Management Science

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We test whether the well-documented high returns of private equity sponsors result from wealth transfers from other financial claimants and counterparties and from a focus on short-term profits at the expense of long-term value. Debt investors who finance buyouts, as well as buyers of private equity portfolio companies, represent the two potential sources of wealth transfers. However, we find that, on average, public companies benefit when they buy financial sponsors' portfolio companies, experiencing positive abnormal returns upon the announcement of the acquisition and long-run posttransaction abnormal returns indistinguishable from zero. We further find that large portfolio company payouts to private equity on average have no relation to future portfolio company distress, suggesting that debt investors are not suffering systematic wealth losses either. However, we find some evidence of wealth transfers from both strategic buyers and debt investors in some special situations. 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.

Keywords: finance; corporate finance; private equity; leveraged buyouts
History: Received May 15, 2012; accepted March 20, 2013, by Brad Barber, finance. Published online in *Articles in Advance* November 13, 2013.

1. Introduction

Although it is well-established that private equity sponsors earn high returns (e.g., Guo et al. 2011, Harris et al. 2013), 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, e.g., *The Times* 2006, Weinberg and Vardi 2006, *Der Spiegel* 2006, Ydstie 2012). Although 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 both hypotheses and reject them in the typical case, although we do find some evidence of wealth transfers in some situations.

To test the wealth transfer hypothesis, we consider the two financial claimants from whom prior literature suggests that private equity sponsors could transfer wealth: the nonfinancial companies (henceforth, "strategic buyers") to whom sponsors sell when they exit their investments, and debt holders who finance buyouts.[1] It is a plausible proposition that debt issuers sometimes successfully transfer wealth on a large scale from creditors who en masse underestimate default risk, as Krishnamuthy (2010) documents for the recent subprime mortgage bubble, which joins many similar episodes in credit market history. There is also a wealth of evidence that nonfinancial companies often overpay when acquiring other companies. Hence, it is plausible that financial sponsors might take advantage of strategic buyers by selling portfolio companies to them at inflated prices.[2] We also note that sale to a strategic buyer is the most common means of private equity sponsor exit in our comprehensive sample of 877 large U.S. buyouts.

Contrary to the wealth transfer hypothesis, 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

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

[2] See Andrade et al. (2001) for a review that includes most classic papers examining the tendency for some strategic acquires to overpay in mergers and acquisitions.

is proportional to transaction size. Furthermore, the long-run posttransaction abnormal stock returns of buyers of portfolio companies are statistically indistinguishable from that of buyers of public merger and acquisition (M&A) targets. To test whether private equity sponsors take advantage of debt holders who finance the buyout, we investigate the relation between U.S. portfolio company payouts to their sponsors and the odds of a bankruptcy or out-of-court distressed restructuring. We find no relation on average, suggesting that in the typical case, either debt covenants or sponsor reputation concerns prevent sponsors from taking excessive payouts that harm the debt investors who finance the buyout. The above new evidence on sales to strategic buyers and bankruptcies covers over 49% of U.S. buyout exits.

Although we find that strategic buyers and debt investors who finance the buyout are, on average, not harmed by financial sponsors, we do find evidence of successful wealth transfers in some special cases. Whereas the average strategic buyer benefits from purchasing a portfolio company from a financial sponsor, strategic buyers with insider-dominated boards see their stock prices decline on the news of such an acquisition. Hence, our evidence suggests that financial sponsors do manage to take advantage of the agency problems within the minority of strategic buyers without an independent board. Second, although we find that, on average, special dividends to sponsors are not associated with a higher probability of bankruptcy, we find a weak positive association in the minority of cases wherein the dividend payer's operating margin underperforms its industry. Taken as a whole, our results suggest that, although not the norm, wealth transfers do occur in some situations.

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 (IPO). However, IPOs account for only around 15% of private equity sponsor exits, and Cao and Lerner (2009) find that long-run abnormal 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 (e.g., Kaplan 1989, Bargeron et al. 2008). Finally, we do not rule out the possibility that financial sponsors are transferring wealth from the government by causing their targets to more fully exploit interest tax shields. However, because the preferential tax treatment of interest is a conscious policy choice with well-known consequences, it seems inappropriate to put

the exploitation of tax shields into the same category as the other types of wealth transfers we explore.

To test the short-termism hypothesis, we perform the first broad-based study of how U.S. portfolio company investment is sensitive to cash flows and investment opportunities.[3] Large debt-service burdens and other measures that pressure management to generate cash flow are thought to be a major reason why portfolio company operating profitability tends to increase after buyouts (e.g., Jensen 1986, 1989). However, high required payouts could financially constrain portfolio companies' investment policy, causing them to forgo (or even liquidate) valuable long-term investments in the pursuit of short-term cash flow. Empirically, such inefficient financial constraints would manifest themselves in lower investment levels and higher investment sensitivity to unlevered operating cash flows (e.g., Fazzari et al. 1988). On the contrary, we find that portfolio company investment policy is no different from that of a matched control sample of public firms. Thus, portfolio company investment policy does not appear inefficiently financially constrained, at least not to a greater extent than that of our admittedly imperfect control group.

We further note that the short-termism hypothesis is actually a variant of the wealth transfer hypothesis. The strategy of boosting short-term profits at the expense of long-term value would only benefit sponsors if they could systematically fool buyers of their portfolio companies into overpaying. Hence, our finding that strategic buyers do not overpay also constitutes 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 United States. 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.[4] This is

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[3] Sheen (2011) studies the investment policy of U.S. portfolio companies in the chemical industry. Boucly et al. (2011) study the investment policy of French portfolio companies.

[4] Sudarsanam (2005), Sousa (2010), and Wang (2012) find a similar result using European data.

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.[5]

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

2. Literature Review

Past research on portfolio companies of private equity sponsors has been necessarily limited because of lack of data. Although 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 (e.g., Cao and Lerner 2009, Degeorge and Zeckhauser 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 2012, Kaplan 1989, Smith 1990, Guo et al. 2011), or to countries that require private companies to disclose financial statements (e.g., Boucly et al. 2011, Bergstrom et al. 2007, Harris et al. 2005, Wright et al. 2006).

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 to 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 prebuyout portfolio company status relates to postexit status, and more. Our focus is different from Kaplan and Stromberg (2009) and Stromberg (2007). Whereas they provide descriptive statistics on the Capital IQ universe, we collect additional data on all U.S. sponsor-backed buyouts greater than $50 million from 1993 to 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.

Masulis and Nahata (2011) study portfolio companies sold by venture capital funds to strategic acquirers and find the latter experience positive announcement returns. Our results on the announcement returns of strategic acquirers of buyout portfolio companies have a similar flavor, but they are distinct because 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.

Hotchkiss et al. (2011) include an analysis of portfolio company financial distress. They find that default rates of portfolio companies are no worse than control firms with similar ex ante credit risk. However, they do not test whether there is a link between distributions to financial buyers and portfolio company financial distress.

As Kaplan and Stromberg (2009) note, data availability of conventional databases, such as Compustat, limits past empirical work on buyout portfolio company operating performance in the United States to those that were public at some point. In contrast, we use Capital IQ, which contains comprehensive financial statement data on all U.S. 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 U.S. portfolio companies studied. Only Lichtenberg 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 company operating performance largely focus on measures of profitability (e.g., Guo et al. 2011, Kaplan 1989, Smith 1990), and productivity (e.g., Lichtenberg and Siegel 1990), but few study investment policy. Kaplan (1989) 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 (1989) work, we not only study how investment policy changes, but how buyouts affect portfolio companies' sensitivity of investment to cash flow and investment opportunities.

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[5] Using European data, Achleitner and Figge (2012) find that sponsor returns are no worse when they invest in portfolio companies acquired through secondary buyouts.

As Kaplan and Stromberg (2009) 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 on portfolio company investment policy, as well as strategic buyer announcement returns, help shed some light on the short-termism hypothesis. Lerner et al. (2011), who show that portfolio company patent productivity does not suffer after buyouts, also shed light on the short-termism question. 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 (2011), who examines chemical industry leveraged buyouts (LBOs).

3. Data Sources and Sample Selection

From Thomson Financial's SDC Platinum and Capital IQ, we extract information on all U.S. corporate transactions labeled as leveraged buyouts, management buyouts, and going private transactions that have a disclosed value of greater than $50 million, and that occurred between 1993 and 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 to determine whether an entity is a private equity sponsor. After applying the above filters, our sample comes to 877 buyouts. We obtain a portfolio company's primary North American Industrial Classification System (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 prebuyout 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 prebuyout status of the portfolio companies in our sample are given in Table 1, panel A.

Table 1   Descriptive Statistics for the Portfolio Companies

Panel A: Pre-LBO status of portfolio companies

	No. of deals	Frequency (%)	Mean LBO size ($MM)
Portfolio of other sponsor	84	9.58	341.82
Operating subsidiary	302	34.44	350.90
Other private owner	314	35.80	262.46
Bankrupt	12	1.37	252.73
Public	165	18.81	484.10

Panel B: Distribution of LBO exit outcomes

	No. of deals	Frequency (%)	Mean years held
IPO	128	14.60	3.75
Strategic buyer	298	33.98	4.35
Financial buyer	249	28.39	5.47
Restructured	133	15.17	4.84
Still held	69	7.87	10.26

Panel C: Descriptive statistics on portfolio company industry

Variable	N	Mean (%)	Median (%)	Std. dev. (%)	25th percentile (%)	75th percentile (%)
ROA	877	4.63	6.96	13.25	4.41	9.18
Sales_ growth	877	11.57	8.87	19.53	6.01	14.19

Notes. Panels A and B present the frequency of each category of prebuyout status and buyout exit outcome, respectively. Panel C summarizes the characteristics of the portfolio companies' industries.

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 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.[6] 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

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[6] 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.

equity sponsor or syndicate lost its controlling stake due to a bankruptcy, out-of-court 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 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 September 30, 2009. The distribution of exit outcomes in our sample is given in Table 1, panel B.

To test hypotheses about portfolio company investment policy and operating performance, we construct a second sample of buyout targets that filed public financial statements while private between the 1996–2006 period. We use Capital IQ to determine which portfolio companies have publicly available financial statements during the time they were held by the buyout syndicate.[7] 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 postbuyout leverage, which we define as the total debt immediately following the buyout to total buyout transaction value. Two hundred and sixteen 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 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 1990s, for these tests we include portfolio companies that were bought out up through 2006. 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.

In addition, for our sample of portfolio companies that filed financial statements, we use the following

propensity-score matching technique to construct a control sample consisting of similar standalone public firms. First, we obtain a firm-year sample of all public standalone firms from Compustat. We label a public firm as a "standalone" if it has 80% or more of sales, as measured in the Compustat 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 drop from this sample of public standalones all firms whose four-digit NAICS never appears in our sample of portfolio companies. Next, we combine our sample portfolio companies, as of the year of the buyout, with the winnowed standalone sample of firm-year observations. Using this pooled sample, we then run a logistic regression in which we model the probability of being a portfolio company as a function of log(sales), sales growth, and EBITDA/assets. We label the predicted probability as the propensity score. Finally, we match each portfolio company to the standalone public firm in the same four-digit NAICS industry that has the closest propensity score, requiring the standalone to be in the sample for the same years as the portfolio company.

We use two proxies for investment opportunities in our investment-cash-flow regressions. First, we use the firm-specific sales growth for the year. In addition, within the four-digit NAICS 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 given year, and label it as *industry_median_q*.

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 U.S. 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 Center for Research in Securities Prices (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 two days prior to the deal and label it *size*. We define *relsize* as the 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

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[7] Most private firms in Capital IQ 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.

exit transactions for which the transaction value is available. We define an indicator variable, *stock*, that equals 1 if the acquirer used stock as acquisition currency and 0 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 when we present the analysis (see §4.3).

In addition, for each strategic acquirer, we obtain governance data from RiskMetrics/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, *ind_board*, which equals 1 if a majority of directors are independent and 0 otherwise. We also obtain information on whether the strategic buyer has any of the following six antitakeover 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 United States, 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 nonfinancial 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 that 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 *sales_growth*. 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 877 of 878 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 (§4.1), we move to our main analyses. We perform several analyses to test 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 (§4.2). Second, we examine the efficiency of portfolio companies' investment policy (§4.3). Third, we test whether strategic buyers of portfolio companies experience value increases or decreases in the short run (§4.4) and long run (§4.5). Finally, we examine the growing secondary buyout market to identify characteristics of portfolio companies that are sold to financial buyers (§4.6).

4.1. Characteristics of Buyout Portfolio Companies and Exits

Panel A of Table 1 shows the pretransaction status of the buyouts in our sample. The largest category, "other private owner," which accounts for nearly 36% of our sample, includes portfolio companies that were bought from owners who were neither private equity sponsors nor any business entity. Approximately 34% of the portfolio companies were subsidiaries of other corporations prior to the buyout. A surprisingly small number, approximately 10%, were owned by other private equity sponsors prior to the buyout. This number appears smaller than some recent papers analyzing the frequency of secondary buyouts, most likely because it only reflects buyouts before 2001, whereas secondary buyouts have become more common in recent years (Stromberg 2007). 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 $484 million, whereas it is just over $350 million in the next-largest category, in which the 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 September 30, 2009, the last date for which we have information. One striking characteristic of the exits is that about 85% of all exits are *not* through IPO. Thus, although 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 less than 15% 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 10% of our sample was purchased from another sponsor company, but 28% 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. IPOs are actually the least common form of exit. Exit form proportions based on original deal value show a similar pattern, with IPOs accounting for a slightly higher (20.6%) 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 exits, 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 Debt Holders?

Despite their portrayal in the popular press, special dividends to private equity sponsors are present in only about one in four deals and are not associated with higher bankruptcy probabilities 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 Capital IQ, 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 fact that prebuyout firms are profitable.[8] Notably, the only significant difference in the way special dividend and nonspecial dividend portfolio firms evolve postbuyout is that the special dividend firms have higher increases in median operating margins.[9]

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 with 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:

$$P(bankrupt = 1)$$
$$= \Lambda(\alpha + \beta dividend\_variable + controls), \quad (1)$$

where *bankrupt* is a dummy variable indicating the portfolio company went bankrupt or underwent an out-of-court 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" nature, as a fraction of the firm's equity. We include the initial leverage at the time of the buyout, as well as postbuyout industry-adjusted operating margin and ROA as controls. The results, in Table 3, confirm that dividends to the sponsor have no statistically detectable relation to the odds of bankruptcy. Only the coefficients on initial leverage are of marginal statistical significance, with *p*-values just below 0.10 in each case.

Next, we quantify our power to reject the null hypothesis that special dividends have no effect on bankruptcy odds. Our point estimate of the coefficient on the special dividend dummy of -0.278 in model (1) implies that, when all other variables are at their means, the payment of a special dividend is associated with an average *decrease* in the probability of bankruptcy of 3.35 percentage points. Using the delta method, we estimate the standard error of this marginal effect is 5.33 percentage points. We can thus rule out with 90% certainty the proposition that special dividends are associated with increases in probability of bankruptcy any larger than 3.48 percentage points [$= -3.35 + 1.281 * 5.33$].

Although our results above indicate that special dividends are generally not associated with bankruptcy or workout, we note that we do not consider recovery rates in our analysis. Hence, we cannot rule out that special dividends might harm providers of buyout debt financing by reducing recovery rates, even if they are not associated with greater probability of bankruptcy.

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[8] To maximize data availability, we use year 0 data for the prebuyout year. Our results are robust to using year −1.

[9] We investigated the possibility that some highly profitable firms have special dividends whereas some unprofitable firms issue special dividends, leaving a normal to high median. We find that only 7 of the 53 special dividend firms are unprofitable, and their profit margins are all above −0.05. Further, the mass of the distribution is clearly centered around the median reported in Table 2.

Table 2   Pre- and Postbuyout 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)

	N	Mean	Std. dev.	25th percentile	Median	75th percentile
All firms						
Prebuyout ind-adjusted cap. ex.	216	0.014	0.088	−0.016	0.000	0.027
Prebuyout ind-adjusted op. margin	216	0.118	0.184	0.017	0.084	0.154
Prebuyout ind-adjusted ROA	216	0.131	0.181	0.038	0.088	0.173
Postbuyout ind-adjusted cap. ex.	216	0.007	0.074	−0.019	−0.001	0.022
Postbuyout ind-adjusted op. margin	216	0.120	0.198	0.012	0.081	0.154
Postbuyout ind-adjusted ROA	216	0.101	0.159	0.016	0.054	0.133
Change in ind-adjusted cap. ex.	216	−0.006	0.052	−0.021	−0.004	0.013
Change in ind-adjusted op. margin	216	0.003	0.099	−0.034	0.002	0.025
Change in ind-adjusted ROA	216	−0.030	0.184	−0.082	−0.024	0.016
No special dividend						
Prebuyout ind-adjusted cap. ex.	165	0.013	0.072	−0.016	0.000	0.023
Prebuyout ind-adjusted op. margin	165	0.117	0.182	0.020	0.085	0.146
Prebuyout ind-adjusted ROA	165	0.116	0.124	0.038	0.085	0.157
Postbuyout ind-adjusted cap. ex.	165	0.007	0.058	−0.018	−0.001	0.020
Postbuyout ind-adjusted op. margin	165	0.117	0.199	0.011	0.077	0.148
Postbuyout ind-adjusted ROA	165	0.101	0.166	0.009	0.054	0.133
Change in ind-adjusted cap. ex.	165	−0.006	0.052	−0.019	−0.002	0.012
Change in ind-adjusted op. margin	165	0.001	0.108	−0.036	0.000	0.024
Change in ind-adjusted ROA	165	−0.015	0.155	−0.079	−0.023	0.017
Special dividend						
Prebuyout ind-adjusted cap. ex.	51	0.015	0.127	−0.018	−0.002	0.029
Prebuyout ind-adjusted op. margin	51	0.122	0.195	0.003	0.082	0.217
Prebuyout ind-adjusted ROA	51	0.179	0.297	0.035	0.104	0.214
Postbuyout ind-adjusted cap. ex.	51	0.010	0.110	−0.020	0.000	0.038
Postbuyout ind-adjusted op. margin	51	0.131	0.196	0.028	0.101	0.201
Postbuyout ind-adjusted ROA	51	0.102	0.138	0.021	0.061	0.121
Change in ind-adjusted cap. ex.	51	−0.005	0.052	−0.025	−0.010	0.014
Change in ind-adjusted op. margin	51	0.008	0.062	−0.021	0.012	0.039
Change in ind-adjusted ROA	51	−0.076	0.252	−0.107	−0.029	0.007

Notes. 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 four-digit NAICS industry median to make the industry adjustment. "Change in" variables are computed as the firm-specific difference in the variable for the average of the postbuyout years (up to three) compared with the buyout year.

Although our findings above suggest that, in the average case, special dividends do not harm the portfolio company, it is possible that there might be some special cases wherein sponsors manage to take payouts that harm debt holders. To examine this possibility, we identify special dividends in cases where the portfolio company is underperforming its industry. That is, we examine the possibility that private equity sponsors sometimes take out cash from a poorly performing investment. However, there are only three firms that can be categorized as underperforming with a special dividend that subsequently went bankrupt. Thus, although there is some evidence of a few detrimental special dividends, it is clearly not a characteristic of buyouts.

4.3. Investment-Cash-Flow Sensitivity
One way in which private equity (PE) sponsors might attempt to profit from short-termism would be to induce underinvestment at portfolio firms, forcing them to quickly pay down debt (or pay out

large dividends) while improving short-term performance, allowing for a quick, profitable exit. A traditional investment-cash-flow sensitivity regression of the sort pioneered by Fazzari et al. (1988) provides a test of this short-termism hypothesis. In Table 5 we present the results of investment-cash-flow sensitivity regressions on 216 portfolio companies from before to after the buyout transaction. To get a benchmark for both investment levels and sensitivities, we use a propensity-score procedure, described in greater detail in §3, to match each private equity portfolio company to the public firm in the same industry closest in sales, EBITDA/assets, and sales growth. Our tests thus constitute a comparison of portfolio company investment policy to that of our admittedly imperfect control group.

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

Table 3   Bankruptcy Logit Regressions

	(1)	(2)	(3)
Special dividend dummy	−0.278		
	(0.467)		
Special dividend/equity		−0.253	
		(0.668)	
Total dividends/equity			−0.160
			(0.355)
Initial leverage	0.935*	0.918*	0.944*
	(0.489)	(0.488)	(0.491)
Postbuyout ind-adjusted cap. ex.	1.740	1.659	1.649
	(2.523)	(2.465)	(2.479)
Postbuyout ind-adjusted ROA	1.881	1.896	1.876
	(1.218)	(1.208)	(1.215)
Postbuyout ind-adjusted op. margin	−0.956	−0.971	−0.973
	(1.198)	(1.195)	(1.198)
Constant	−2.177***	−2.224***	−2.199***
	(0.357)	(0.348)	(0.353)
Observations	216	216	216

Notes. 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.

* and *** indicate significance at the 10% and 1% levels, respectively.

Table 4   Descriptive Statistics for Portfolio Companies with Public Debt (or Otherwise Compelled to File Financial Statements) and the Control Group

Variable	Mean	Median	Std. dev.	25th percentile	'75th percentile
Control firms					
Cap. ex./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					
Cap. ex./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, prebuyout					
Cap. ex./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, postbuyout					
Cap. ex./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

Notes. Each portfolio company with public debt is matched to a public firm in the same four-digit NAICs industry with the closest pretransaction sales. The summary statistics for the variables used in the investment-to-cash-flow sensitivity regression in this table are presented.

total assets. We winsorize all variables at the 1st 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. Postbuyout, 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 also be indicative of lower agency costs, consistent with the findings of Edgerton (2012).

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

$$
\begin{aligned}
\frac{cap.\ ex.}{assets} = {} & \alpha + \beta_1 industy\_median\_q + \beta_2 sales\_growth \\
& + \beta_3 \frac{EBITDA}{assets} + \beta_4 postbuyout \\
& + \beta_5 postbuyout * \frac{EBITDA}{assets} + \varepsilon,
\end{aligned} \tag{2}
$$

where *assets* are total book assets as of the beginning of the fiscal year, *cap. ex.* 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 0 during the prebuyout years. It is 0 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.[10] As is standard in this literature, we also control for *industy_median_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). Our results, presented in column (1) of Table 5, demonstrate that private equity sponsors neither reduce investment by their portfolio companies nor make it more sensitive

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[10] 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, because of interest or other constraints, investment by portfolio firms becomes more sensitive to underlying cash flows. If we used a postinterest cash flow, we would be removing the effect we are testing.

Table 5   Investment-Cash-Flow Sensitivity Regressions

	(1)	(2)	(3)
Industry_median_q	−0.000	−0.000	−0.000
	(0.003)	(0.003)	(0.003)
Sales_growth	0.010**	0.010**	0.010**
	(0.004)	(0.004)	(0.004)
EBITDA/assets	0.121***	0.121***	0.122***
	(0.023)	(0.023)	(0.023)
Postbuyout	−0.008	−0.010	−0.008
	(0.007)	(0.007)	(0.009)
Postbuyout × EBITDA	0.020	0.016	0.002
	(0.040)	(0.039)	(0.050)
Paid_special_dividend		0.007	0.001
		(0.007)	(0.014)
Special_dividend × EBITDA			0.043
			(0.070)
Intercept	0.051***	0.051***	0.050**
	(0.006)	(0.006)	(0.006)
R-squared	0.07	0.07	0.07
Observations	1,872	1,872	1,872

Notes. 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 four-digit NAICs industry closest in pretransaction sales. *Industry_median_q* is calculated as the median market-to-book of assets for all standalone public firms in the buyout target's four-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. *Postbuyout* is a dummy equal to 1 for portfolio firms while it is held by a PE sponsor and is 0 otherwise. *Postbuyout* 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 0 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 5% and 1% levels, respectively.

to cash flow. The postbuyout dummy is insignificant, indicating that the level of investment unrelated to cash flows or investment opportunity proxies is the same for buyout firms and the control group. Its standard error, taking the value of 0.007, is also small compared with the sample mean of investment to assets ratio of 0.07, suggesting our tests have reasonably high power. The coefficient on the interaction term is statistically insignificant, indicating that the degree to which investment is sensitive to cash flow is no different for the buyout firms and the control group. Furthermore, the interaction term's standard deviation of 0.04 is small relative to our point estimate of the coefficient on EBITDA/assets of 0.12. This suggests our power to detect a difference in investment-cash-flow sensitivity between treatment and control firms is also high.

We next examine the extent to which the payment of special dividends impacts both the level of investment and its sensitivity to EBITDA. To this end, we

estimate two specifications, shown in columns (2) and (3), identical to Equation (2), except that they, respectively, include a dummy variable for portfolio companies that paid special dividends (column (2)), defined broadly as in §4.2, as well as the interaction of this dummy with EBITDA/assets. The coefficient on both the dummy and the interaction are statistically insignificant. In untabulated results, we also confirm that interactions between the postbuyout dummy and our proxies for investment opportunities are insignificant, suggesting the sensitivity of investment to investment opportunities are no different for portfolio companies than for our admittedly imperfect control group. Again, we stress that this result is meaningful only in the sense that our control firms are similar to the portfolio companies.

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 (CAR) during the three-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 that 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. Furthermore, our results suggest that acquirers of sponsor portfolio companies tend to benefit more from their deals than do acquirers of other private targets. The 2.1% mean CAR we find compares favorably with the smaller (though still positive) 1.2% mean CAR that Faccio et al. (2006) find for the universe of public acquirers of private targets.

We expand on the above summary statistics with regression analysis.

Specifically, we estimate the following regression:

$$CAR_i = \alpha + \beta_1 \log(mktcap_i) + \beta_2 relsize_i + \beta_3 stock_i$$
$$+ \beta_4 Q_i + \beta_5 time\_held + \varepsilon_i, \tag{3}$$

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,

Table 6   Descriptive Statistics on Strategic Acquisitions and Acquirers

	N	Mean	Median	Std. dev.	25th percentile	75th percentile
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
Time_held	191	3.950	3.600	2.207	2.192	5.463
Log(*mktcap*)	191	7.809	7.567	1.956	6.689	9.083

Notes. 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 three-day window around the acquisition announcement date. Other variables are as follows: *relsize* 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; *time_held* is the length of time the acquisition target was held as private equity portfolio company prior to the acquisition; and *mktcap* is the acquirer's equity market capitalization as of two days prior to the acquisition.

and *Q* is the ratio of the acquirer's market value of equity plus liabilities to book assets, excluding goodwill; *time_held* 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 et al. 2005). We include *time_held* 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

Table 7   Regression Analysis of Strategic Buyer Announcement Returns

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

Notes. The dependent variable is the cumulative abnormal return to the strategic buyer acquiring a private equity portfolio company during the three-day window around the acquisition announcement date. Independent variables are defined in Table 5. 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.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

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 et al. 2007) that governance matters. We estimate a specification identical to Equation (3), 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. Although 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 nondisclosure, in the above specifications we set *relsize* equal to the first percentile in the sample of deals for which a transaction value was disclosed (see Table 5). As a robustness check, we reestimate 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 Posttransaction 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.[11] 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 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 (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

We present three sets of results in Table 8. The first uses OLS to regress the returns of the long portfolio of strategic buyers of private equity portfolio companies

Table 8   Analysis of the Strategic Buyer Portfolio Returns

	(1)	(2)	(3)
Alpha	−0.0046	−0.00642**	0.0018
	(0.0031)	(0.0026)	(0.0037)
MktRF	0.9562***	1.2431***	−0.2748***
	(0.0680)	(0.0577)	(0.0821)
HML	0.4639***	0.4299***	0.0340
	(0.0944)	(0.0810)	(0.1153)
SMB	0.2781***	0.5594***	−0.2813***
	(0.0875)	(0.07421)	(0.1057)
Observations	171	171	171
R-squared	0.57	0.77	0.14

Notes. 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. For comparison, column (2) contains an analysis of the returns of portfolio of all public acquirers of public companies, and column (3) contains an analysis of returns long the portfolio in column (1) and short that of column (2). Acquirers are added to their respective portfolios in the calendar month immediately following the acquisition and dropped 36 months later. Standard errors are in parentheses.

** and *** indicate significance at the 5% and 1% levels, respectively.

on the Fama–French factors. The long portfolio's alpha is negative, but insignificant. The second regression uses the returns of the long all acquirers of public companies, and the third column is the portfolio long the first set of acquirers and short the second. From the latter two results, we see that the alpha of the portfolio of acquirers of private equity targets is slightly less negative than that of the acquirers of public companies, but the difference is not statistically significant. The long-short portfolio is nearly market neutral, with a small negative beta, and it has an insignificantly positive alpha. We conclude that there is no evidence that public acquirers of portfolio firms underperform in the long run.[12] Combined with the positive announcement effect, the evidence establishes that these purchases are value increasing for the public buyers.

In addition to establishing that the long-short portfolio has an alpha statistically indistinguishable from 0, we utilize its point estimate and standard error to establish a lower bound. A point estimate of 0.0018 and standard error of 0.0037, along with a *t* distribution critical value of 1.28, imply that the alpha is larger than −0.00296 with 90% confidence [−0.003 = 0.0018 − (0.0037)(1.28)]. On an annualized basis, this implies an alpha of no less than −3.49%

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[11] For ease of computation, we limit this analysis to domestic acquirers and foreign acquirers that are either listed on a U.S. exchange or have ADRs.

[12] In untabulated results, we also run the same regressions using weighted least squares, weighting each time-series observation by the number of firms in the portfolio. The alpha on the long-only portfolio becomes slightly negative and statistically significant in this specification. However, the alpha on the long-short portfolio remains slightly positive and statistically insignificant when we weight either by the number of firms in the long portfolio, or the sum of the total number of firms in both portfolios.

per year with 90% confidence, a modest worst-case scenario considering that the announcement returns are positive, as discussed above.

4.6. Secondary Buyouts: Are Some Firms Simply Suited to Remain Private?

Given the high returns that 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 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 create 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:

$$P(outcome_i)$$

$$= \Lambda \left[\begin{array}{l} \alpha_i + \beta_{i,1} previous\_portfolio\_co \\ + \beta_{i,2} previous\_subsidiary \\ + \beta_{i,3} previous\_other\_private \\ + \beta_{i,4} \log(lbovalue) + \beta_{i,5} ROA \\ + \beta_{i,6} sales\_growth + \beta_{i,7} time\_held \end{array} \right] \quad (4)$$

$$\sum_{i=1}^{5} P(outcome_i) = 1,$$

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 nonbuyout firm, or held by some nonbuyout-focused private investors, such as a foundation, family, or high net worth individual. 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. *Time_held* is the number of years the portfolio company was held by the sponsor prior to exit. We set sale to a financial buyer as the base exit outcome. Hence, our coefficient estimates measure the extent to which the above variables affect the odds of the other four possible outcomes (IPO, distressed restructuring, sale to strategic buyer, and no exit) *relative* to the odds of sale to a financial buyer.

If certain firms are just better suited to be in private equity sponsor portfolios, then we would expect our estimates of the coefficient on *previous_portfolio_co* to be significantly negative for the IPO and strategic buyer outcomes, because that would indicate that being a portfolio company prior to the current deal makes the other successful exit outcomes less likely than a sale to a financial buyer. 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 *time_held* to be negative in our regressions, because that would indicate that portfolio companies tend to be held longer before being exited via sale to a financial buyer. If poor performance is driving secondary buyouts, then we expect the coefficients on industry *ROA* and *sales_growth* to be positive for the other successful exit outcomes. The results are in Table 9.

First, note that the coefficients on *previously_portfolio_co* are statistically indistinguishable from 0, both jointly and individually, in the strategic buyer and IPO columns. This result implies that having been previously held by a private equity sponsor does not make it any more likely that a portfolio company will be exited via sale to financial buyer than via IPO or sale to strategic buyer. Hence, we have direct evidence against the proposition that some firms are just perpetually better suited to remain as portfolio companies. On the other hand, notice that the coefficient is negative and significant in the *restructured* column, implying that previously being in a sponsor's portfolio makes a portfolio company *less*

Table 9   Analysis of Exit Types

	Exit type			
	Restructured	No exit	Strategic buyer	IPO
Previously_portfolio_co	−1.297***	−0.219	0.146	−0.260
	(0.453)	(0.637)	(0.364)	(0.408)
Previously_other_private	−0.832***	−0.422	0.204	−0.709**
	(0.287)	(0.427)	(0.276)	(0.344)
Previously_subsidiary	−1.475***	−0.542	0.419	−0.170
	(0.320)	(0.487)	(0.274)	(0.317)
Log(*Ibovalue*)	0.152	0.142	0.00646	0.531***
	(0.119)	(0.192)	(0.105)	(0.125)
ROA	−0.750	−2.017*	−0.149	−1.071
	(1.184)	(1.176)	(0.936)	(1.050)
Sales_growth	0.997	−0.307	−0.867	0.237
	(0.658)	(2.798)	(0.916)	(0.709)
Time_held	−0.0960**	0.661***	−0.173***	−0.294***
	(0.0452)	(0.0761)	(0.0341)	(0.0536)
Log(*sales*)	0.217**	0.0855	−0.0398	0.00807
	(0.105)	(0.179)	(0.0870)	(0.106)
Pseudo-R^2	0.138	0.138	0.138	0.138
Observations	877	877	877	877

Notes. Multinomial logistic regression analysis wherein we model the probability of five different buyout exit types: IPO, sale to a strategic buyer, sale to a financial buyer, distressed restructuring, or not exited as of September 30, 2009. Sale to a financial buyer 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 a sale to a financial buyer. The variables *previous_portfolio_co*, *previous_subsidiary*, 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 *Ibovalue* is the enterprise value of the buyout in question. The variables *ROA*, *sales_growth*, and *sales* are, respectively, the return on assets, sales growth, and sales of the median public firm in the portfolio company's four-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 except in cases where no segment data are available and the firm operates in single industry. Heteroskedasticity-robust standard errors are in parentheses.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

likely to enter financial distress. Taken together, the above results imply that being previously held by a private equity firm significantly increases the odds of the three favorable exits (namely, financial buyer, strategic buyer, or IPO), without favoring any one in particular, but making financial distress less likely. Our evidence is inconsistent with the proposition that sponsors use the secondary buyout market to unload bad investments.

Note further that coefficient estimates for *time_held* are both individually and jointly negative and significant in the *strategic_buyer* and IPO columns. This result 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, consistent with 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* are 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.[13]

5.   Conclusions

Using a comprehensive sample of large private equity buyouts from 1993 to 2001, as well as a sample of 216 portfolio companies with public debt bought out between 1996 and 2006, we test and reject the hypotheses that private equity sponsors transfer wealth 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 that its investment policy does not differ from that of a matched sample of public firms. Further, we find that payouts to the sponsor are uncorrelated with future portfolio company distress, inconsistent with sponsors systematically taking advantage of debt investors who finance buyouts. 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 15% 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 firms exited via sale to financial buyer tend to

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[13] 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).

have been held longer, suggesting that private equity sponsors sell to other sponsors when a timely exit of another sort is 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.

Acknowledgments

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