

Do private equity returns result from wealth transfers and short-termism?^{*}
Evidence from a comprehensive sample of large buyouts

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February 23, 2012

Abstract

We test whether the well-documented high returns of private equity sponsors result from wealth transfers from other financial claimants and counterparties, or from a focus on short-term profits at the expense of long-term value. Bondholders and buyers of private equity portfolio companies represent the two potential sources of wealth transfers. Yet, we find that public companies benefit when they buy financial sponsors' portfolio companies, experiencing positive abnormal returns upon the announcement of the acquisition and long-run post-transaction abnormal returns indistinguishable from zero. We further find that large portfolio company payouts to private equity have no relation to future portfolio company distress, suggesting that bondholders are not suffering systematic wealth losses, either. Finally, we find that portfolio companies invest no differently than a matched sample of public control firms, even when they are not profitable, an observation inconsistent with short-termism.

^{*} We thank Adlai Fisher, Weili Ge, Rocky Higgins, Paul Malatesta, Jon Karpoff, Jennifer Koski, Wayne Mikkelson and participants at the 2010 Pacific Northwest Finance Conference and at seminars at Arizona State University, Southern Methodist University, and the University of Washington for helpful comments. C. Lamar Grant, Jared Stanfield, Robert Schonlau, and Wei Ming Lee provided excellent research assistance. A previous version of this paper was titled, "How do private equity sponsors create value? Evidence from a comprehensive sample of large buyouts."

1. Introduction

While it is well-established that private equity sponsors earn high returns (e.g., Guo, Hotchkiss, and Song, 2011), the source of those returns remains controversial. Many influential investors, policy makers, and members of the financial press allege that sponsors earn their returns not by creating value in the firms they acquire, but by transferring wealth to themselves from other financial claimants and counterparties (see, for example, The Times of London, 2006, Forbes, 2006, Der Spiegel, 2006, Ydstie, 2012). While the academic literature confirms that sponsors increase the short-term profitability of their portfolio companies, the evidence uncovered to date rules out neither the hypothesis that sponsors transfer wealth, nor, as Kaplan and Stromberg (2009) point out, the hypothesis that they increase short term profits at the expense of long run value. In this study, we test and reject both hypotheses.

To test the wealth transfer hypothesis, we consider the two financial claimants from whom private equity sponsors could transfer wealth: the non-financial companies (henceforth “strategic buyers”) to whom sponsors sell when they exit their investments, and bondholders.¹ We note that sale to strategic buyer is the most common means of private equity sponsor exit in our comprehensive sample of 788 large US buyouts. We find that strategic buyers’ stock prices increase when they announce the purchase of a portfolio company from a private equity sponsor, and the effect is proportional to transaction size. Furthermore, long-run post-transaction abnormal strategic buyer stock returns are statistically indistinguishable from zero. Taken together, these new results imply that rather than being harmed by their dealings with sponsors, strategic buyers benefit. To test whether private equity sponsors take advantage of bondholders, we

¹ We do not consider stakeholders without financial claims, such as workers, suppliers or customers.

perform an analysis of the relation between US portfolio company payouts to the sponsor and the odds of a bankruptcy or distressed restructuring. We find no relation, suggesting bondholders optimally set covenants to prevent payouts that damage credit quality and private equity sponsors, who have repeated interactions with creditors, have no incentive to attempt to take advantage of bondholders. The above new evidence on sales to strategic buyers and bankruptcies covers over 51% of US buyout exits.

Our analysis does not consider the remaining two major financial claimants on portfolio companies because existing evidence already rules them out as sources of wealth transfers. First, it is possible that sponsors transfer wealth by selling their portfolio companies to investors at inflated prices during an initial public offering. However, IPOs account for only around 10% of private equity sponsor exits, and Cao and Lerner (2010) find that long-run abnormal return returns following portfolio company IPOs tend to be positive. Another possible source for wealth transfers are the original shareholders from whom sponsors buy portfolio companies. Prior research, however, finds that financial sponsors pay these shareholders a positive premium over market value (eg., Kaplan, 1989, and Bargaron, Schlingemann, Stulz, and Zutter, 2008).

To test the short-termism hypothesis, we perform the first broad-based study of US portfolio company investment policy.² We find that portfolio companies invest no differently than a matched sample of public control firms. Further, they do not reduce investment in the face of negative cash flows. If the portfolio company's short-term profitability were the sponsor's only concern, there would be little reason to encourage continued investment when profits are poor. Finally, we note that the strategy of boosting

² Sheen (2009) studies the investment policy of US portfolio companies in the chemical industry. Boucly, Sraer and Thesmar (2011) study the investment policy of French portfolio companies.

short-term profits at the expense of long-term value would only benefit sponsors if they could systemically fool buyers of their portfolio companies into overpaying. Our finding that strategic buyer stock prices increase when they purchase portfolio companies from sponsors implies they do not overpay, thereby providing further evidence against the short-termism hypothesis.

Finally, we also study so-called “secondary buyouts,” where a portfolio company of one sponsor is sold to another sponsor (or “financial buyer,” to use the industry term). These represent the remaining third of exits in the US. We examine whether some portfolio companies are simply suited to perpetually remain so. We find that having been bought from another private equity sponsor before does not make sale to a financial buyer any more likely than an IPO or sale to a strategic buyer. Thus secondary buyouts are not indicative of a portfolio company-type characteristic. Rather, secondary buyouts are common when the sponsor has held the portfolio firm longer, suggesting that inability to exit in a timely manner leads to exit to a financial buyer through a secondary buyout.³ This is consistent with Kaplan and Schoar (2005), who find that private equity sponsors face pressure to exit early. However, having been previously owned by a private equity sponsor has no impact on the odds of a current portfolio company undergoing a distressed restructuring, suggesting that sponsors do not use secondary buyouts to unload lemons.⁴

The rest of this study is organized as follows. In section 2, we review the private equity buyout literature in greater depth. In Section 3, we discuss our data sources and sample selection procedure. In Section 4, we discuss our tests and results. Section 5 concludes.

³ Sudarsanam (2005) and Sousa (2010) find a similar result using European data.

⁴ Using European data, Achleitner and Figge (2011) find that sponsor returns are no worse when they invest in portfolio companies acquired through secondary buyouts.

2. Literature Review

Past research on portfolio companies of private equity sponsors has been necessarily limited because of lack of data. While databases such as SDC and Capital IQ reliably track private equity buyouts, they do not track exit outcomes. Furthermore, financial statement data on portfolio companies is generally not available on Compustat. As a result, research on exit outcomes of buyouts has been largely limited to portfolio companies that were exited via IPO (eg., Cao and Lerner, 2009, Degeorge and Zeckhuaser, 1993, Holthausen and Larcker, 1996, Mian and Rosenfeld, 1993, Muscarella and Vetsuypens, 1990). Likewise, as Kaplan and Stromberg (2009) point out in their survey article, research on the operating performance of portfolio companies has been largely limited either to portfolio companies that were public before or after the buyout (e.g., Edgerton, 2011, Kaplan, 1989, Smith, 1990, Guo, Hotchkiss, and Song, 2011), or to countries that require private companies to disclose financial statements (e.g., Boucly, Sraer and Thesmar, 2011, Bergstrom, Grubb and Jonsson, 2007, Harris, Siegel and Wright, 2005, and Renneboo, Simons and Scholes, and Wright, 2005).

The exception to the above are Stromberg (2007) and Kaplan and Stromberg (2009), who provide important descriptive evidence from a comprehensive global sample of buyouts from 1970-2007. Both studies provide a distribution of exit outcomes. Stromberg (2007) presents evidence on the evolution of portfolio company characteristics over time, the longevity of buyouts, how pre-buyout portfolio company status relates to post-exit status, and more. Our focus is different from Stromberg and Kaplan (2009) and Stromberg (2007). While they provide descriptive statistics on the CapitalIQ universe, we collect additional data on all US sponsor-backed buyouts greater than \$50 million from

1993-2001 so that we can conduct hypothesis tests. We are thus able to extend the literature by using our comprehensive sample of large buyouts to conduct formal tests of some previously untested hypotheses about whether the high returns of private equity sponsors come at the expense of other investors and counterparties.

We provide the first evidence on the performance of strategic buyers who buy portfolio companies being exited by sponsors. We find that the strategic buyers benefit, suggesting private equity sponsors create value for their counterparties. These results complement Masulis and Nahata (2011), who find positive acquirer announcement returns for strategic acquisitions of portfolio companies being sold by venture capital funds. Their results imply that venture capital investors do not profit at the expense of the shareholders of the strategic acquirers to whom they sell. While our results have a similar flavor, they are distinct since the business of buyouts and the types of portfolio companies held by buyout-focused private equity sponsors are fundamentally different from those held by venture funds.

Our paper presents the first evidence on the relation between distributions to financial buyers and portfolio company financial distress. Specifically, we find that, among portfolio companies with public financial statements, neither special dividends nor total dividends help forecast future financial distress. Furthermore, we find that large dividends are uncorrelated with underinvestment or poor operating performance. These results suggest that far from being naively taken advantage of, portfolio company bondholders optimally set covenants to allow only payouts that do not harm credit quality. These covenants are acceptable to private equity sponsors because their repeated credit interactions imply that they have little incentive to take advantage of creditors. Our

analysis complements Hotchkiss, Smith and Stromberg (2012), who find that default rates of portfolio companies are no worse than control firms with similar ex-ante credit risk, and the result is the same for deals classified as dividend recapitalizations.

We also make significant contributions to the literature on buyout portfolio company operating performance. Our study of operating performance using US data is not limited to portfolio companies that were public at one time. Furthermore, we add some new, broad-based results on the efficiency of US portfolio company investment policy. We discuss each of these contributions in turn.

As Kaplan and Stromberg note, data availability of conventional databases, such as Compustat, limits past empirical work on buyout portfolio companies in the US to those that were public at some point. In contrast, we use Capital IQ, which contains comprehensive financial statement data on all US private companies with public debt, as well as other private companies that SEC rules compel to file public financial statements. Hence we are able to obtain data on operating performance, capital expenditures, special dividends, and the like for all portfolio companies financed with public debt or otherwise compelled to file, so that we contribute to the literature by expanding the scope of US portfolio companies studied. Only Litchenberg and Siegel (1990), who utilize Census Bureau plant-level data, study operating performance in a sample larger than ours. However, they are naturally limited to manufacturing industries and they focus on various productivity and profitability measures, rather than investment, financing and payout policy as we do.

Prior studies on domestic buyout portfolio companies largely focus on measures of profitability (e.g., Guo et al., 2011, Kaplan, 1989, and Smith, 1990), and productivity

(e.g., Lichtenberg and Siegel, 1990). Kaplan (1989) also provides descriptive evidence on how a portfolio company's ratio of capital expenditures to total sales changes during a buyout. We expand this literature by providing evidence on the efficiency of portfolio company investment policy. Building on Kaplan's work, we not only study how investment policy changes, but how buyouts affect portfolio companies' sensitivity of investment to cash flow and investment opportunities. We include controls for industry q , firm sales growth, and matched control firms to proxy for investment opportunities of the portfolio firms. We find that neither the level of investment, nor the sensitivity of investment to cash flow, significantly differs between private equity portfolio companies and a matched sample of comparable public firms.

The last result is significant because it clarifies past evidence that private equity sponsors improve portfolio company profitability and productivity. As Kaplan and Stromberg point out, just because profitability and productivity improve while portfolio companies are private does not necessarily mean private equity sponsors add value. It is possible that such short-run performance improvements come at the expense of long-run performance. Our findings that private equity sponsors do not cause their portfolio companies to underinvest relative to their public peers provides important evidence on this question that is inconsistent with the short-termism hypothesis. These findings are consistent with Lerner, Sorensen and Stromberg (2011), who show that portfolio company patent productivity does not suffer after buyouts. However, our findings on investment policy are more broadly applicable, since virtually all portfolio companies have capital expenditures, whereas only a small subset is active in patent production. Likewise, our investment policy findings, which come from portfolio companies in a

broad array of industries, generalize some of the findings of Sheen (2009), who examines chemical industry LBOs.

3. Data sources and sample selection

From Thomson Financial's SDC Platinum and Capital IQ, we extract information on all US corporate transactions labeled as leveraged buyouts, management buyouts, and going private transactions that have a disclosed value of greater than \$50 million, and which occurred between 1993-2001. We eliminate duplicate transactions by hand. In addition, for each transaction, we examine the entities listed as acquirers and keep only those transactions for which at least one of the acquirers is a private equity sponsor, defined as a legal entity that engages in buyouts in its ordinary course of business. Private equity sponsors include corporations and partnerships in the business of buyouts, such as Bain Capital, as well as buyout-focused subsidiaries, such as Goldman Sachs Merchant Banking, whose parent firms are in other lines of business. We use sponsor websites, SEC filings, and Hoover's business directory in order to determine whether an entity is a private equity sponsor. After applying the above filters, our sample comes to 788 buyouts. We obtain a portfolio company's primary NAICS code from SDC if the deal is in that database. If a deal is only in Capital IQ, we assign a NAICS code based on the detailed business description provided in the database. Using SDC and articles in the business press (*Factiva*), we determine the pre-buyout status of the portfolio company and categorize it in one of the following ways: public, a subsidiary of a firm that is not a private equity sponsor, emerging from bankruptcy, a portfolio company of a private

equity sponsor, or other privately held firm. Statistics on the pre-buyout status of the portfolio companies in our sample are given in Table 1, panel A.

Next, for each buyout in our sample, we determine whether the private equity sponsor or syndicate exited the investment, and if so, how. We check for exit via IPO and merger and acquisition (M&A) using Capital IQ and SDC. We classify IPOs and M&As as exits if a controlling stake of the portfolio company was sold to the public or some entity or syndicate that did not participate in the initial buyout. For those portfolio companies for which no exit can be found in the databases, we obtain exit information from articles in the business press, company and private equity sponsor websites, bankruptcy filing databases, and, in a few instances, with a phone call to the portfolio company or private equity sponsor.⁵ We place each exit outcome in one of five categories: IPO, sale to strategic buyer, sale to financial buyer, restructured, or still held. Following industry nomenclature, we classify as “strategic buyers” firms who do not conduct buyouts in the ordinary course of business. “Financial buyers” are private equity sponsors. We classify as “restructured” all buyouts in which the private equity sponsor or syndicate lost its controlling stake due to a bankruptcy, workout, or other debt restructuring resulting from financial distress. We count as “still held” those portfolio companies where the original sponsor or syndicate, or some subset thereof, continued to hold a controlling stake as of September 30, 2009. In each case, we confirm that a company for which we could find no exit outcome was still held. In the case of a “rollup”, in which two or more portfolio companies held by the same sponsor or syndicate are merged with one another before exit, we assign to each individual portfolio

⁵ In one instance, the private equity sponsor revealed that when its portfolio company was nearing financial distress, it had a fortuitously timed fire. The insurance payout provided enough capital for the portfolio company to recover, and it was eventually sold to another financial buyer.

company the exit outcome of the rolled-up entity. We were able to determine the status of every portfolio company in our sample as of Sept. 30, 2009. The distribution of exit outcomes in our sample is given in Table 1, panel B.

In order to test hypotheses about portfolio company investment policy and operating performance, we use Capital IQ to determine which portfolio companies have publicly available financial statements during the time they were held by the buyout syndicate.⁶ For each of these companies, we obtain data on sales, total assets, EBITDA, dividends (whether designated special or otherwise), and capital expenditures for the year of the buyout, the year prior, and the two years after the buyout took place. We also compute initial post-buyout leverage, which we define as the total debt immediately following the buyout to total buyout transaction value. Two hundred and twenty-six portfolio companies either had public debt or were compelled to file financial statements for some other reason. This sample does not perfectly overlap with our main sample because in order to fully track exits, our main sample consists only of buyouts with transaction dates before the end of 2001. Because we do not need detailed exit data for our tests of while-private behavior (other than a bankruptcy dummy), and because Capital IQ coverage only becomes comprehensive toward the latter half of the 1990's, for these tests we use buyout targets with that filed financial statements during the 1996 to 2006 period. In the post-2001 cases where these targets do not overlap with our sample on exits, we use Factiva to determine whether the target either filed for bankruptcy or underwent a distressed restructuring before it was exited.

⁶ Most private firms in CIQ that file public financial statements do so because they have public debt outstanding. However, some file financial statements for other reasons, such as having enough shareholders to trigger legal filing requirements.

In addition, for our sample of portfolio companies that filed financial statements, we construct a control sample consisting of similar standalone public firms. We define a firm as “standalone” if 80% or more of its sales, as measured in the Computstat segments file, fall within operating or business segments with the same four-digit NAICS code, or if the firm does not report business or operating segment results. We match each portfolio company to the standalone public firm in the same 4-digit NAICS industry that is also closest in terms total sales as of the year before the buyout. In addition, as a proxy for investment opportunities within the industry for each year, we compute the median ratio of market equity plus total liabilities to total assets, excluding goodwill, for all standalone public firms in a given industry in a give year, and label it as *indQ*.

In order to test the wealth transfer hypothesis on buyouts exited via sale to strategic buyers, we obtain data on each publicly traded strategic buyer around the time of the buyout exit. If the strategic buyer is listed on a US exchange at the time of the exit, we use Compustat data to compute the strategic acquirer’s ratio of market value of equity plus book liabilities to total assets, excluding goodwill, as of the most recent quarter end. We label this variable *Q*. Using the CRSP daily file, we compute the cumulative abnormal return to the strategic buyer’s stock during the three day window around the acquisition announcement and label it *ret*. We define abnormal return on a given day as the acquirer’s return less that of its CRSP size decile portfolio. Also using the CRSP daily file, we determine the acquirer’s market capitalization as of 2 days prior to the deal and label it *size*. We define *resize* as ratio of the exit transaction value (taken either from SDC, Capital IQ, or news articles) to *size*. If we are unable to obtain the transaction value, it indicates that the transaction was not material from the acquirer’s point of view,

so in these cases we set *relsize* equal to the 1st percentile of the sample of strategic M&A exit transactions for which the transaction value is available. We define an indicator variable, *stock*, which equals 1 if the acquirer used stock as acquisition currency, and zero otherwise. We use SDC, Capital IQ, or news articles to determine the acquisition currency. If an acquirer is public but only listed on a foreign exchange, we obtain the same financial statement and stock return data, in dollars, from Datastream. Of the 287 strategic buyers in our sample, 191 are public, and we are able to obtain financial statement and stock return data for all of them. Descriptive statistics for our sample of strategic buyers' exit transactions are given later in Table V when we present the analysis.

In addition, for each strategic acquirer, we obtain governance data from Risk-Metrics/IRRC as of the year of the exit event. We determine the board's size and the number of independent directors, and define an indicator variable, *indboard*, which equals 1 if a majority of directors are independent and zero otherwise. We also obtain information on whether the strategic buyer has any of the following six anti-takeover provisions: poison pill, staggered board, CEO golden parachute, and supermajority requirements to approve takeovers, charter amendments, and bylaw amendments. We count the number of the above provisions that a strategic buyer has in effect at the time of the acquisition, and label it as its entrenchment index, or *Eindex*, which can take integer values between 0 and 6. If a strategic buyer is not covered by IRRC, we collect the same data by hand from SEC filings, or, if the firm is not listed in the US, from foreign filings, corporate websites, and Bloomberg. We were able to obtain these data for all public strategic acquirers in our sample.

We obtain time series data on each portfolio company's industry. Using the COMPUSTAT segments database, we obtain data on sales, operating income, and total assets for each non-financial business segment (or operating segment, if business segments are unavailable) for each firm and year, aggregating segments within firms by four digit NAICS codes. If a firm is not in the segments file, we assume it operates in only one segment, whose industry corresponds to its primary NAICS code, and treat its consolidated financial data as if it were segment data. For each segment-year, we compute sales growth and take the median by industry to obtain industry *salesgrowth*. We do the same for return on assets, defined as segment operating income divided by beginning-of-year total assets, and label it *roa*. Finally, for each portfolio company, we take the time series average of the industry variables starting two years prior and ending two years after the buyout. We were able to obtain industry data on 787 of 788 portfolio companies in our sample. Descriptive statistics are available in panel C of Table 1.

4. Results

After establishing the basic characteristics and typical exit method of portfolio companies (section 4.1), we move to our main analyses. We perform several analyses in order to test of the wealth transfer and short-termism hypotheses. First, we document the frequency of special dividends and test whether dividends correlate with future portfolio company distress (section 4.2). Second, we examine the efficiency of portfolio companies' investment policy (section 4.3). Third, we test whether strategic buyers of portfolio companies experience value increases or decreases in the short run (section 4.4) and long

run (section 4.5). Finally, we examine the growing secondary buyout market to identify characteristics of portfolio companies that are sold to financial buyers (section 4.6).

4.1. Characteristics of buyout portfolio companies and exits

Panel A of Table 1 shows the pre-transaction status of the buyouts in our sample. The largest category, “other private owner,” which accounts for nearly 40% of our sample, includes portfolio companies that were bought from owners who were neither private equity sponsors nor any business entity. Nearly 35% of the portfolio companies were subsidiaries of other corporations prior to the buyout. A surprisingly small number, approximately 8%, were owned by other private equity sponsors prior to the buyout. In our sample, buyouts of public companies are generally bigger than the other categories, but not by much. The mean size of a buyout of a public company is \$477 million, whereas it is just over \$334 million in the next largest category, in which buyout target was an operating subsidiary prior to the buyout.

Panel B of Table 1 gives a breakdown of the types of exits of portfolio firms, as well as the mean time to exit for each category. For portfolio companies not exited, or “still held,” we simply compute the number of years between the announcement of the buyout and Sept. 30, 2009, the last date for which we have information. One striking characteristic of the exits is that about 90% of all exits are *not* through IPO. Thus, while we have learned much by studying the sample of buyouts that go public again, “Reverse LBOs,” the extant literature is basing most of its inferences about buyouts on approximately 10% of the population. The largest exit type is a sale to a strategic buyer, followed by sale to another private equity sponsor, or “financial buyer.” The fact that

only about 8% of our sample was purchased from another sponsor company, but 30% was sold to one demonstrates the growth in the market for so-called secondary buyouts. Bankruptcies and other distress-induced restructuring actions account for around 15% of all exits. IPO's are actually the least common form of exit. Exit form based on original deal value shows a similar pattern, with IPOs accounting for a slightly higher (11.6%) fraction of exits, but remaining the least common form (not tabulated).

The fastest exits are through IPO, followed by strategic buyer. Portfolio companies exited via sale to a financial buyer are held longer than other successful exists, supporting the conjecture that private equity sponsors only sell to each other when they have not been successful with arranging another exit. Panel C of Table 1 provides information on the operating performance of portfolio companies' industries.

4.2. Do Private Equity Sponsors Pay Themselves Special Dividends to the Detriment of the Portfolio Firm and its Bondholders?

Despite their portrayal in the popular press, special dividends to private equity sponsors are present in about 1 in 4 deals and are not detrimental, on average. For sample firms with public debt or who meet other criteria for mandatory SEC filing, we can observe the financials of the portfolio firms. Because not all large dividends are coded as special dividends by CapitalIQ, we conservatively consider any of the following to be a potential special dividend: a recorded special dividend, total dividends from the buyout year to year +3 amounting to more than 20% of the firm's equity, or a dividend of any amount when the portfolio firm had negative equity. By this definition, a qualifying dividend appeared in 23% of the sample firms for which we have sufficient data. Table 2

presents the industry-adjusted capital expenditures, profitability and ROA for the portfolio firms with public debt, breaking the sample out by whether the portfolio firm had a special dividend. The table documents the well-known characteristics of pre-buyout firms: profitable with relatively low capital expenditures.⁷ Notably, the only significant difference in the way special dividend and non-special dividend portfolio firms evolve post-buyout is that the special dividend firms have higher increases in median operating margins.

We also investigate whether special dividends are related to financial distress, and we find that they are not. First, unconditionally, we find that only 13.2% of portfolio companies that pay special dividends file for bankruptcy or undergo a workout when in a sponsor's portfolio, compared to 16.2% of those that do not pay special dividends. Therefore, if anything, special dividend portfolio companies firms are *less* likely to become distressed. Second, we run logistic regressions of the following form on our sample of portfolio companies with public debt:

$$P(\text{bankrupt} = 1) = \Lambda(\alpha + \beta_1 \text{Dividend_Variable} + \beta_2 \text{Initial_Leverage} + \mathbf{Controls}) \quad (1)$$

Where *bankrupt* is a dummy variable indicating the portfolio company went bankrupt or underwent a distressed workout while in the sponsor's portfolio. We use three different dividend variables, including a dummy for having paid a special dividend within the first three years after the buyout, the total value of special dividends in that time frame as a fraction of the firm's equity, and the value of all dividends, regardless of their "special"

⁷ To maximize data availability, we use year 0 data for the pre-buyout year. Our results are robust to using year -1.

nature, as a fraction of the firm's equity. We include the initial leverage at the time of the buyout, as well as industry-adjusted operating margin and ROA as controls. The results, in Table 3, confirm dividends to the sponsor have no effect on the odds of bankruptcy. Only initial leverage is statistically significant, but then only marginally so (with p-values of approximately 0.08 in each specification). This suggests that, rather than causing the portfolio firms to fail, private equity sponsors choose portfolio firms' dividend policy endogenously, such that only portfolio firms that can afford to pay large dividends do so.

4.3. Investment-Cash Flow sensitivity

One way in which PE sponsors might attempt to profit from short-termism would be to induce underinvestment at portfolio firms, forcing them to quickly pay down debt and improve short-term performance, allowing for a quick, profitable exit. A traditional investment-cash flow sensitivity regression provides a test this short-termism hypothesis. In Table 5 we present the results of investment-cash flow sensitivity regressions on 226 portfolio companies from before to after the buyout transaction. In order to make a statement about the optimality of their sensitivities, we match each private equity portfolio company to the standalone public firm in its 4-digit NAICS industry that is closest in pre-transaction sales.

Table 4 provides descriptive statistics on the operating performance and investment activity of portfolio companies for which we have data while private, as well as their matched control sample. We normalize capital expenditures and EBITDA by total assets. We winsorize all variables at the first and 99th percentiles. Both the portfolio and control firms are profitable on average with EBITDA/Assets of 15 to 17%.

The control firms tend to have higher capital expenditures than the portfolio firms even before the transaction. Post-buyout, the portfolio firms decrease capital expenditures by a little less than 1% of assets. Because private equity firms select portfolio firms partly on the basis of lower expected capital expenditures, this by itself is not evidence of suboptimal investment policy. It could be indicative of lower agency costs, consistent with the findings of Edgerton (2011).

To examine the efficiency of portfolio company investment policy, next we examine the sensitivity of their investment to cash flow pre- and post-buyout while controlling for firm and industry-level investment opportunities. Specifically, we estimate the following panel regression using OLS with firm fixed-effects:

$$\frac{CAPX}{Assets} = \alpha + \beta_1 Q + \beta_2 SalesGrowth + \beta_3 \frac{EBITDA^+}{Assets} + \beta_4 \frac{EBITDA^-}{Assets} + \beta_5 PostBuyout + \beta_6 PostBuyout * \frac{EBITDA^+}{Assets} + \beta_7 PostBuyout * \frac{EBITDA^-}{Assets} + \varepsilon \quad (2)$$

Where *Assets* are total book assets as of the beginning of the fiscal year, *CAPX* is total capital expenditures over the fiscal year, and *Postbuyout* is a dummy variable that equals 1 for each private equity portfolio company while it is held by a sponsor and is zero during the pre-buyout years. It is zero for all firm-years for the matched control firms. We use earnings before interest, taxes, depreciation and amortization (*EBITDA*) as our proxy for cash flow.⁸ We partition *EBITDA* according to whether it is positive and negative because firms typically have an asymmetric response to the two. Specifically, $EBITDA^+$ and $EBITDA^-$ are set to equal *EBITDA* when the latter is, respectively,

⁸ Initially, one might question the use of EBITDA for portfolio firms (for whom interest expense is large). However, this is precisely why EBITDA is important. We are asking whether, due to interest or other constraints, investment by portfolio firms becomes more sensitive to underlying cash flows. If we used a post-interest cash-flow, we would be removing the effect we are testing.

positive and negative, and zero otherwise. Finally, as is standard in this literature, we control for industry q and firm sales growth to reduce the possibility that cash flows are proxying for investment opportunities. We focus on the coefficients on the interaction terms. We cluster standard errors by portfolio company–control firm pair, thereby making our inferences robust to arbitrary heteroskedasticity, serial correlation, and correlation between observations of each portfolio company and its control firm.

We then estimate equation (2) above and our results, presented in column (2) of Table 5, demonstrate that private equity sponsors do not reduce investment by their portfolio companies.⁹ The Post-buyout dummy is insignificant, indicating that the level of investment unrelated to cash flows or investment opportunity proxies is unchanged, relative to the control group. Control firms invest about 16 cents per dollar of positive operating cash flow ($EBITDA$), as indicated by the coefficient on $EBITDA^+/Assets$. Buyout targets do not behave differently in this respect, as the coefficient on the interaction of the Post-buyout dummy and $EBITDA^+/Assets$ is statistically indistinguishable from zero.

We next examine how investment responds to negative cash flows. The point estimate on the coefficient for $EBITDA^-/Assets$ is -0.049. The interaction term for portfolio firms post-buyout is insignificantly different from zero, indicating that again, portfolio firms' investment does not behave differently from their peer firms. This implies that private equity sponsors do not force their portfolio companies to decrease investment when experiencing operating losses.

⁹ For completeness, we also run a specification identical to equation (2) above, except we exclude the interaction terms, and the results are in column (1) of Table 4.

We estimate another specification, shown in column (3), that is identical to equation (2) above, except it includes a dummy variable for portfolio companies which paid special dividends, defined broadly as in section (B) above. The coefficient on this dummy is negative, small and not significant, demonstrating that payment of special dividends to sponsors does not result in reliably less portfolio company investment. Finally, for completeness, we present a specification where we test whether portfolio firm investment reacts differently to investment opportunities in general and after the buyout in particular. We interact our proxies for investment opportunities, Q and sales growth, with the buyout firm dummy and the post-buyout dummy. The coefficients are not significant, indicating that private equity sponsors do not make portfolio company investment less responsive to investment opportunities after the buyout.

4.4. Evidence from the sale of portfolio firms to public strategic buyers

Table 6 presents summary statistics for the acquirer's cumulative abnormal return (henceforth "CAR") during the 3-day window around the announcement of the sale of private equity portfolio companies to public strategic acquirers. Also included in this table are various control variables we use in subsequent regression analysis. Negative announcement returns would be consistent with wealth transfer from strategic buyers rather than wealth creation. Instead, these purchases of portfolio companies are generally evaluated as value-increasing for the buyer: the average CAR is 2.1% and the median is 1.1%, and both are statistically significant at the 5% level. Thus, on average, there is no evidence to support the claim that private equity sponsors strip portfolio firms and then

unload them on naïve strategic acquirers willing to overpay. Instead, the descriptive statistics suggest these deals are good for the acquiring firm.

We expand on the above summary statistics with regression analysis.

Specifically, we estimate the following regression:

$$CAR_i = \alpha + \beta_1 \log(mktcap_i) + \beta_2 relsize_i + \beta_3 stock_i + \beta_4 Q_i + \beta_5 Timeheld + \varepsilon_i \quad (3)$$

where *mktcap* is the acquirer's market capitalization as of two days prior to the deal, *relsize* is the ratio of the transaction size to the acquirer market capitalization, *stock* is a dummy variable indicating that acquirer stock was included in the consideration paid, and *Q* is the ratio of the acquirer's market value of equity plus liabilities to book assets. *TimeHeld* is the number of years the portfolio company was held by the private equity sponsor prior to the sale. We control for the acquirer's market capitalization, *Q* and acquisition currency because prior literature has found all to be important (e.g., Moeller, Schlingemann and Stulz, 2005). We include *TimeHeld* because some have argued that private equity sponsors are motivated to unload portfolio companies after they have held them for a long time. (e.g., Kaplan and Schoar, 2005) We are, however, particularly interested in *relsize*, the relative size of the portfolio company to the acquirer. If these acquisitions are generally good for the acquirer, we expect the value creation, as measured by *CAR*, to be directly proportional to *relsize*. If, on the other hand, private equity sponsors profit at the expense of strategic acquirers, then we expect the coefficient on *relsize* to be negative.

Our results are in column (1) of Table 7. The coefficient on *relsize* is strongly positive and significant at the 1% level, suggesting that strategic buyers benefit substantially when they purchase portfolio companies from private equity sponsors. The coefficient is also economically significant. The value of this coefficient of 0.037 together with the constant term of 0.033 implies that if a strategic acquirer purchases a portfolio company half its size, it will increase shareholder value by 5%. Consistent with prior research, the coefficient on *stock* is negative and significant. However, the rest of the control variables do not affect the CAR in our sample.

In addition, we find, consistent with other studies (e.g. Masulis, Wang and Xie, 2007) that governance matters. We estimate a specification identical to equation (3) above, except that we include the acquirer's board size, a dummy indicating a majority of independent directors on the board, and the acquirer's managerial entrenchment index (*Eindex*) discussed above. We interact each with *relsize* since the effect on *CAR* should be related to the relative size of the acquisition target. As can be seen in column (2) of Table 6, the coefficient on the interaction between *relsize* and the independent board indicator is positive and significant at the 1% level. Hence an independent board is critical to the deal being value-increasing for the acquiring shareholders. Given that the average deal is positive, this suggests that a minority of sales may be the result of a private equity sponsor taking advantage of poorly-governed public firms. However, this also shows that the majority of deals, involving well-governed public firms, create even greater value than indicated by the mean CAR. The evidence is that strategic buyers do not, on average, overpay for portfolio companies.

In the two specifications above, we keep strategic acquisitions for which the transaction value was not disclosed in the sample. While we cannot compute *relsize* in these cases, we know that it must be small relative to the acquirer, since lack of disclosure implies the transaction was deemed to be immaterial for financial reporting purposes. Thus, in the cases of non-disclosure, in the above specifications we set *relsize* equal to first percentile in the sample of deals for which a transaction value was disclosed (see Table V). As a robustness check, we re-estimate the above specifications dropping deals for which the transaction value was not disclosed, and we report the results in columns (3) and (4) of Table 7. They are qualitatively unchanged.

4.5. Evidence from the long-run post-transaction returns of strategic buyers

Prior studies such as Loughran and Vijh (1997) and Rau and Vermaelen (1998) have found long-run underperformance following acquisitions. Thus, it is possible that the announcement returns do not present the full picture of the effect of purchasing the portfolio firm. In this section we test the hypothesis that public acquirers of portfolio firms underperform acquirers of public companies.

We construct long-short portfolios that buy the acquirers of portfolio companies and short the buyers of public companies.¹⁰ Portfolios are rebalanced monthly, so an acquirer is added to the portfolio during the calendar month after the acquisition took place and is kept in the portfolio for 36 months. We equally weight the portfolios, but our results are robust to value weighting based on acquirer market capitalization. After constructing a time series of returns for the portfolios of strategic acquirers and public

¹⁰ For ease of computation, we limit this analysis to domestic acquirers and foreign acquirers that are either listed on a US exchange or have ADR's.

acquirers, we subtract the risk-free rate, the one-month t-bill return over that month. We obtain the Fama-French factors from Ken French's website.

We present two sets of results in Table 8. The first regresses the returns of the long portfolio of strategic buyers of private equity portfolio companies on the Fama-French factors. The long portfolio's alpha is negative, but insignificant. The second regression uses the returns of the long-short portfolio, that is, the return of the portfolio of acquirers of private equity buyout targets less the return on the portfolio of all acquirers of public companies. We see that the portfolio is essentially market-neutral and has a very small and insignificantly positive alpha. We conclude that there is no evidence that public acquirers of portfolio firms underperform in the long run. Combined with the positive announcement effect, the evidence establishes that these purchases are value-increasing for the public buyers.

4.6. Secondary Buyouts: Are some firms simply suited to remain private?

Given the high returns private equity sponsors are reported to have, the fact that about 30% of all buyouts are exited via a sale to another private equity sponsor is puzzling. In this section, we test two competing explanations of this phenomenon. On the one hand, it is plausible that some firms are better-suited to be managed as portfolio companies of private equity sponsors, so the most efficient exit for such an investment is simply to sell to another sponsor. If this explanation is valid, then we expect the secondary buyout to be a more likely exit for targets that were portfolio companies before the buyout. On the other hand, it is possible that sale to a financial buyer is a last resort. That is, private equity sponsors only sell to financial buyers if they cannot exit an

investment quickly through other means. If this explanation is true, we expect the time held to be the main factor influencing exit via secondary buyout. It is also possible that poor performance drives this exit outcome. We note, however, that this does not necessarily induce a lemons problem where only bad investments are sold via secondary buyout. The repeated interactions of buyout firms with each other in this market creates reputational capital that mitigates the lemons problem. Further, if only bad investments were sold this way, we would see a relation between secondary buyouts and exit outcomes that are restructuring or bankruptcy. We test for this in our regressions.

We test the above two hypotheses by running the following multinomial logistic regression on our sample of portfolio companies:

$$P(\text{outcome}_i) = \Lambda \left[\begin{array}{l} \alpha_i + \beta_{i,1} \text{previous_portfolio_co} + \beta_{i,2} \text{previous_subsidiary} + \\ + \beta_{i,3} \text{previous_other_private} + \beta_{i,4} \log(\text{lbovalue}) + \\ + \beta_{i,5} \text{roa} + \beta_{i,6} \text{sgrowth} + \beta_{i,7} \text{TimeHeld} \end{array} \right] \quad (4)$$

$$\sum_{i=1}^5 P(\text{outcome}_i) = 1$$

Where Λ is the logistic cumulative distribution function. Above we model the probability of each of our five exit outcomes, given by outcome_i , as a function of several covariates, constraining the predicted probabilities of the five outcomes to sum to one for each observation. The five possible outcomes include sale to financial buyer, sale to strategic buyer, IPO, distressed restructuring, or not exited as of September 30, 2009. The variables *previous_portfolio_co*, *previous_subsidiary*, and *previous_other_private* are dummy variables indicating that, prior to the current buyout, the portfolio company was, respectively, part of a private equity sponsor's portfolio, an operating subsidiary of a non-buyout firm, or held by some non-buyout-focused private investors, such as a

foundation or high net worth individuals. The variables *roa* and *sales growth* are the median return on assets and sales growth in the portfolio firm's industry, averaged over the period beginning two calendar years before the buyout and ending two years afterward. *TimeHeld* is the number of years the portfolio company was held by the sponsor prior to exit. We set IPO exit as the base outcome, so our coefficient estimates are measures of how the above variables affect the odds of a given exit outcome, such as sale to a financial buyer, *relative* to the odds of an IPO.

If certain firms are just better-suited to be in private equity sponsor portfolios, then we would expect the coefficient on *previous_portfolio_co* to be significantly more positive for financial buyer exits than other exits. On the other hand, if private equity sponsors sell to other sponsors primarily as a last resort because the portfolio company is not ready for another exit, then we expect the coefficient *TimeHeld* to be more positive for portfolio companies exited via sales to financial buyers than other types of exits. If poor performance is driving secondary buyouts, then we expect the coefficients on industry *ROA* and *sales growth* to be most negative for financial buyer exits. The results are in Table 9.

First note that, for firms exited via sale to a financial buyer, the coefficient on *previously_portfolio_co* is statistically indistinguishable from zero. It is also statistically indistinguishable from its value in the *strategic buyer* column. This result implies that having been previously held by a private equity sponsor does not make it more likely that a portfolio company investment will be exited via sale to financial buyer than IPO or sale to strategic buyer. However, the coefficient in question is statistically larger for the financial buyer column than it is for *still held* and *restructured*. Taken together, all the

results imply that being previously held by a private equity firm does increase the odds of the three favorable exits, namely financial buyer, strategic buyer, or IPO, but it does not influence which of these is most likely. This is evidence against the proposition that bad investments are unloaded in the secondary buyout market.

Note further that the coefficient on *TimeHeld* is positive and significant in the financial buyer column. It is also statistically larger in the financial buyer column than in the strategic buyer column. This implies that when a portfolio company has been held longer, it is more likely to be exited via sale to a financial buyer than via IPO or sale to a strategic buyer. This result supports the hypothesis that private equity sponsors sell to other sponsors when a timely exit via IPO or strategic buyer is impossible. However, the effect of *roa* and *sales growth* is not significant, so poor portfolio company performance cannot explain the inability to exit via other means. Instead, the combined evidence suggests that portfolio companies exited via secondary buyout are still viable investments that simply need more time before exit via IPO or sale to a strategic buyer. The demand for liquidation of the fund's investments forces the sponsor to exit via sale to another financial buyer.¹¹

5. Conclusions

Using a comprehensive sample of large private equity buyouts from 1993 to 2001, as well as a sample of 226 portfolio companies with public debt bought out between 1996 and 2006, we test and reject the hypotheses that private equity sponsors transfer wealth

¹¹ One might wonder why the sponsor does not simply sell the company to another of its own funds. This is typically strictly prohibited in the limited partnership agreements that establish the funds because the potential for self-dealing and litigation over what is effectively a transfer price would be too great (as long as the limited partners of the transacting funds are not the same entities invested in the same proportions, the possibility for a wealth transfer exists).

from other financial claimants and sacrifice long-term value for short term profit. As is well known, sponsors purchase portfolio companies in a transaction that pays a premium to existing shareholders, rendering the latter an unlikely source of wealth transfers. While the portfolio company is held by the sponsor, we find its investment policy does not differ from that of comparable public firms. Sponsors allow portfolio companies to continue investing even when profits are negative, inconsistent with short-termism. Further, we find that payouts to the sponsor are uncorrelated with future portfolio company distress, inconsistent with sponsors systematically taking advantage of bondholders. The typical sponsor exit is by sale to either a strategic or financial buyer. We find that strategic buyers benefit when buying portfolio companies from private equity sponsors, particularly when the buyer is well-governed, inconsistent with the notion that sponsors fool strategic buyers into overpaying. Coupled with the extant evidence examining the 10% of buyouts that exit by IPO, our evidence strongly rejects the hypothesis that private equity returns come at the expense of other financial claimants. Our evidence is also inconsistent with the hypothesis that sponsors focus on short-term profit at the expense of long-term value.

We further examine how portfolio company characteristics influence the choice of exit type. We find that strong industry sales growth helps predict exit via IPO. We also find that firms exited via sale to financial buyer tend to have been held longer, suggesting that private equity sponsors sell to other sponsors when a timely exit of another sort was not possible. Our evidence is inconsistent with the notion that sponsors use secondary buyouts to unload lemons. It is also inconsistent with the notion that secondary buyouts are an indication of a portfolio company firm-type characteristic.

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Table 1

This table presents descriptive statistics for the portfolio companies. Panels A and B present the frequency of each category of pre-buyout status and buyout exit outcome, respectively. Panel C summarizes the characteristics of the portfolio companies' industries.

Panel A Pre-LBO Status of Portfolio Companies				Panel B Distribution of LBO Exit Outcomes			
	# Deals	% Frequency	Mean LBO Size (\$MM)		# Deals	% Frequency	Mean Years Held
Portfolio of other sponsor	66	8.38%	254.65	IPO	77	9.77%	3.70
Operating subsidiary	272	34.52%	334.02	Strategic Buyer	287	36.42%	4.26
Other private owner	300	38.07%	260.43	Financial Buyer	239	30.33%	5.44
Bankrupt	9	1.14%	307.13	Restructured	117	14.85%	4.85
Public	141	17.89%	477.73	Still Held	68	8.63%	10.26

Panel C Descriptive Statistics on Portfolio Company Industry						
Variable	N	Mean	Median	Std Dev	25th Pctl	75th Pctl
ROA	787	4.98%	7.07%	12.49%	4.71%	9.37%
Sales Growth	787	0.116	0.089	0.204	0.060	0.140

Table 2

This table presents pre- and post-buyout industry-adjusted capital expenditures (as a percentage of total assets), operating margins and ROA for portfolio firms with public debt (or otherwise compelled to file financial statements). The sample contains firms for which we had sufficient data to compute the pre and post characteristics as well as dividend payments. We define a special dividend to have occurred if any of the following is true: a recorded special dividend, total dividends from the buyout year to year +3 amounting to more than 20% of the firm's equity, or a dividend of any amount when the portfolio firm had negative equity. We subtract the 4-digit NAICS industry median in order to make the industry adjustment. "Change in" variables are computed as the firm-specific difference in the variable for the average of the post-buyout years (up to 3) compared to the buyout year.

Table 2, continued

	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>Std Dev</u>	<u>25th Pctl</u>	<u>75th Pctl</u>
All Firms						
Pre-buyout Ind-Adjusted CapEx	226	0.012	-0.001	0.086	-0.016	0.027
Pre-buyout Ind-Adjusted Op. Margin	226	0.119	0.084	0.185	0.017	0.154
Pre-buyout Ind-Adjusted ROA	226	0.130	0.088	0.181	0.035	0.173
Post-buyout Ind-Adjusted CapEx	226	0.008	-0.001	0.072	-0.018	0.022
Post-buyout Ind-Adjusted Op. Margin	226	0.120	0.081	0.196	0.013	0.157
Post-buyout Ind-Adjusted ROA	226	0.100	0.053	0.161	0.015	0.133
Change in Ind-Adjusted CapEx	226	-0.004	-0.003	0.052	-0.020	0.014
Change in Ind-Adjusted Op. Margin	226	0.001	0.001	0.099	-0.036	0.026
Change in Ind-Adjusted ROA	226	-0.030	-0.024	0.181	-0.083	0.017
No Special Dividend						
Pre-buyout Ind-Adjusted CapEx	173	0.012	-0.001	0.071	-0.016	0.023
Pre-buyout Ind-Adjusted Op. Margin	173	0.117	0.085	0.183	0.018	0.146
Pre-buyout Ind-Adjusted ROA	173	0.117	0.085	0.127	0.038	0.157
Post-buyout Ind-Adjusted CapEx	173	0.007	-0.001	0.057	-0.018	0.021
Post-buyout Ind-Adjusted Op. Margin	173	0.116	0.077	0.197	0.011	0.148
Post-buyout Ind-Adjusted ROA	173	0.099	0.053	0.168	0.009	0.134
Change in Ind-Adjusted CapEx	173	-0.005	-0.002	0.052	-0.017	0.014
Change in Ind-Adjusted Op. Margin	173	-0.001	-0.001	0.108	-0.038	0.022
Change in Ind-Adjusted ROA	173	-0.017	-0.023	0.154	-0.080	0.017
Special Dividend						
Pre-buyout Ind-Adjusted CapEx	53	0.015	-0.002	0.125	-0.018	0.029
Pre-buyout Ind-Adjusted Op. Margin	53	0.126	0.083	0.193	0.004	0.217
Pre-buyout Ind-Adjusted ROA	53	0.172	0.098	0.293	0.029	0.212
Post-buyout Ind-Adjusted CapEx	53	0.011	0.000	0.108	-0.019	0.038
Post-buyout Ind-Adjusted Op. Margin	53	0.136	0.115	0.194	0.043	0.219
Post-buyout Ind-Adjusted ROA	53	0.100	0.051	0.136	0.023	0.109
Change in Ind-Adjusted CapEx	53	-0.004	-0.009	0.051	-0.025	0.014
Change in Ind-Adjusted Op. Margin	53	0.010	0.012*	0.063	-0.019	0.039
Change in Ind-Adjusted ROA	53	-0.072	-0.028	0.248	-0.092	0.011

* indicates that the change for the special dividend firms is significantly different, at the 5% level or greater, than the change for the no special dividend firms.

Table 3
Bankruptcy logit regressions

Logistic regressions modeling the log-odds that a portfolio company is exited via bankruptcy or distressed workout as a function of initial leverage, as well as average capital expenditures, profitability, and various measures of the degree to which the portfolio firm paid dividends over the first three years after the buyout. In model (1) we use a dummy variable indicating that there was at least one special dividend in the first three years, where we define “special dividend” as in Table 2. In model (2) we use the ratio of total the total amount paid in special dividends in the first three years as fraction of the firm’s equity. In model (3) we use total dividends in the first three years, regardless of their specialness, as a fraction of the firm’s equity. Standard errors are in parentheses. Significance levels of 1%, 5% and 10% are indicated by ***, ** and *, respectively.

	(1)	(2)	(3)
Special Dividend Dummy	-0.304 (0.463)		
Special Dividend/Equity		-0.251 (0.666)	
Total Dividends/Equity			-0.171 (0.355)
Initial Leverage	0.861* (0.487)	0.840* (0.486)	0.869* (0.489)
Post-buyout Ind-Adjusted CapEx	1.860 (2.510)	1.765 (2.452)	1.753 (2.466)
Post-buyout Ind-Adjusted ROA	1.346 (1.187)	1.379 (1.180)	1.351 (1.186)
Post-buyout Ind-Adjusted Op. Margin	-0.896 (1.201)	-0.930 (1.198)	-0.926 (1.201)
Constant	-2.102*** (0.347)	-2.152*** (0.340)	-2.126*** (0.344)
Observations	226	226	226

Table 4

Descriptive statistics for portfolio companies with public debt (or otherwise compelled to file financial statements) & the control group. Each portfolio company with public debt is matched to a public firm in the same 4-digit NAICS industry with the closest pre-transaction sales. The summary statistics for the variables used in the investment-to-cash flow sensitivity regression in Table 4 are presented here.

Variable	Mean	Median	Std Dev	25th Percentile	75 th Percentile
Control Firms					
CapEx/Assets	0.086	0.051	0.107	0.026	0.105
EBITDA/Assets	0.174	0.170	0.236	0.103	0.257
Industry Median q	1.791	1.644	0.793	1.306	2.064
Sales Growth	0.213	0.104	0.615	0.005	0.243
Portfolio Firms					
CapEx/Assets	0.056	0.036	0.061	0.022	0.066
EBITDA/Assets	0.151	0.136	0.089	0.098	0.191
Industry Median q	1.864	1.660	1.298	1.322	2.076
Sales Growth	0.164	0.088	0.376	0.013	0.191
Portfolio Firms, Pre-buyout					
CapEx/Assets	0.061	0.043	0.063	0.024	0.070
EBITDA/Assets	0.167	0.156	0.092	0.108	0.205
Industry Median q	1.813	1.629	0.990	1.304	2.033
Sales Growth	0.165	0.093	0.364	0.009	0.192
Portfolio Firms, Post-buyout					
CapEx/Assets	0.053	0.034	0.060	0.021	0.062
EBITDA/Assets	0.140	0.124	0.084	0.094	0.168
Industry Median q	1.900	1.682	1.479	1.332	2.081
Sales Growth	0.163	0.086	0.385	0.013	0.190

Table 5

Investment-cashflow sensitivity regressions

The dependent variable is capital expenditures scaled by assets. The sample consists of all buyout portfolio firms that have public debt or file financial statements for another reason, so that we can track their investment while private, and matching firms chosen for each buyout firm as the public firm in its 4-digit NAICS industry closest in pre-transaction sales. Industry median q is calculated as the median market-to-book of assets for all standalone public firms in the buyout target's 4-digit NAICS industry that year. EBITDA/Assets (Negative, Positive) are EBITDA scaled by assets if negative and if positive, respectively. Sales growth is the percentage change in sales in the current year over the previous year. Post-buyout is a dummy equal to 1 for portfolio firms while it is held by a PE sponsor and is zero otherwise. Post-buyout is also interacted with the EBITDA variables. Paid Special Dividend is a dummy variable set equal to 1 if the firm paid a special dividend while held by the PE sponsor (as defined in the legend to Table 2) and is zero otherwise. The regression is estimated with fixed firm effects and the robust standard errors, clustered by buyout (portfolio company-control firm pair), are reported in parentheses. ***, **, and * indicate significance at the 1, 5 and 10% levels.

	(1)	(2)	(3)	(4)
Industry Median Q	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)	0.009 (0.010)
Sales Growth	0.017** (0.004)	0.017** (0.004)	0.017** (0.004)	0.022** (0.006)
EBITDA/Assets (Negative)	-0.048** (0.014)	-0.049** (0.014)	-0.049** (0.014)	-0.044** (0.016)
EBITDA/Assets (Positive)	0.165** (0.028)	0.167** (0.030)	0.167** (0.030)	0.160** (0.030)
Post-buyout	-0.003 (0.003)	-0.000 (0.006)	-0.000 (0.006)	-0.004 (0.007)
Post x EBITDA-/Assets (Negative)		0.099 (0.187)	0.099 (0.187)	0.246 (0.168)
Post x EBITDA+/Assets (Positive)		-0.020 (0.033)	-0.020 (0.033)	-0.012 (0.034)
Paid Special Dividend			-0.011 (0.011)	-0.012 (0.011)
Portfolio Firm x Ind. Median q				-0.011 (0.011)
Portfolio Firm x Sales Growth				-0.014 (0.008)
Post x Industry Median q				0.003 (0.002)
Post x Sales Growth				-0.010 (0.007)
Intercept	0.035** (0.007)	0.035** (0.007)	0.036** (0.007)	0.036** (0.010)
R-Squared	0.10	0.10	0.10	0.10
Observations	1,895	1,895	1,895	1,895

Table 6
Descriptive statistics on strategic acquisitions & acquirers

The sample consists of all acquisitions of private equity portfolio companies by public strategic acquirers, defined as firms not in the business of buyouts. CAR is the size-decile-adjusted cumulative abnormal return on the acquirer's stock price during the 3-day window around the acquisition announcement date. Other variables are as follows: *relnsize* is the ratio of the transaction value to the acquirer's equity market capitalization two days prior to the acquisition; *stock* is a dummy indicating that acquirer stock was used as consideration; *board size* is the number of directors on the acquirer's board before the acquisition; *indep board* is an indicator variable for a majority of independent directors; *eindex* is the managerial entrenchment index that counts the following antitakeover provisions for the acquirer: poison pill, staggered board, CEO golden parachute, and super majority requirements for mergers, charter amendments or bylaw amendments; *Q* is the ratio of the acquirer's equity market capitalization plus liabilities to total assets; *TimeHeld* is the length of time the acquisition target was held as private equity portfolio company prior to the acquisition; *mktcap* is the acquirer's equity market capitalization as of two days prior to the acquisition.

	n	mean	Median	stddev	25th pctl	75th pctl
CAR	191	0.021	0.010	0.077	-0.012	0.047
Relsize	157	0.500	0.228	0.860	0.059	0.550
Stock	191	0.188	0.000	0.392	0.000	0.000
Board Size	191	9.874	9.000	3.208	8.000	12.000
Indep Board	191	0.717	1.000	0.452	0.000	1.000
EINDEX	191	1.848	2.000	1.488	1.000	3.000
Q	191	2.470	1.852	2.657	1.357	2.878
TimeHeld	191	3.950	3.600	2.207	2.192	5.463
log(mktcap)	191	7.809	7.567	1.956	6.689	9.083

Table 7
Regression analysis of strategic buyer announcement returns

The dependent variable is the cumulative abnormal return to the strategic buyer acquiring a private equity portfolio company during the 3-day window around the acquisition announcement date. Independent variables are defined in Table 5 above. Columns (1) and (2) are estimated on a sample of all strategic acquisitions, including those for which a transaction value was not disclosed. In the latter case, the 1st percentile of relsize was imputed. Columns (3) and (4) are estimated on a sample that excludes acquisitions for which the transaction value was not disclosed. Standard errors, clustered by acquirer, are in parentheses. Significance levels of 10%, 5%, and 1% are indicated by *, **, and ***.

	(1)	(2)	(3)	(4)
Relsize	0.037*** (0.007)	0.043 (0.037)	0.037*** (0.008)	0.043 (0.040)
log(mktcap)	-0.003 (0.003)	-0.007* (0.003)	-0.003 (0.004)	-0.008* (0.004)
Stock	-0.039*** (0.013)	-0.044*** (0.013)	-0.038*** (0.014)	-0.045*** (0.014)
Q	-0.003 (0.002)	-0.002 (0.002)	-0.003 (0.002)	-0.002 (0.002)
TimeHeld	0.003 (0.002)	0.003 (0.002)	0.004 (0.003)	0.003 (0.003)
Board Size		0.003 (0.002)		0.004 (0.003)
Indep Board		-0.012 (0.013)		-0.016 (0.017)
Eindex		0.001 (0.004)		0.001 (0.005)
Relsize * Ind Board		0.057** (0.023)		0.061** (0.026)
Relsize * Board Size		-0.004 (0.003)		-0.005 (0.003)
Relsize * Eindex		-0.009 (0.007)		-0.010 (0.008)
Constant	0.033 (0.026)	0.036 (0.030)	0.030 (0.033)	0.041 (0.039)
Observations	191	191	157	157
R-squared	0.24	0.28	0.26	0.30

Table 8
Analysis of the strategic buyer portfolio returns

Column (1) below regresses monthly excess returns of the equal-weighted portfolio of strategic acquirers of private equity buyout targets on the Fama-French factors. Column (2) contains an analysis of a long-short portfolio, where the dependent variable is the return on the portfolio of strategic acquirers of private equity buyout targets less the return on the portfolio that contains all acquirers of public companies. Acquirers are added to their respective portfolio in the calendar month immediately following the acquisition and dropped 36 months later. Standard errors are in parentheses. Significance levels of 10%, 5%, and 1% are indicated by *, **, and ***.

	(1)	(2)
alpha	-0.0046 (0.0031)	0.0018 (0.0037)
MktRF	0.9562*** (0.0680)	-0.2748*** (0.0821)
HML	0.4639*** (0.0944)	0.0340 (0.1153)
SMB	0.2781*** (0.0875)	-0.2813 (0.1057)
Obs	171	171
Rsquared	0.57	0.14

Table 9

Multinomial logistic regression analysis wherein we model the probability of five different buyout exit types: IPO, sale to a strategic buyer, sale to financial buyer, distressed restructuring, or not exited as of Sept. 30, 2009. IPO is the reference exit type, so the parameter estimates in the table constitute the respective variable's marginal effect on the log-odds of the exit type indicated at the top of the column *relative* to that of an IPO. The variables *previous_portfolio_co*, *previous_subsidary*, and *previous_other_private* are dummies indicating that the portfolio company, before the buyout, was, respectively, owned by a private equity fund, held by some other private owner, or was an operating subsidiary of a parent company that does not conduct buyouts in the ordinary course of business. The variable *lbovalue* is the enterprise value of the buyout in question. The variables *roa*, *salesgrowth* and *sales* are, respectively, the return on assets, sales growth and sales of the median public firm in the portfolio company's 4-digit NAICS industry, averaged over the time period beginning two years prior to the buyout and ending two years afterward. Compustat segments data were used to compute all industry variables. White standard errors are in parentheses. Significance levels of 10%, 5%, and 1% are indicated by *, **, and ***.

	Exit type			
	Restructured	No Exit	Financial Buyer	Strategic Buyer
<i>previously_portfolio_co</i>	-0.312 (0.691)	0.408 (0.869)	0.878 (0.618)	1.115* (0.608)
<i>previously_other_private</i>	-0.313 (0.402)	0.029 (0.523)	0.561 (0.391)	0.797** (0.383)
<i>previously_subsidary</i>	-1.212*** (0.409)	-0.477 (0.554)	0.183 (0.373)	0.638* (0.367)
log(<i>lbovalue</i>)	-0.252* (0.142)	-0.248 (0.212)	-0.361** (0.142)	-0.358*** (0.135)
ROA	-4.251** (2.148)	-5.252** (2.286)	-3.528* (2.086)	-3.646* (2.085)
Sales growth	0.210 (0.384)	-1.205 (2.712)	-0.692 (0.623)	-1.813** (0.845)
TimeHeld	0.207*** (0.075)	0.882*** (0.101)	0.288*** (0.070)	0.113 (0.069)
log(<i>sales</i>)	0.254* (0.139)	0.073 (0.214)	0.040 (0.123)	-0.015 (0.120)
Observations	787	787	787	787