg (2009) further try to correct for the large number of funds in VentureXpert, an investment oriented database, that are not included in Venture Economics. After this correction, they estimate an average annual fund alpha of -3% for a combined sample of buyout and venture funds. That is, assuming a fund beta of one, the average private equity fund underperforms the S&P500 by as much as 3% per year.

Driessen, Lin, and Phalippou (2011) explore the risk and return characteristics of buyout investments. They develop a GMM-style methodology to estimate the abnormal performance and risk exposure of the funds' net-of-fee distributions. The data set includes the actual cash flows through

²⁰This database is also referred to as Thompson Venture Expert.

2003 reported in *Venture Economics* for 272 buyout funds raised in 1980–1993. Their estimations produce a buyout fund market beta of a low 0.33 and an alpha close to zero. Interestingly, while fund alpha is unrelated to size, the beta is significantly positively related to size. Thus, the persistently higher return of large funds documented by Kaplan and Schoar (2005) could be explained by higher risk rather than superior abnormal performance. Using a different mimicking portfolio technique, Groh and Gottschalg (2011) also document a low beta of buyout funds.

Recent papers cast doubt on the quality of the data in *Venture Economics*. Stucke (2011) suggests that this data base systematically is missing information on cash distributions and fails to update residual values, which leads to a downward bias in performance estimations. Harris, Jenkinson, and Kaplan (2011) compare fund performance across several different data sets and conclude that *Venture Economics* seems to understate the returns for buyout funds. Thus, papers using other sources of data may provide more reliable information about private equity fund performance.

Nikoskelainen and Wright (2007) examine a hand-collected data set of 321 buyout investments in the United Kingdom that were exited between 1995 and 2004. They document an average internal rate of return (IRR) on the equity investment of 70%, adjusted for the return of the FTSE 100 index on the London Stock Exchange. The variation between individual investments are large, and the median index-adjusted return is -18%. At a fund level, however, the size of each individual investment matters. Nikoskelainen and Wright (2007) show that, in the cross-section, the larger investments tend to have higher returns. Thus, their evidence suggests that buyout index-adjusted fund returns are positive, at least before accounting for sponsor fees. Using proprietary data on cash inflows and outflows from a large institutional investor invested in 54 U.S. LBO funds raised between 1981 and 1993, Ljungqvist and Richardson (2003) also find positive fund returns. They report that buyout funds typically outperform the stock market, generating a risk-adjusted excess return (alpha) of 5% annually.

Jones and Rhodes-Kropf (2004) use sponsor estimates of value changes to analyze quarterly returns of 379 LBO funds formed between 1980 and 1999. Measuring fund performance with a Fama and French (1993) three-factor model, their estimations yield buyout fund alphas that are insignificantly different from zero. However, Cumming and Walz (2010) caution in interpreting fund returns based on unrealized valuation estimates. They study whether private equity fund managers tend to report inflated valuation estimates of portfolio companies that have not yet been

realized. The sample is large, including cash flow data for over 5,000 portfolio companies of 221 private equity funds across 39 countries in the period 1971–2003, one-quarter of which are buyout funds. Comparing realized returns with previously reported returns, Cumming and Walz (2010) show systematic upward biases in the self-reported returns.

Higson and Stucke (2011) examine a large proprietary database of fund cash flows, covering 85% of all funds raised by the U.S. buyout industry. Their evidence indicates that the buyout industry significantly has outperformed the S&P500. Funds liquidated in the period 1980-2000 generated excess returns of on average 4.5% per year. The cross-sectional variation is large, with just over 60% of the funds outperforming the stock-market index, and the top decile driving the positive average returns. Analyzing individual fund data from Burgiss that is self-reported by limited partners, Harris, Jenkinson, and Kaplan (2011) find that the median and average buyout fund has outperformed public markets. Moreover, using fund data from a large limited partner, Robinson and Sensoy (2011a) also document returns exceeding public market indexes for the 1990s vintage buyout funds.

Finally, Phalippou (2012) explores public data from Preqin, which contains the cash flows for 392 U.S. buyout funds. He finds that these funds outperform the Vanguard S&P500 index fund by on average 5.7% per annum. However, after adjusting for risk-factors related to the small size of the portfolio companies, the value premium and leverage, the average annual fund alpha is negative (-3.1%).

Overall, the total gains from LBOs are large, manifested in the substantial premiums paid to target shareholders. However, the evidence is inconclusive as to whether selling shareholders largely capture all the gains in leveraged buyouts. Depending on the sample, the benchmark portfolio, and assumptions about the value of assets that are not liquidated, the estimates of LBO fund abnormal returns range from positive to negative.

8.4 Drivers of value creation in LBOs

8.4.1 Operating efficiency

Jensen (1986) argues that entrenched managers prefer to overinvest rather than pay out the firm's free cash flow as dividends. Increasing the firm's debt, without retaining the proceeds, reduces the

overinvestment problem by precommitting future cash flow to be paid out in the form of interest. In addition, the increased risk of financial distress helps motivate managers to operate the firm efficiently. In sum, by limiting managerial discretion, debt reduces the agency costs of free cash flow.

As argued by Jensen (1986), the high leverage in buyouts may result in improved managerial investment decisions for firms with high cash flow and few growth opportunities. Lehn and Poulsen (1989) examine 263 LBOs in the 1980s. They find that firms with high levels of free cash flow are more likely to go private and that acquisition premiums increase with the target firm's cash flow. They conclude that the mitigation of agency problems associated with free cash flow is a major source of buyout gains. Opler and Titman (1993) provide additional evidence showing that LBO targets have a combination of high cash flow and unfavorable investment opportunities (low q), and are more diversified than firms that don't become targets. Also, Bae and Simet (1998) find that LBO announcement returns are increasing in the free cash flow of the target firm.

There is some evidence that buyouts are less likely for firms with high expenditures for research and development (R&D). Long and Ravenscraft (1993) show that LBOs typically target firms with R&D expenditures below the industry average. Servaes (1994), however, fails to find any significant difference in the capital expenditure level between target firms in 99 going private transactions and their industry peers.

Harford and Kolasinski (2011) suggest that private equity sponsors add value by reducing overinvestment and making financing of investments available in years where public firms are cash constrained. For a sample of 388 firms bought out with public debt in 1996–2006, they document greater improvements in portfolio company return on assets than that of public industry peers. The level of capital expenditures unrelated to investment opportunities, measured by sales growth and industry market-to-book ratio, decline relative to rivals. Moreover, relative to the control group, portfolio companies' capital expenditures are less sensitive to operating losses. Overall, the evidence suggests that the potential for incentive realignment in firms with high levels of free cash flow represents an important factor in the leveraged buyout decision.

If leverage successfully curbs overinvestment, this should show in the post-buyout operating performance. Kaplan (1989a) examines the performance of 48 large management buyouts between 1980 and 1986. He shows that the firms experience substantial increases in operating income

(+42%), reductions in capital expenditure, and improvements of the net cash flow (+96%) over a three-year period following the buyout. Smith (1990) also reports significant performance improvements for 58 management buyouts in 1977–1986. She finds that operating returns, measured as operating cash flow per employee and per dollar of operating assets, increase significantly from the year prior to the year after the buyout. She examines changes in accounting line items and finds no evidence that repair and maintenance expenditures are postponed or the R&D expenditures are reduced. Instead, the higher margins are a result of adjustments in the management of working capital.

Several other studies document improved operating efficiency after buyouts. Lichtenberg and Siegel (1990) examine data from the Longitudinal Business Database (LBD) of the U.S. Bureau of the Census for 131 LBOs in the period 1981–1986, with a total of 1,132 plants. They show that plant total factor productivity (TFP) increases more than the industry average in the years following a leveraged buyout. Consistent with this, Harris, Siegel, and Wright (2005) find an above-industry increase in TFP for U.K. MBO plants in the 1990s. Moreover, Muscarella and Versuypens (1990) examine the performance of 72 LBO firms that went public again. They show that LBO firms reduce operating costs and experience significant improvements in their operating margins. Also, while there is a dramatic increase in leverage upon completion of the LBO, the debt ratios are gradually reduced before returning to public ownership.

The evidence of improvements in operating performance is weaker for more recent transactions. Guo, Hotchkiss, and Song (2011) examine 192 U.S. public-to-private LBOs between 1990 and 2006, 94 of which have post-transaction data. They find that post-buyout improvements in operating performance are comparable to or slightly exceed benchmark firms matched on industry and pre-buyout characteristics. The cash flow improvements are greater for firms with higher increase in leverage and when the CEO is replaced in the buyout transaction. Moreover, the median risk-adjusted return to LBO investors are 41% (average 63%). Interestingly, the cash flow improvements and returns to capital are strongly related. However, due to the small magnitude of the cash flow gains, Guo, Hotchkiss, and Song (2011) suggest that recent transactions may be motivated by other considerations than improving the operating efficiency of underperforming firms. Providing further support for this conjecture, Cohn, Mills, and Towery (2011) find little evidence of improvements in operating performance after an LBO, using corporate tax return data for 317 U.S. public companies

that went private between 1995 and 2007. Similarly, for a sample of 35 successful public-to-private transactions in 1998-2006, Bartlett III and Poulsen (2010) show a reduced focus on improving portfolio company operating profitability. Instead, buyout funds increasingly seek to increase equity returns by implementing strategies that aggressively grow revenues and capitalize on favorable conditions in the capital markets.

However, the evidence suggests that European buyouts still generate improvements in operating performance. Cressy, Munari, and Malipiero (2007) compare the operating performance of private equity backed LBOs with that of comparable non-buyout private firms matched on industry and size. Their sample is 122 U.K. buyouts in 1995–2002. They find a higher post-buyout operating profitability for the LBO firms, and particularly when the sponsor specializes in the target firm industry. Acharya, Gottschalg, Hahn, and Kehoe (2011) study 395 leverage buyout transactions in Western Europe sponsored by large private equity firms during 1997-2001, and compare them to publicly traded peers. They estimate that 20% in deal IRR, or one-third of the gross IRR of the portfolio companies, is abnormal performance (adjusted for the higher leverage). During private equity ownership, the average operating performance increases by 0.4% per annum above industry median. Also, a stronger operating improvement is associated with higher abnormal IRR and private equity partners with strong operational background. Boucly, Sraer, and Thesmar (2011) further document an increase in operating profitability for a large sample of French LBO firms compared to their controls. This evidence is consistent with private equity sponsors creating value through operating improvements. See also Achleitner, Braun, and Engel (2011) for further evidence on multiples and operating performance improvements of buyout firms.

There is a concern that the trimmed organization and reduced capital expenditure may hurt the long-term prospects of LBO firms. Lerner, Sorensen, and Stromberg (2011) study a sample of 472 LBO firms that received private equity backing between 1986 and 2005 and filed at least one successful patent application through May 2007. They show that firms continue to pursue high-impact patents after going private, concentrating their innovations in areas of historical core strengths. They conclude that leveraged buyouts promote a beneficial refocusing of the firm's patent portfolios. In a different study of 681 private firms in Western Europe that were acquired by private equity funds in the period 1998–2004, Ughetto (2010) finds an increase in the number of successful patent applications after the buyout. Moreover, Barrot (2012) examines the impact of

the horizon of private equity funds on their investment strategies. He finds that funds with longer remaining investment horizon tend to select younger, earlier-stage firms and hold on to them longer.

Overall, the results suggest that buyout funds target firms with free cash flow, where the leverage could help improve investment decisions by reducing managers' discretionary funds. There is convincing evidence of post-buyout improvements in operating performance and plant productivity. Also, while total capital expenditures decline, critical investments in R&D seem to continue.

8.4.2 Employment

It appears that the improvements in operating efficiency are associated with employee layoffs. Kaplan (1989a) finds that the median firm reduces its employee count by 12% relative to the industry from the year prior to the year after the buyout. Muscarella and Versuypens (1990) show that the average employment declines by 0.6% for LBO firms that subsequently went public. This job creation is in the bottom 10% of COMPUSTAT firms. Lichtenberg and Siegel (1990) report that white collar compensation and employment decline in the years following the buyout. Moreover, for a sample of 33 LBOs in 1980–1984, Liebeskind, Wiersema, and Hansen (1992) report that LBO firms downsize the operations more than comparable firms in terms of number of employees, plants and total revenues. In addition, there is some evidence that buyouts in the United Kingdom lead to modest declines in employment (Wright, Thompson, and Robbie, 1992; Amess and Wright, 2007; Cressy, Munari, and Malipiero, 2011).

More recent evidence, however, suggests that the decline in LBO employment in existing facilities is outweighed by additional employment in new establishments, defined as new plants, offices, and retail outlets. Davis, Haltiwanger, Jarmin, Lerner, and Miranda (2011) examine LBD data for 3,200 U.S. firms acquired in private equity transactions between 1980 and 1995 and 150,000 U.S. establishments operated by these firms. Consistent with previous work, they find that employment drops more in existing target establishments than at control firm establishments following the buyout. The difference is 3% of initial employment over two years and 6% over five years. Also, target-firm employment losses are much greater in public-to-private transactions than other leveraged buyouts. However, the LBO firms create substantially more jobs in new establishments than do their peers. They conclude that the private equity sponsors push the target firm to expand in new, higher-value directions. Overall, while LBO firms appear to trim their workforce to improve

efficiency in existing production facilities, they also create additional job opportunities through new establishments.

There is also some evidence that private target firms experience more growth than firms that were public prior to the leveraged buyout. Examining a sample of 839 French buyouts in 1994–2004, Boucly, Sraer, and Thesmar (2011) find that employment, assets and sales grow much more rapidly at portfolio firms than at their control firms. Interestingly, this growth is concentrated to firms that were private prior to the takeover, and where the seller was an individual or family cashing out. Since these firms may have been credit constrained prior to the takeover, it appears that private equity funds help portfolio companies get access to growth capital. This inference is supported by Chung (2011), who documents positive industry-adjusted growth rates in employment, assets, sales, and capital expenditures for a large sample of U.K. private-to-private buyouts between 1997 and 2006.

8.4.3 Corporate governance

Highly leveraged transactions lead to increased monitoring by banks and the LBO sponsor, whose compensation is a direct function of the success of the investment. Jensen (1989) argues that the combination of active governance by buyout sponsors, high-powered managerial incentives, and pressure from high leverage, provide a corporate governance system and incentive structure that is superior to that of public firms with dispersed ownership. He predicts that the LBO organization eventually will eclipse the traditional, widely held public companies to become the dominant organizational form. While this has not yet happened, there is little doubt that the LBO organization carries with it a relatively efficient governance structure.

A central governance characteristic of leveraged buyouts is a meaningful management equity participation. Kaplan (1989a) shows that the median equity ownership of the top management team increases from 6% to 23% for 76 MBOs in the 1980s. Moreover, Muscarella and Versuypens (1990) report that the most highly paid officer owns 18% of the LBO firm's equity prior to an IPO exit.

The equity ownership of the top management team is substantial also in more recent samples. Kaplan and Stromberg (2009) study 45 LBOs from 1996 to 2004. They find a median equity ownership of 6% for the CEO and 16% for the management team. Nikoskelainen and Wright

(2007) report an average equity ownership of 37% (median 35%) for 321 U.K. buyouts over the 1995-2004 period. Acharya and Kehoe (2008) examine a sample of 59 large buyouts in the United Kingdom between 1997 and 2004. They document an equity ownership including options of 3% for the CEO and 13% for the top management team as a whole. In sum, leveraged buyouts provide significant equity-based incentives to top management that help align managerial incentives with shareholders' interests.²¹

The concentration of ownership further provides LBO sponsors with a strong incentive to monitor the firm closely. In the model of Edmans (2011), the concentrated ownership induces equityholders to learn more about the firm's cash flow. This protects skilled managers from being fired when good long-term projects return low short-term earnings, thus increasing investment efficiency.

Baker and Wruck (1990) provides a detailed description of the organizational changes at O.M. Scott after its leveraged buyout in 1986. The board had five members, of which one was a manager and three represented the buyout sponsor. All board members owned stock. The board met quarterly, and an executive committee monthly. More importantly, one of the private equity partners served as a liaison between the LBO sponsor and the firm's managers. The operating partner, which functioned as an advisor and consultant, spent several weeks at O.M. Scott after the buyout closed and was thereafter in telephone contact with the CEO daily. Baker and Wruck (1990) conclude that the close monitoring by the LBO sponsor, combined with the restrictions imposed by the high leverage and significant managerial shareholdings and bonus plans, led to a substantial improvement in O.M. Scott's operating performance and investment policies. See also Denis (1994) for an analysis of the organizational changes at Safeway after its leveraged buyout in 1986.

The evidence suggests that LBO sponsors are active monitors also in more recent transactions. Cornelli and Karakas (2011) examine the board structure for 88 U.K. leveraged buyouts sponsored by a private equity firm over the 1998-2003 period. They find significant changes in board size and composition when a firm goes private. Board size generally decreases and the presence of outside directors is drastically reduced, as they are replaced by individuals employed by the LBO sponsors. Private equity sponsors have a larger presence on the board in deals where the incumbent CEO is replaced or it takes more than five years to exit the investment. Thus, it appears that private

²¹See also Achleitner, Betzer, and Gider (2010) for an analysis of corporate governance motives in German private equity investments.

equity sponsors sit on boards primarily when there is a need for their expertise.

Acharya, Kehoe, and Reyner (2009) examine board effectiveness for private equity portfolio companies compared to that of publicly traded firms, using a sample of 66 U.K. portfolio firms. They report that 39% of the CEOs and 33% of the CFOs are replaced either before closure or in the first 100 days of the deal. For a sample of U.S. buyouts in 1990–2006, Gong and Wu (2011) find that 51% of incumbent CEOs are replaced within two years of the LBO announcement. Surveying over 4,000 firms worldwide, Bloom, Sadun, and Reenen (2009) show that private-equity backed firms on average have better management practices than firms with other types of ownership. See also Masulis and Thomas (2009) for a discussion of the superior corporate governance by private equity sponsors. In sum, buyout sponsors play an important role through active monitoring of their portfolio companies.

Kaplan, Klebanov, and Sorensen (2011) analyze how CEO characteristics affect portfolio company performance. They examine assessments of 224 candidates hired or remaining as CEOs in private equity transactions in 2000–2006, performed by a firm specialized in assessing top executives. Kaplan, Klebanov, and Sorensen (2011) identify two main CEO characteristics: (i) the candidate's general ability and (2) his communication and interpersonal skills relative to his execution and resoluteness skills. Performance is measured several ways, including an assessment by the private equity firm, whether there was a favorable exit, and whether the company received positive press on its operations or additional financing at higher valuations. In cross-sectional regressions, subsequent performance is shown to be positively related to the general ability and execution skills of the buyout CEO.

While the monitoring by LBO sponsors is an important governance mechanism in leveraged buyouts, managers sometime undertake MBOs without the involvement of a private equity sponsor. Fidrmuc, Roosenboom, and van Dijk (2008) examine the choice between an MBO and a sponsor-backed buyout across 129 U.K. leveraged buyouts in 1997–2003 and where management stayed in control. They find that MBO targets have lower market-to-book ratios, more cash on hand, and greater managerial ownership. They suggest that managers invite LBO sponsors when they need help to complete a deal, and conclude that MBOs and sponsor-backed LBOs are complementary transactions.

Cotter and Peck (2001) analyze how the equity ownership of the LBO firm interacts with the

structure of the buyout debt. Their sample is 64 LBO firms in 1984–1989, of which a buyout specialist owns majority control in 40 firms (63%). They find that firms controlled by an LBO sponsor use less short-term and/or senior bank debt to finance the transaction. Moreover, the LBO firm's operating performance increases with the use of senior debt only in deals where no buyout specialist is involved. They suggest that bank debt, having more restrictive covenants, and debt with shorter maturity, and thus higher debt service, both help motivate and monitor management in the absence of an active buyout specialist. See also Grinstein (2006) for an analysis of how the debt structure is used to commit investors to disciplinary actions against management.

In sum, leveraged buyouts are characterized by powerful corporate governance structures. First, management owns a substantial portion of the equity. Second, the ownership is concentrated with an LBO sponsor who actively monitors management. Third, the high leverage puts additional pressure on generating cash flow. Together, these mechanisms provide compelling incentives for managers to improve the efficiency of the LBO firm

8.4.4 Wealth transfers from target debtholders

If the pre-buyout bonds lack protective covenants, the LBO firm may issue more senior debt. Bonds that lack protective covenants become more junior in the capital structure, resulting in a reduction in the value of those bonds. Thus, it is possible that some of the buyout gains represent wealth transfers from target firm debtholders. Marais, Schipper, and Smith (1989) examine a sample of leveraged buyouts between 1974 and 1985. They find positive average CARs for convertible securities and preferred stock, most of which are redeemed as part of the buyout. A majority of the non-convertible debt claims remain outstanding without renegotiation after the buyout. This debt typically lacks covenants restricting additional borrowing with higher seniority and there are pervasive downgradings of public debt following successful buyout proposals, suggesting bondholder losses.

Asquith and Wizman (1990) investigate the one-month return for 199 bonds of LBO targets in the 1980s. They find an average abnormal return of -1% across all bonds. However, these losses are concentrated to bonds with no covenant protection (mean return of -3%). Bonds with strong covenant protection have insignificant returns. Overall, the losses to bondholders are small compared to the total gains accruing to shareholders in the same LBO. Warga and Welch (1993)

document an average risk-adjusted LBO announcement return of -7% for 36 bonds. The bondholder losses, however, constitute at most 6% of the shareholder gains. They too conclude that bondholder expropriation is a minor source of gains in leveraged buyouts.

Billet, Jiang, and Lie (2010) collect information on change-in-control covenants for a sample of 407 U.S. LBO targets, 1980–2006. A change-in-control covenant forces a redemption of the bonds at a premium in case of a takeover. They find average bondholder abnormal returns of -4.9%, consistent with earlier studies. However, splitting the sample based on change-in-control covenant protection, protected bonds experience positive announcement returns of 2.3%, while unprotected bonds have negative returns of -6.8%. Interestingly, firms without change-in-control covenants are twice as likely to become a target compared to firms without such covenants. Billet, Jiang, and Lie (2010) suggest that bondholder wealth expropriation has declined over time with an increased use of change-in-control covenants. See also Baran and King (2010) for additional evidence on bondholder returns in leverage buyout transactions.

Ippolito and James (1992) propose that LBOs could extract wealth from other stakeholders as well. They examine the termination of pension plans in 169 buyouts in the 1980s. They find that the incidence of pension terminations doubles following LBO announcements. However, many of these terminations are affiliated with plant closings or an adaption to terms offered by the competitors of the LBO firm.

Brown, Fee, and Thomas (2009) examine the effect of leveraged buyouts on the firms' suppliers, using a sample of 157 suppliers of firms undertaking LBOs in 1981-2001. They document an average announcement CAR of -1.3% for the suppliers. Moreover, the negative returns are concentrated to suppliers with substantial relation-specific investments. Thus, some of the LBO gains may come from the financial leverage as a commitment device in negotiations with suppliers and other stakeholders.

Another group of stake holders in the buyout transaction is the LBO bank lenders. Kracaw and Zenner (1996) examine wealth effects of highly leveraged transactions on the stock prices of lead-banks of the leveraged-loan syndicate. They find significantly positive average CARs of 0.5% when the transaction is announced and another 0.4% when the bank financing is agreed upon. Moreover, the bank stock returns are increasing in the size of the highly leveraged transaction. In all, bank lenders are expected to make profits on financing highly leveraged transactions and not

the opposite.

Demiroglu and James (2010) investigate how the financial structure of a leveraged buyout is related to the reputation of the private equity sponsor. They examine a sample of 180 public-to-private LBOs completed in 1997–2007. Demiroglu and James (2010) find that portfolio companies of high-reputation sponsors pay lower bank and institutional loan spreads, have longer loan maturities, and rely more on institutional loans. In addition, sponsor reputation is positively related to the amount of leverage (debt/EBITDA) used to finance the buyout, but not to the pricing multiple. Also, reputable sponsors are more active when credit spreads are low and bank lending standards are relatively lax, suggesting that reputable sponsors are able to exploit favorable credit market conditions for LBOs.

Ivashina and Kovner (2009) further study the impact on the loan terms of LBO sponsors' repeated lending from banks. The sample is 1,590 leveraged loans financing private equity sponsored LBOs between 1993 and 2005. Ivashina and Kovner (2009) show that loan spreads decrease and maximum debt-to-EBITDA covenants increase in the sponsor's lending relationship with the bank and the potential for future fee business. It is possible that the advantage from lending relationships could help explain the persistence in returns across LBO sponsors documented by Kaplan and Schoar (2005). See also Cao and Liu (2012) for an analysis of shared bank relationships between the private equity sponsor and the target firm. Overall, these results suggest that LBO firms play an important role as financial intermediaries, helping their portfolio companies achieve leverage on better terms than as standalone borrowers.

8.4.5 Wealth transfers from target shareholders

Muller and Panunzi (2004) argue that the LBO sponsor can expropriate minority shareholders by merging the firm with the raider's leveraged acquisition subsidiary. Also, while managers have a fiduciary duty to negotiate fair value in a buyout transaction, as acquirers of shares, they stand to gain from a low transaction value. Thus, by understating the true value of the target shares, they could expropriate wealth from outside target shareholders in the buyout. The evidence on the extent to which managers are able to manipulate the target firm's books and thus indirectly the offer price is inconclusive. DeAngelo (1986) examines the accounting choices of 64 NYSE firms proposing an MBO during 1973–1982. Using a variety of tests, she fails to find any evidence that managers

systematically understate earnings in the period leading up to the buyout. Perry and Williams (1994) employ a different methodology and a larger sample of 175 MBOs. In contrast, they find evidence of manipulation of discretionary accruals that lowers the earnings in the year preceding the buyout announcement. Similarly, Li, Qian, and Zhu (2012) find that target firms exhibit abnormally high discretionary sales, general and administration (SGA) expenses and abnormally low discretionary accruals, and losses from asset sales in the year prior to an MBO announcement, allowing managers to acquire the target firm relatively cheap. Further, Hafzalla (2009) document that managers involved in MBOs, issue press releases with more negative news just prior to the MBO transaction.

Kaplan (1989b) compares the financial forecasts that firms present at the time of a management buyout to subsequent performance. He finds that the actual post-buyout performance generally lags the forecast, rejecting the notion that managers capitalize on inside information in the MBO. Lee (1992) studies a sample of withdrawn MBO proposals to determine whether managers' proposals reveal information beyond the gains from the completed transaction. He finds that stock prices drop back to their pre-bid level after the withdrawal of the MBO proposal unless another bidder appears. He suggests that the wealth creation in LBOs primarily results from efficiency gains associated with the completed transaction rather than wealth transfers from pre-buyout shareholders. Moreover, Ofek (1994) finds that stock prices drop back to their pre-buyout level after MBO offers are canceled or rejected by the target boards. Also, there is no subsequent improvement in the operating performance of these firms. Overall, the evidence at large suggests that buyout gains come from other sources than expropriation of selling shareholders

A relatively recent practice is the so called "club deals", where two or more private equity firms jointly sponsor an LBO. The equity portion in the 2006–2007 mega-deals may have been too large for a single fund to finance on its own. Indeed, Wu (2011) shows that the likelihood for private equity syndication increases with investment size and geographic distance. Stanfield (2011) finds that buyout funds with a history of poor deal performance are more likely to participate in syndicates than funds with a record of past success. A concern with these club deals, however, is that LBO sponsors may collude to limit competition, hence reducing the price paid to target shareholders. Addressing this concern, the U.S. Department of Justice launched an inquiry in late 2006 into the effect of private equity consortiums on takeover competition.

Officer, Ozbas, and Sensoy (2011) examine the collusion argument for a sample of 70 club deals and 131 single-sponsor LBOs completed between 1984 and 2007. Using target abnormal return estimates, they find that club deals are associated with significantly lower premiums than single-sponsor deals. Guo, Hotchkiss, and Song (2011) report that club deals are associated with higher returns on the capital invested in the LBO. However, target shareholder returns are also higher in club deals, rejecting the proposal of lower prices. Moreover, LBO fund returns are not related to measures of the competition in the bidding, suggesting that deals with better ex-ante prospects attract participation by private equity consortiums. Boone and Mulherin (2011) studies 70 club deals and 94 single-sponsor deals over 2003–2007. Based on SEC filings, they show that the level of takeover competition is significantly higher for both types of LBO bidders compared to a control sample of takeovers. Moreover, for a longer window that better account for differences in the takeover process, they document target abnormal returns of similar magnitude across the different bidder categories. In sum, there is little evidence that club deals limit bidder competition in LBOs at the expense of target shareholders.²²

Outside investors may play an active role in the buyout, promoting target shareholder interests. Peck (1996) examines block trades in 111 MBO bids between 1984 and 1987. She finds that acquisitions of equity blocks increase around MBO offers, peaking three months prior to the offer. The participation of these blockholders increases the probability that the MBO proposal fails and a rival bidder acquires the firm. For a sample of 196 LBOs in 1990–2006, Huang (2010) finds significant increases in hedge fund holdings prior to the bid. He shows that the buyout premium is increasing in the level of hedge fund ownership in the target firm, in particular for hedge funds with an activism agenda. Thus, outside investors seem to play an important role in enhancing target returns.

For a sample of 186 LBOs in 2000–2006, Acharya and Johnson (2010) examine insider trades prior to the buyout announcement. They show that the likelihood of insider trading in stock and options markets increases with the number of participants in the equity syndicate. Similarly, insider trading in bond markets and credit default swaps increases in the size of the debt syndicate. This

²²See Marquez and Singh (2009) for a theoretical analysis of club formation and Meuleman, Wright, Manigart, and Lockett (2009) for evidence on club deals in the United Kingdom. Povel and Singh (2010) model how “stapled finance” (a loan committed arranged by the seller) helps increase bidding competition among private equity bidders in auctions.

suggests that insider trading is more likely the more people has advance knowledge of the buyout.

Recent evidence indicates that board members and their personal social networks influence what companies become targets in private equity transactions, which have huge value implications for target shareholders. Stuart and Yim (2010) analyze how directors' prior deal exposure through other board assignments affect the likelihood that a firm is targeted in a leveraged buyout transaction. The sample consists of all U.S. publicly traded firms in 2000–2007, of which 473 received a buyout offer. Stuart and Yim (2010) find that firms are 40% more likely to get a takeover offer from a buyout fund if they have one or more directors with prior experience of private equity deals through interlocking directorships. The higher takeover propensity is concentrated to firms where these directors have positive going-private experience and are influential on the current board. See also Becker and Pollet (2008), Weir, Wright, and Scholes (2008), Bharath and Dittmar (2010) and Mehran and Peristiani (2010) for evidence on firms' decision to go private through a leveraged buyout transaction.

Target shareholders can realize a gain only if the deal is consummated. Cain, Davidoff, and Macias (2011) study the contract terms in 227 buyouts between 2004 and 2010, 32 of which failed for a variety of reasons. Beginning in August 2007, 12 private equity firms strategically defaulted on pending acquisitions of public targets that had declined in value since the contracting date. Two contract terms predict bidder default during the financial crises: (1) the \$ amount of reverse termination fee paid to the target in case of non-performance (i.e. failure to close the deal); and (2) the ability of the target to seek court enforcement of the buyout agreement, so called "specific performance". Cain, Davidoff, and Macias (2011) conduct a detailed study of the 12 terminated deals and document that none of them were driven by lack of credit financing to complete the transaction. They further show that average reverse termination fees have doubled in size post-crisis, and are even greater for sponsors with previous non-performance and in transactions representing a larger fraction of sponsor equity. At the same time, targets are less likely to seek third-party enforcement of the buyout contract and are generally of a smaller dollar size than before the crisis. Thus, private equity sponsors and target firms appear to have changed multiple contract terms post-crises to shift the allocation of deal risk.

8.4.6 Taxes

Interest expenses are deductible and therefore reduce the firm's cost of capital. In the 1980s, management could also chose to step up the value of the assets after the buyout, increasing depreciation deductions. Kaplan (1989b) estimates the value of potential tax benefits created in MBOs using a range of assumptions about the marginal tax advantage to debt and the debt retirement schedule. Depending on the assumptions, the median value of the tax benefits from interest deductions range from 13% to 130% of the premium paid to pre-buyout shareholders, or 5% to 53% of the market value of equity two months prior to the buyout. He finds a strong positive correlation between the total tax deductions and the premium, and suggests that taxes are an important source of gains in leveraged buyouts.

Jenkinson and Stucke (2011) estimate the size of debt tax benefits for the 100 largest U.S. buyouts in 2003-2008. They report that the size of the takeover premia is strongly correlated to the incremental tax savings in the deal. On average, the takeover premium is around twice the size of estimates of the capitalized tax savings. Thus, it appears that anticipated tax savings from increased financial leverage essentially are captured by selling shareholders rather than the private equity investors. See also Schipper and Smith (1991) and Newbould, Chatfield, and Anderson (1992) for further analysis of tax deductions in leveraged buyouts. Jensen, Kaplan, and Stiglin (1989) estimate that leveraged buyouts have a positive overall effect on the tax revenue of the U.S. Treasury. Simulations of the net effect of leveraged buyout activity for the U.S. Treasury are found in Chatfield and Newbould (1996).

8.5 Industry effects

Slovin, Sushka, and Bendeck (1991) propose that leveraged buyout announcements convey private information about the future prospects of the industry. Examining the stock price reaction of 940 industry rivals of 128 buyouts in the 1980s, they find a significant and positive rival average announcement CAR of 1.3%. The returns tend to be greater for rivals that are smaller in size than the target firm. Phallipou and Gottschalg (2008) argue that LBO announcements signal the existence of an industry-wide agency problem, encouraging industry rivals to improve their governance structure too. They document an increase in rival firm options awards, director share

ownership, and CEO turnover following LBO activity. It is not clear, however, whether their results are specific to rivals in industries with LBO activity or reflect a general trend in corporate governance.

One of the potential costs of high leverage is that it reduces financial flexibility and makes the LBO firm vulnerable to price competition by rival firms. Chevalier (1995b) examines how a leveraged buyout affects the pricing behavior of the LBO firm and its rivals in a local market, using data from the supermarket industry. She shows that prices rise when rival firms are also highly leveraged and LBO firms have higher prices than their competitors. However, prices fall when rival firms have relatively low debt-levels and a single competitor controls a large market share. She finds that these low prices increase the probability that the LBO firm will exit, and suggests that rivals attempt to prey on LBO chains.

Phillips (1995) examine how financial leverage interacts with product market decisions for four different industries where a major player initiated a leveraged buyout. In three of the industries, characterized by difficult entry and high leverage of rival firms, prices increase and industry output declines with the average industry debt ratio. In the fourth industry, characterized by low leverage of rivals and low barriers to entry, prices fall and industry output increases with the industry debt ratio.

Berstein, Lerner, Sorensen, and Stromberg (2010) examine aggregate effects of private equity investments across 20 industries in 26 OECD countries between 1991 and 1997. They find that leveraged buyout activity is associated with faster industry growth in productivity and employment. Yet, there is little evidence that economic fluctuations in industries are exacerbated by the presence of private equity investments.

Overall, the evidence indicates that firms' leverage decisions affect industry pricing and output. See also Dasgupta and Titman (1998) for an equilibrium model explaining the interaction between capital structure and product markets, Fulghieri and Nagarajan (1996) for a model on the strategic role of high leverage for deterring entry in monopolistic markets, and Chevalier (1995a) for further evidence. Also, Parsons and Titman (2008) discuss empirical studies on the interactions between leverage and corporate strategy.

8.6 Organizational longevity and exit

Are leveraged buyouts a transitory structure or a sustainable corporate form that lasts over a longer period of time? Jensen (1989) argues that the organizational form of a leveraged buyout is superior to public ownership for firms in low-growth industries, predicting long-lived LBO companies. In contrast, Rappaport (1990) claims that the lack of financial flexibility will ultimately harm the buyout firm and foresees a prompt return to the public equity markets. Kaplan (1991) examines 183 large leveraged buyouts completed between 1979 and 1986. He finds that the median LBO target remains in private ownership for seven years. Moreover, 45% of the LBO firms return to public ownership at some point. In a sample of 72 reverse LBOs, i.e. LBOs that subsequently went public, Muscarella and Versuypens (1990) report that the average firm remains private for three years.

Halpern, Kieschnick, and Rotenberg (1999) conjecture that there are two types of targets in leveraged buyouts. One is the classical public target with little managerial equity and high free cash flow. The other is a target that performs poorly because the manager has too much of her wealth invested in the firm and hence is suboptimally risk-averse. Examining 126 LBOs in 1981–1986, they find that their sample clusters into two groups. The first group has low prior managerial equity and takeover premiums decrease in managerial equity. Moreover, the buyout is led by an outside sponsor and the LBO firm is typically sold in an IPO or to a strategic buyer. The second group has high managerial equity and takeover premiums that increase in managerial equity. These buyouts are led by managers and the LBO firm tends to remain private. In addition, managers in this group typically increase their ownership fraction but decrease the dollar investment in the LBO firm. The authors suggest that a partition into these two different types of target firms better describes the LBO population.

Stromberg (2008) studies holding periods and exits for 21,000 buyout transactions in 1970–2007. 17,000 (80%) of these buyouts were backed by a financial sponsor. Given the large number of transactions in the 2000s, only 40% of the firms in his sample have exited. He finds that 39% of the exits are in the form of a sale to a strategic buyer. One quarter of the exits are a secondary buyout, i.e. a sale to another LBO fund—an exit form which has increased in importance over the last decade. IPOs account for 13% of the exits. Moreover, despite the significant leverage used in

buyouts, only 6% of exiting firms file for bankruptcy or initiate a financial restructuring. Stromberg (2008) further shows that the median firm stays in LBO ownership for nine years, and only 8% of the firms are sold within two years of the buyout. Overall, the evidence suggests that leveraged buyouts are a long-term organizational form for many firms.

Harford and Kolasinski (2011) examine 788 large U.S. LBO transactions in 1993–2001, tracking exit status through 2009. Similar to Stromberg (2008), 10% of the portfolio companies exit through an IPO, 36% through a sale to a strategic buyer, 30% through a sale to a financial buyer and 15% end up in financial distress. Interestingly, when a sponsor sells a portfolio company to a public strategic acquirer, the buyer's stock price reaction is positive. Also, a purchase from another financial sponsor cannot help predict the subsequent type of exit. Instead, secondary buyouts are common when the sponsor has held the portfolio company longer, suggesting that this type of exit is a result of the pressure to sell rather than firm-specific characteristics.

Wang (2011) studies a sample of 485 U.K. secondary buyouts in 1997–2008. Supporting the conjecture of Harford and Kolasinski (2011), she finds that the likelihood of a secondary buyout exit is higher when the debt markets offer favorable conditions, when industry IPO volume is low, and when the selling private equity firm wants to raise a new fund. While secondary buyouts have a higher average price multiple than first-time buyouts, this could be explained by the favorable debt market conditions at the time of the transaction. Bonini (2012) fails to find any evidence of operating performance improvements in secondary buyouts and documents lower returns to private equity investors. See also Achleitner and Figge (2011) for evidence on secondary buyouts.

Degeorge and Zeckhauser (1993) study the decision to exit a buyout through a public offering for 62 reverse LBOs in the 1980s. They find that the IPO coincides with a peak in the buyout firm's operating performance. The stock of the reverse LBOs outperform comparison firms, however, suggesting that the market anticipates the subsequent decline in operating profitability. They conclude that LBO firms chose to go public when their performance is strong. Holthausen and Larcker (1996) further show that the accounting performance of LBO firms exceeds that of its industry rivals at the time of the IPO and for the following four years. Chou, Gombola, and Liu (2006) document increases in discretionary accruals prior to the listings, and suggest that earnings management may explain a subsequent decline in profitability.

For a sample of 594 reverse LBOs from 1981 to 2006, Cao (2011) find that LBO duration is

negatively related to favorable IPO market conditions. Moreover, firms with shorter LBO duration experience greater deterioration of performance and higher probability of bankruptcy following the IPO. Cao (2011) suggests that sponsors may seek quick cash returns from selling immature LBOs when stockmarket conditions are favorable. Nevertheless, Cao and Lerner (2009) show that the three- and five-year stock performance of reverse LBOs does not significantly differ from the market. See Levis (2011) for further evidence on the performance of reverse LBOs in the UK and Van de Gucht and Moore (1998) for estimates of the probability that an LBO firm returns to public ownership.

Tykvova and Borell (2011) examine the extent to which buyout companies become financially distressed and go bankrupt. Their sample is 1,842 European buyouts in 2000-2008 and matched control firms. Importantly, private equity backed companies have no higher bankruptcy filing rates than do the non-buyout companies. In fact, when the private equity sponsor is “experienced”—i.e. has carried out a buyout transaction before—the probability of bankruptcy filing is even lower. Wilson and Wrigth (2011) confirm the result that private-equity backed firms have no different failure rates in a large sample of U.K. firms over the period 1995–2010. See also Halpern, Kieschnick, and Rotenberg (2009) for further evidence on the determinants of financial distress and bankruptcy in the cross-section of highly levered transactions.

Hotchkiss, Smith, and Stromberg (2011) study 2,156 U.S. firms that obtained leverage loan financing between 1997 and 2010, 991 of which were private-equity backed at some point during the sample period. Similar to the evidence from Europe, they find that the likelihood of default is no higher for buyout firms than other firms when controlling for leverage. However, conditional on default, the portfolio companies are restructured in a shorter time and are more likely to emerge as an independent company versus being sold or liquidated. This is particularly the case for the firms owned by private equity funds that are older and larger, and with more cash. Overall, it appears that buyout sponsors help facilitate efficient restructurings once a portfolio company defaults.

9 Conclusions

In this survey, we review the extant literature on corporate breakup transactions and highly leveraged transactions such as LBOs. For each individual transaction, we survey techniques, transaction

volume, valuation effects and potential sources of restructuring gains. Corporate breakup transactions are optimal when the separation of the diversified firm's divisions increases firm value. The breakup transactions range from divestitures and spinoffs, which entirely separates a subsidiary from its parent, to equity carveouts and tracking stock, which preserves some parent control. LBOs and other highly leveraged recapitalizations result in the firm taking on substantial additional debt in its capital structure.

A divestiture is a sale of a division or subsidiary in a private transaction. Asset sales generate cash to the parent firm on the one hand, but trigger a capital gains tax on the other. The average parent firm experiences an abnormal stock return of 1.2% and the average buyer a CAR of 1.2% when a divestiture is announced. These valuation effects have several explanations: (1) Most divestitures involve divisions that are unrelated to the parent firm, increasing the corporate focus of the diversified firm. (2) The parent firm's investment decisions tend to improve after the divestiture. (3) Assets are often transferred to a higher valuation buyer. (4) It appears that managers are reluctant to sell assets, managers in firms with better corporate governance make better divestment decisions, and the retention of proceeds is associated with inefficient investments.

A spinoff is the separation of a subsidiary through a distribution of the stock to parent shareholders. Spinoffs can be completed without any tax implications, but also do not generate any cash to the parent. The parent stock price increases by 3.3% on average at the announcement of a spinoff. The value creation comes from (1) increased corporate focus; (2) elimination of cross-subsidization leading to improved investment decisions; (3) reduced information asymmetries; and (4) a higher probability of becoming a target. Investors rebalance their portfolios when the parent and subsidiary stocks start trading separately. Moreover, parent managers design the subsidiary corporate charter to include more takeover defenses compared to the parent firm itself as well as other IPO firms.

An equity carveout is a partial IPO of the subsidiary, where the parent typically retains a controlling stake. It generates cash (the IPO proceeds) but no tax. The average parent firm experiences an abnormal stock return of 1.8% at the announcement of an equity carveout. The gains in equity carveouts are attributed to (1) an increase in corporate focus, and (2) a reduction of the financing costs for high-growth subsidiaries. Equity carveouts are a temporary organizational form, and most carveouts are subsequently reacquired or sold off. It is possible that the carveout

generates information about the value of the subsidiary as an independent company, improving the decision to exercise the option to sell out or buy back the subsidiary.

Tracking stock is a separate class of common stock in the parent company, tracking the performance of a given division. The tracking stock generates cash if it is offered to the public and has no tax implication. The average parent CAR is 3.0% on the announcement of a tracking stock issue. These announcement returns are, however, difficult to explain beyond an initial market infatuation with yet another breakup transaction. The tracking stock is a "quasi-pure" play in that it requires separate divisional SEC filings, but has voting rights in the parent. In fact, tracking stock trades like its corporate sibling divisions rather than its industry. It lends itself for expropriation since the corporate board, without legal remedy, can transfer funds from the tracked division to the rest of the company. As a result of such expropriation, most tracking stock issues have been dissolved.

A leveraged recapitalization is a large special dividend financed by debt, substantially increasing the firm's leverage. The average abnormal stock return is 5% on the announcement of a leveraged recapitalization and 20 to 30% through closing of the transaction. The gains in leveraged recapitalizations are attributed primarily to the incentive effects of debt: recap firms substantially cut their capital expenditures and increase operating profitability.

A leveraged buyout is an acquisition by private investors financed primarily by debt. Premiums paid to target shareholders in LBOs average 37%, and announcement CARs average 16–17%. The LBO gains are attributed to several sources: (1) improved investment and operating efficiencies; (2) increased equity-based incentives to management; and (3) strong monitoring by the LBO sponsor. Buyouts after the turn of the century appear to have somewhat less improvements in operating efficiency, but in general create value similar to LBOs of the 1980s. Recent developments include club deals (consortiums of LBO sponsors bidding together), fund-to-fund exits (LBO funds selling the portfolio firm to another LBO fund in a secondary buyout), a leveraged loan market that is highly liquid, and evidence of persistence in fund returns (perhaps because brand-sponsors borrow at better rates).

In this survey, we have primarily focused on the individual transactions and their associated empirical evidence. This is also how most of the literature progresses. A major drawback of this approach is the resulting lack of analysis of alternatives. That is, when a company self-selects a divestiture, what were reasonable alternative strategies? In what sense was divestiture

superior to, say, a spinoff or an equity carveout? In what sense was going private via an LBO superior to a leveraged recapitalization, where the firm levers up without a change of control? Are there systematic differences between public to private LBO transactions and private-to-private restructurings?

Ideally, one would use a theoretical model to structure the answers to these types of questions. The perhaps greatest challenge to the restructuring literature is to achieve a modicum of integration of the analysis across transaction types. Also, it is difficult to evaluate the expected return from buyout investments with only limited data on portfolio companies that do not return to public status within the sample period. We expect these issues to be resolved as both theories and data become more readily available in the future.

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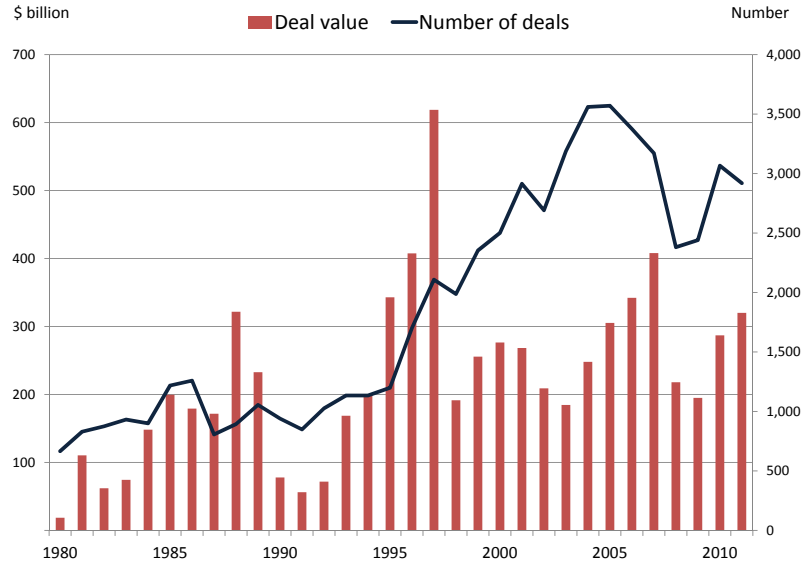
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Figure 1
Annual volume of U.S. divestitures, 1970-2011 (source: Mergerstat Review)

A: Total transaction value in \$ billion and number of divestitures



B: Divestitures as a fraction of the U.S. merger and acquisition volume

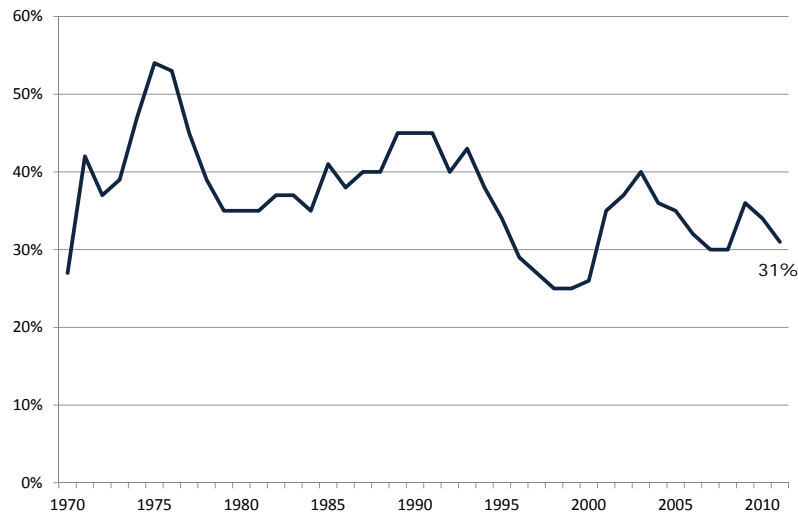
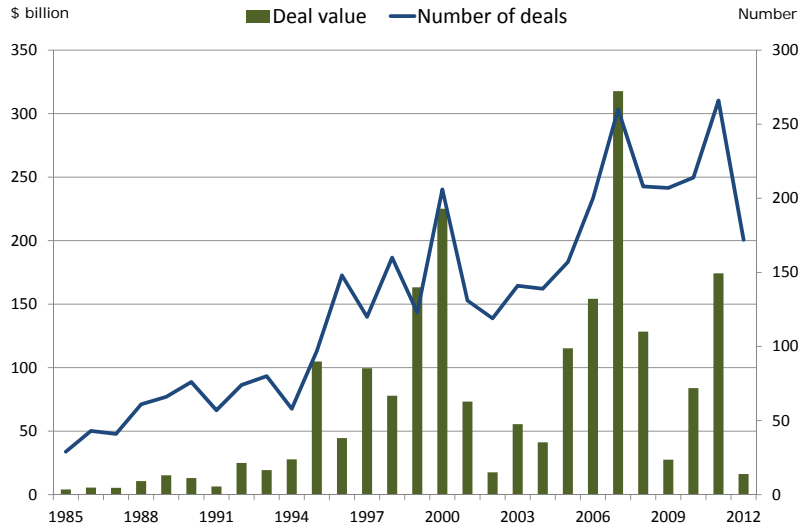


Figure 2
Annual volume of spinoffs and carveouts worldwide, 1985-2012 (source: SDC)

A: Total transaction value in \$ billion and number of spinoff announcements



B: Total transaction value in \$ billion and number of equity carveout announcements

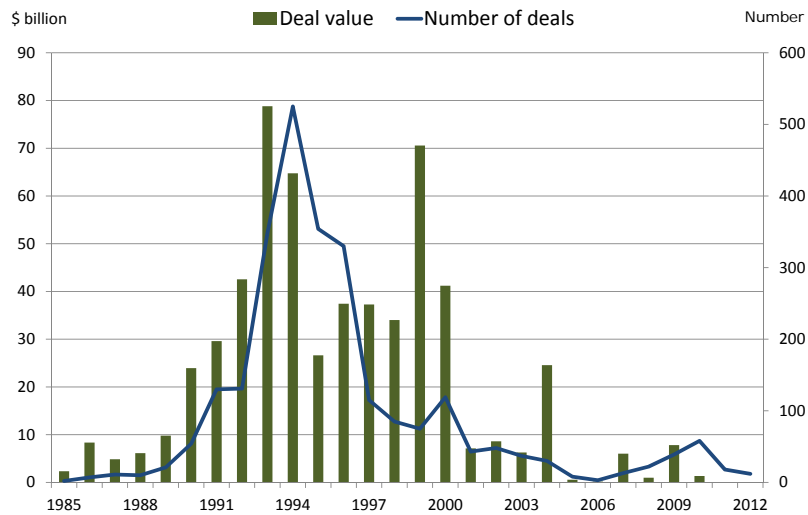


Figure 3
Annual worldwide volume of leveraged buyouts (source: SDC), 1985-2012

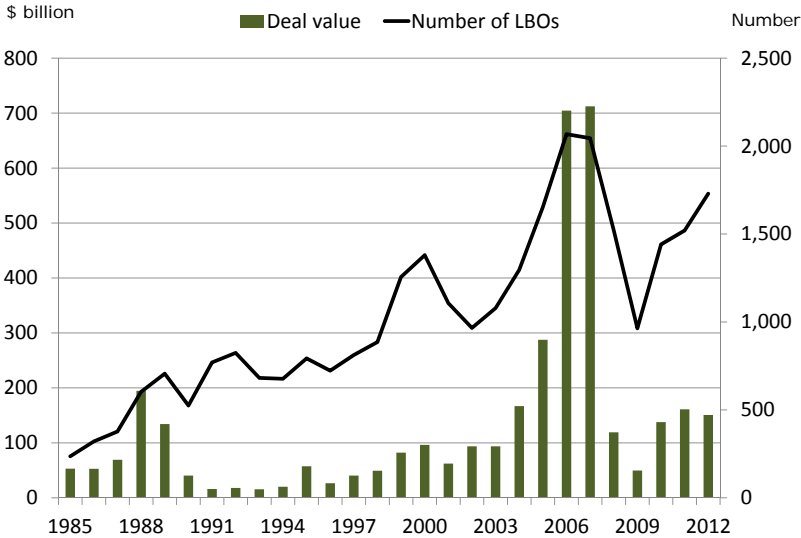
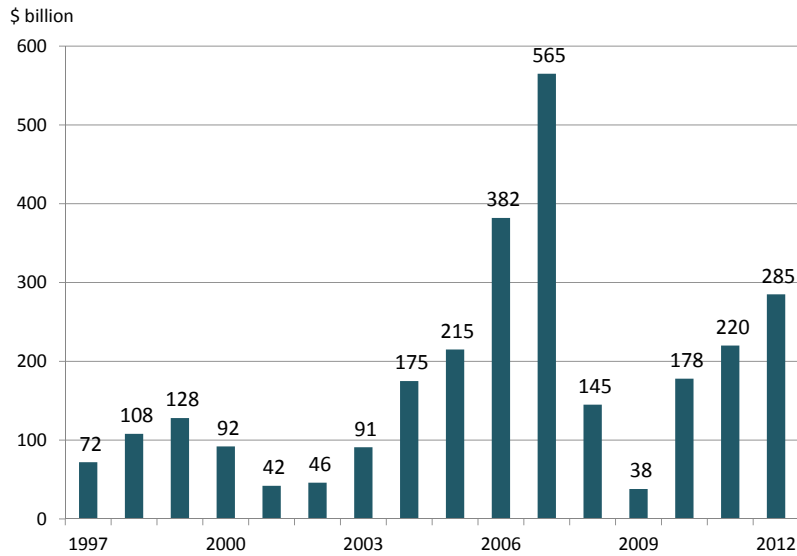


Figure 4
Leveraged bank loans issuance volume (source: S&P's LCD)

A: U.S. sponsored leveraged loans issuance volume in \$ billion, 1997-2012



B: U.S. and Europe leveraged loans issuance volume in \$ billion, 2006-2012

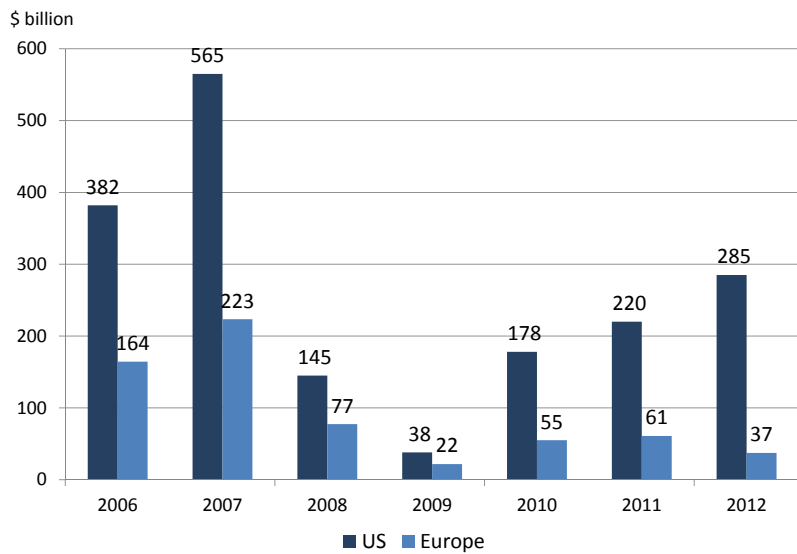


Figure 5
U.S. leveraged loans new-issue spreads, 4q 1998-2q 2012 (source: S&P's LCD)

Average new-issue BB/BB- spreads above LIBOR for pro-rata and institutional tranches

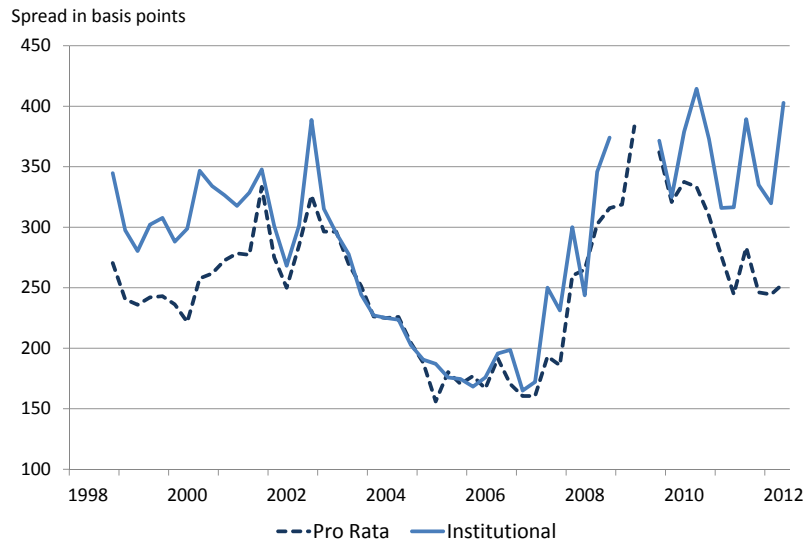
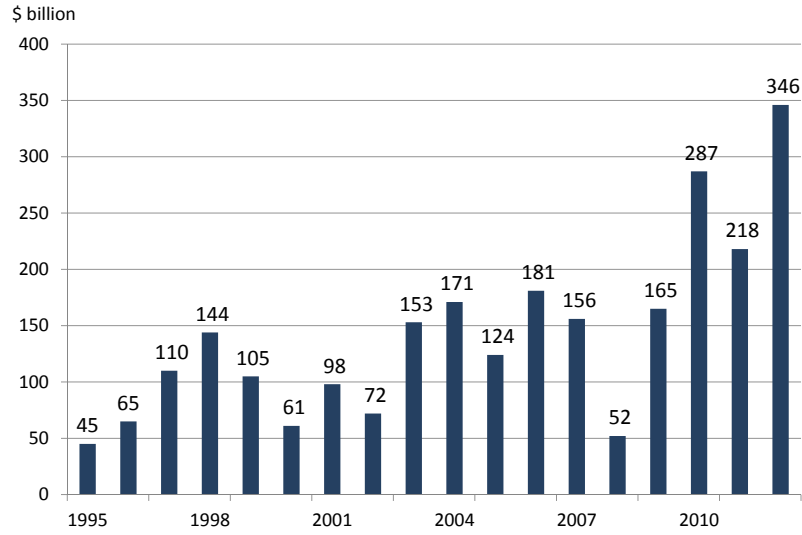


Figure 6
High yield debt issuance volume (source: S&P's LCD)

A: U.S. high yield debt issuance volume in \$ billion, 1995-2012



B: U.S. and Europe high yield debt issuance volume in \$ billion, 2006-2012

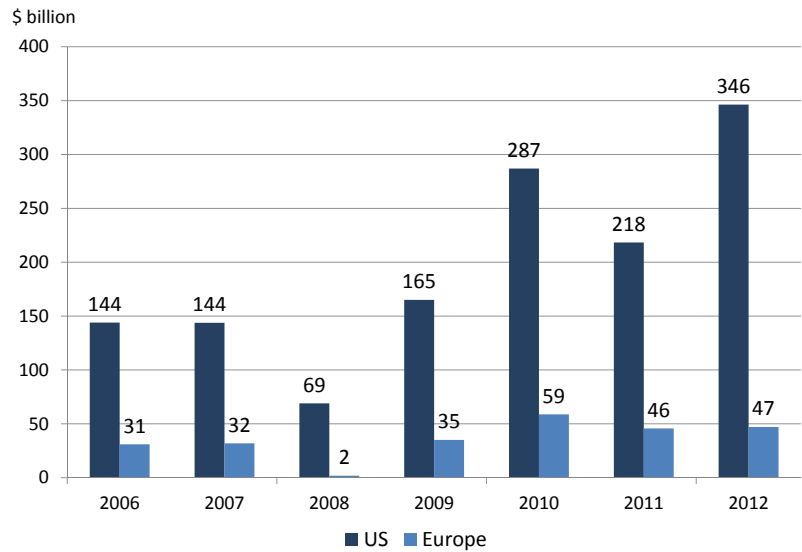
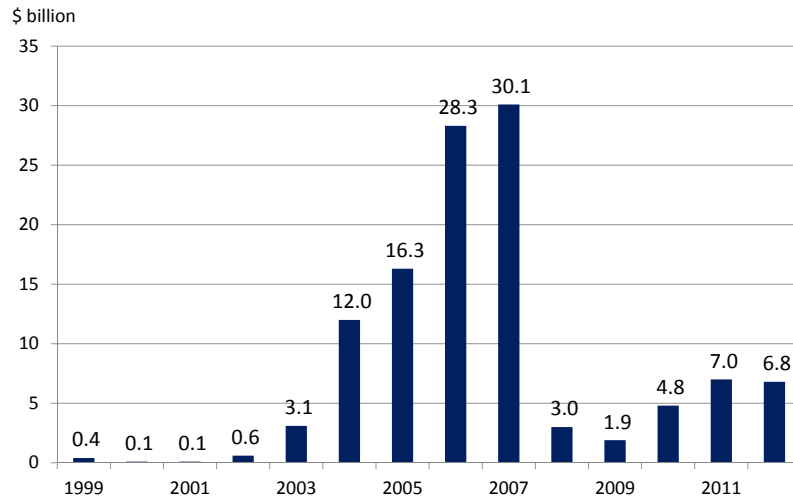


Figure 7
Issuance of 2nd lien loans and transaction debt multiples (source: S&P's LCD)

A: U.S. sponsored issuance volume of 2nd lien loans in \$ billion, 1999-2q 2012



B: Average pro-forma debt multiples (total debt to adjusted EBITDA) in LBOs, 1997-2q 2012

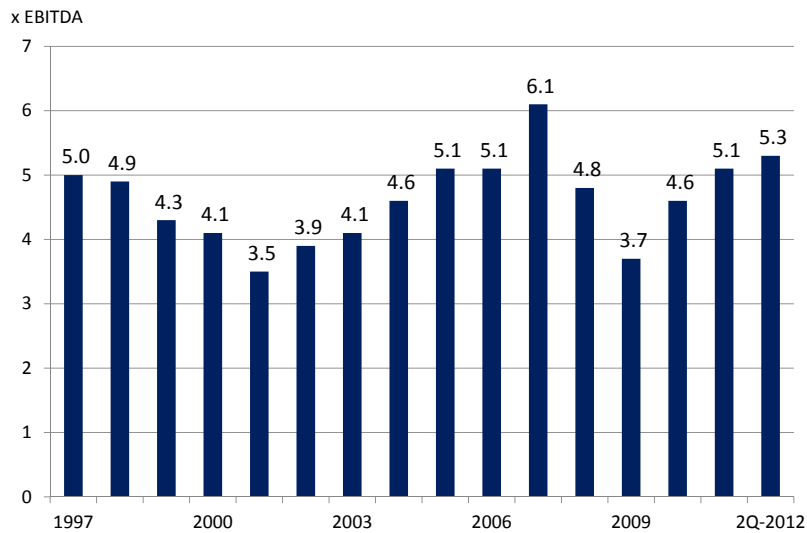


Figure 8
European issuance of mezzanine debt, high yield debt, and leveraged loans,
2006-2012

New issuance volume in EUR billion. The sources are European Mezzanine Review and S&P's LCD.

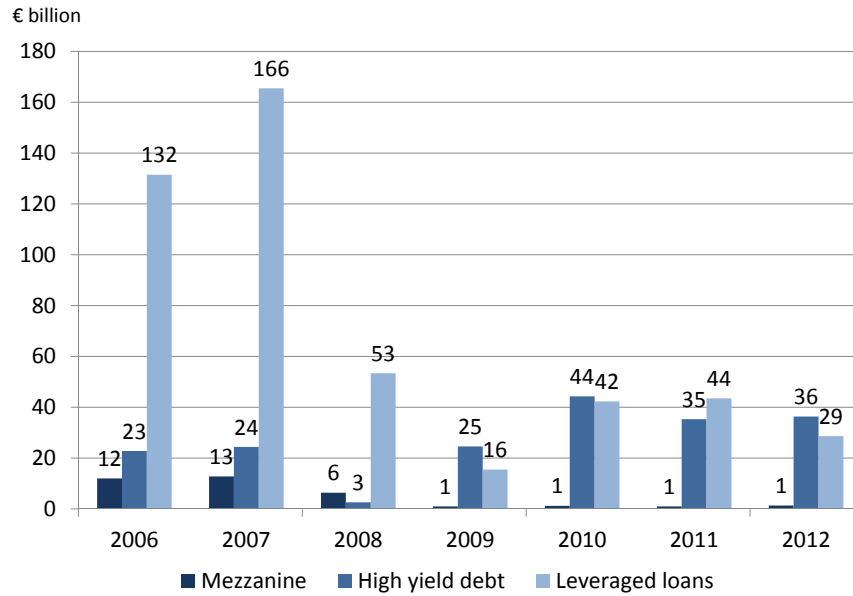


Figure 9
Capital raised for private equity (source: Preqin)

Total capital in \$ billion raised globally in private equity funds with final close 1997-2q 2012

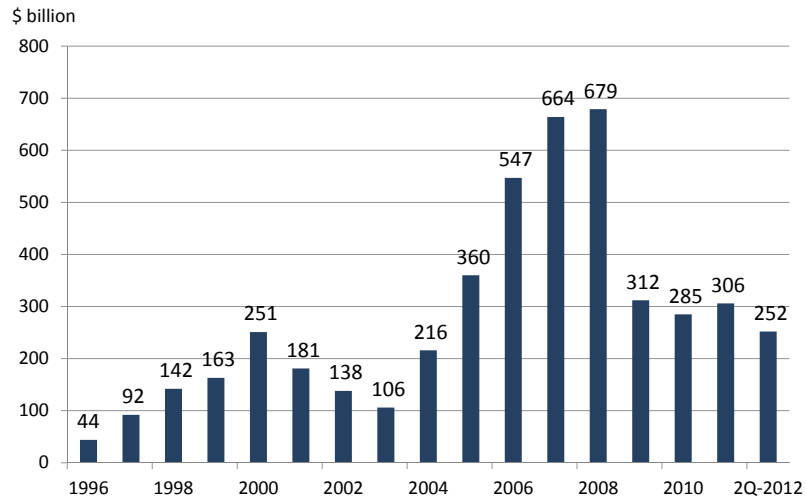
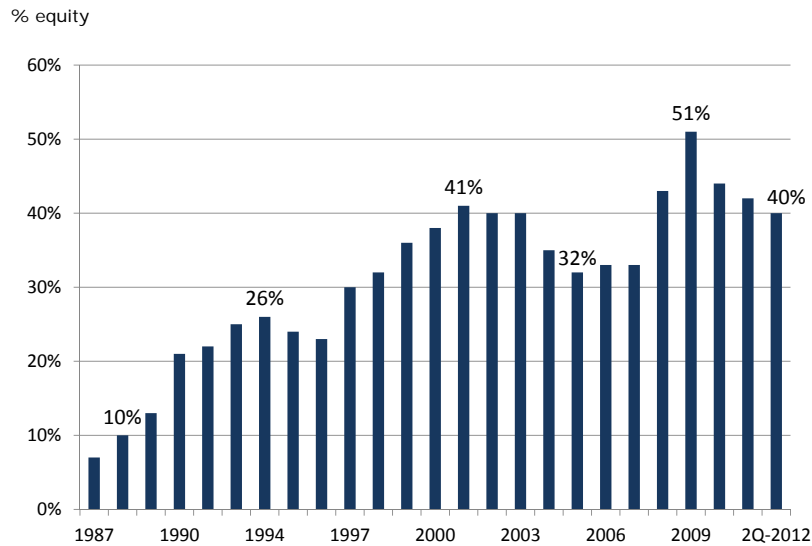


Figure 10
Average annual percent equity contribution and purchase multiples in LBOs

A: Average equity contribution to LBOs in percent of the capital structure, 1987-2q 2012.
 Source: Portfolio Management Data



B: Average purchase price multiples paid by LBO firms relative to trailing EBITDA, 1997-2q 2012.
 Source: S&P's LCD

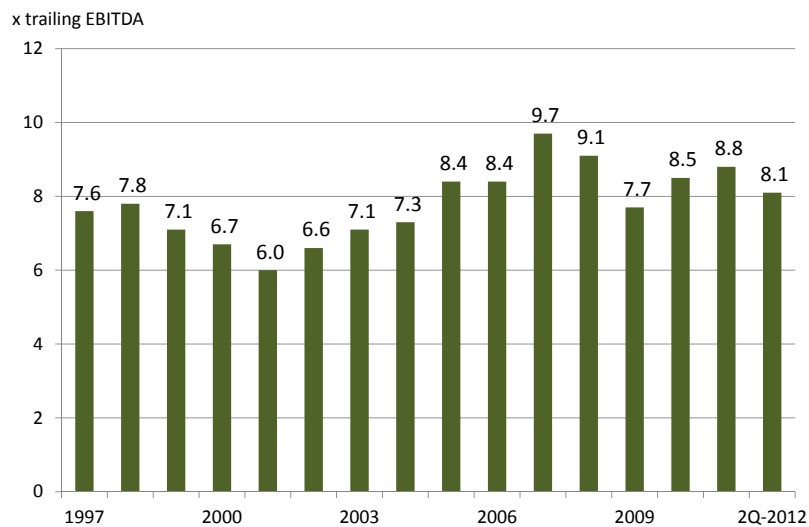


Table 1
Cumulative abnormal returns (CAR) for divestiture announcement of 7,544 sellers
and 2,300 buyers in 25 selected studies, 1963–2005

Relative size is the average ratio of the sales price of the divested assets to the pre-deal total assets (TA) and market value of equity (MVE) of the seller and buyer, respectively.

Study	CAR		Relative size		Sample size	Time period	Event window
	Mean	Median	TA	MVE			
Panel A: Seller returns:							
Alexander, Benson, and Kampmeyer (1984)	0.3%				53	1964–1973	[-1,0]
Linn and Rozeff (1984)	1.6 %				77		[-1,0]
Rosenfeld (1984)	2.3%				62	1969–1981	[-1,0]
Jain (1985)	0.5%				1,062	1976–1978	[-1,0]
Klein (1986)	1.1%				202	1970–1979	[-2,0]
Hite, Owers, and Rogers (1987)	1.5%		16%		114	1963–1981	[-1,0]
Hirschey and Zaima (1989)	1.6%				170	1975–1982	[-1,0]
Hirschey, Slovin, and Zaima (1990)	1.5%			38%	75	1975–1982	[-1,0]
Afshar, Taffler, and Sudarsanam (1992)	0.7%			10%	178	1985–1986	[-1,0]
Sicherman and Pettway (1992)	0.9%			30%	278	1980–1987	[-1,0]
John and Ofek (1995)	1.5%	0.8%		39%	258	1986–1988	[-2,0]
Lang, Poulsen, and Stulz (1995)	1.4%	0.7%	11%	69%	93	1984–1989	[-1,0]
Loh, Bezjak, and Toms (1995)	1.5%				59	1980–1987	[-1,0]
Slovin, Sushka, and Ferraro (1995)	1.7%	0.7%	33%	17%	179	1980–1991	[0,1]
Hanson and Song (2000)	0.6%	0.3%		27%	326	1981–1995	[-1,1]
Mulherin and Boone (2000)	2.6%	1.6%		18%	139	1990–1999	[-1,1]
Clubb and Stouraitis (2002)	1.1%	0.5%		14%	187	1984–1994	[-1,0]
Dittmar and Shivdasani (2003)	3.4%		31%		188	1983–1994	[-1,1]
Kiyamaz (2006)	3.2%		9%		205	1989–2002	[-1,1]
Benou, Madua, and Ngo (2008)	0.9%				1,812	1981–2001	[-1,1]
Cao, Owen, and Yawson (2008)	1.3%				668	1992–2003	[-1,1]
Francoeur and Niyubahwe (2009)	0.6%				167	1990–2000	[-1,1]
Ataullah, Davidson, and Le (2010)	2.0%		14%		195	1992–2005	[-1,1]
Owen, Shi, and Yawson (2010)	1.6%	0.6%	20%		797	1997–2005	[-1,1]
Sample-size weighted seller average	1.2%		20%	27%	7,544	1963–2005	
Panel B: Buyer returns:							
Jain (1985)	0.5%				304	1976–1978	[-1,0]
Hite, Owers, and Rogers (1987)	0.6%		19%		105	1963–1981	[-1,0]
Sicherman and Pettway (1992)	0.5%				278	1980–1987	[-1,0]
Datta and Iskandar-Datta (1995)	0.0%			13%	63	1982–1990	[-1,0]
John and Ofek (1995)	0.4%	-0.5%		72%	167	1986–1988	[-2,0]
Hanson and Song (2000)	0.5%	0.2%			326	1981–1995	[-1,1]
Kiyamaz (2006)	0.8%				185	1989–2002	[-1,1]
Benou, Madua, and Ngo (2008)	2.3%				872	1981–2001	[-1,1]
Sample-size weighted buyer average	1.2%		19%	25%	2,300	1963–2002	

Table 2
Cumulative abnormal returns (CAR) for 2,957 spinoffs in 24 selected studies,
1962–2007

Relative size is the ratio of the market value of equity of the spunoff subsidiary and the parent company prior to the spinoff.

Study	CAR		Relative size		Sample size	Time period	Event window
	Mean	Median	Mean	Median			
Miles and Rosenfeld (1983)	3.3%			10%	55	1963–1980	[0,1]
Hite and Owers (1983)	3.3%			7%	123	1963–1981	[-1,0]
Schipper and Smith (1983)	2.8%			20%	93	1963–1981	[-1,0]
Rosenfeld (1984)	5.6%				35	1969–1981	[-1,0]
Vijh (1994)	2.9%	2.1%	29%	18%	113	1964–1990	[-1,0]
Allen, Lummer, McConnell, and Reed (1995)	2.1%				94	1962–1991	[-1,0]
Slovin, Sushka, and Ferraro (1995)	1.3%	1.6%	33%	24%	37	1980–1991	[0,1]
Daley, Mehrotra, and Sivakumar (1997)	3.4%	1.4%			85	1975–1991	[-1,0]
Best, Best, and Agapos (1998)	3.4%				72	1979–1993	[-1,0]
Desai and Jain (1999)	3.8%		29%	18%	144	1975–1991	[-1,1]
Krishnaswami and Subramaniam (1999)	3.1%	1.9%	31%	14%	118	1979–1993	[-1,0]
Mulherin and Boone (2000)	4.5%	3.6%	22%	14%	106	1990–1999	[-1,1]
Gertner, Powers, and Scharstein (2002)	3.9%	2.2%	24%	19%	160	1982–1996	[-1,0]
Wruck and Wruck (2002)	3.6%				172	1985–1995	[-1,0]
Burch and Nanda (2003)	3.7%	3.2%	24%	20%	106	1979–1996	[-2,1]
Maxwell and Rao (2003)	3.6%	2.6%	25%	19%	80	1976–1997	[-1,0]
Seoungpil and Denis (2004)	4.0%	3.1%	25%	17%	150	1981–1988	[-1,1]
Veld and Veld-Merkoulova (2004)	1.7%	0.6%			156	1987–2000	[-1,0]
McNeil and Moore (2005)	3.5%		25%	23%	153	1980–1996	[-1,1]
Qian and Sudarsanam (2007)	4.8%	2.6%			157	1987–2005	[-1,1]
Veld and Veld-Merkoulova (2008)	3.1%	2.6%	21%		91	1995–2002	[-1,1]
Chemmanur, Jordan, Liu, and Wu (2010)	2.2%				139	1990–2000	[-1,1]
Harris and Madura (2011)	2.5%	1.9%			472	1984–2007	[-1,1]
Jain, Kini, and Shenoy (2011)	4.9%				46	1986–2005	[-1,1]
Sample-size weighted average	3.3%		26%	18%	2,957	1962–2007	

Table 3
Cumulative abnormal returns for 1,251 equity carveout announcements in 10
selected studies, 1965–2007

CAR is the parent cumulative abnormal stock return over the event window relative to the announcement of the equity carveout. Relative size is the ratio of the market value of equity of the carved out subsidiary and its parent company.

Study	CAR		Relative size		Sample size	Time period	Event window
	Mean	Median	Mean	Median			
Schipper and Smith (1986)	1.8%			8%	76	1965–1983	[-4,0]
Klein, Rosenfeld, and Beranek (1991)	2.7%				52	1966–1983	[-4,0]
Slovin, Sushka, and Ferraro (1995)	1.2%	1.5%	45%	31%	32	1980–1991	[0,1]
Allen and McConnell (1998)	2.1%		20%	14%	186	1978–1993	[-1,1]
Vijh (1999, 2002)	1.9%			18%	336	1980–1997	[-1,1]
Mulherin and Boone (2000)	2.3%	0.8%	37%	17%	125	1990–1999	[-1,1]
Hulburt (2003)	1.6%	1.1%		30%	172	1981–1994	[-1,0]
Wagner (2004)	1.7%		32%	22%	71	1984–2002	[-1,1]
Jain, Kini, and Shenoy (2011)	1.6%				65	1986–2005	[-1,1]
Sun and Shu (2011)	0.5%				136	1994–2007	[-1,1]
Sample-size weighted average	1.8%		33%		1,251	1965–2007	

Table 4
Premiums paid in 1,058 leverage buyouts for 7 selected studies from 1973–2006

The premium is the ratio between the final offer price and the pre-buyout stock price less one.

Study	Premium		Type of deal	Sample size	Time period	Day of pre-buyout stock price
	Mean	Median				
DeAngelo, DeAngelo, and Rice (1984)	59%		LBO	23	1973–1980	-40
Lehn and Poulsen (1989)	36%		LBO	257	1980–1987	-20
Kaplan (1989c)	46%	42%	MBO	76	1980–1985	-40
Harlow and Howe (1993)	45%		LBO	121	1980–1989	-20
Renneboog, Simons, and Wright (2007)	40%	38%	LBO	177	1997–2003	-40
Billet, Jiang, and Lie (2010)	27%	27%	LBO	212	1990–2006	-60
Guo, Hotchkiss, and Song (2011)		29%	LBO	192	1996–2006	-20
Sample-size weighted average	37%	32%		1,058	1973–2006	