Private Equity Firms' Reputational Concerns and the Costs of Debt Financing

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Abstract

A popular view is that private equity (PE) firms tend to expropriate other stakeholders of their portfolio companies. Bonds offered during 1992-2011 by companies after their initial public offerings (IPOs) do not reflect this view. We find that yield spreads on bonds offered by PE-backed companies are on average 70 basis points lower, holding other things constant. We also find that PE-backed companies have more conservative investment and dividend policies after bond offerings compared to non-PE-backed companies. These results suggest that PE firms' reputational concerns dominate their wealth expropriation incentives and help their portfolio companies reduce the costs of debt.

Key Words: IPOs, Buyout Groups, Private Equity, Reputation, Agency Costs, Bond Offering

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I. Introduction

Private equity (PE) firms, also known as buyout groups, continue to be controversial, with many commentators arguing that these financial sponsors gain at the expense of other stakeholders. An increasing fraction of initial public offerings (IPOs) are sponsored by PE firms.[1] From 1990 to 2000, PE firms were pre-IPO shareholders in 11% of all IPOs in the U.S. For 2001 to 2013, the percentage increased to 30%. In this paper, we examine bond offerings of PE-sponsored companies after the IPO to shed light on the interactions of PE firms with other stakeholders.

Bondholders are important stakeholders for PE-backed companies, and the conflicts of interest between bondholders and shareholders are well documented. Private equity firms, as shareholders, have an incentive to push their portfolio companies to make investment and dividend decisions to the detriment of the companies' bondholders. Since equity can be viewed as a call option on the firm, shareholders of a levered firm can transfer wealth from bondholders by taking risky projects. PE-backed companies can also adopt an aggressive payout policy that could harm bondholders. PE firms sometimes pay themselves big dividends shortly before the IPOs of their portfolio companies. PE firms are also powerful shareholders of their portfolio companies, and they are able to pursue their own interests at the expense of, or to the benefit of, bondholders. If bond investors are concerned about the ability of PE firms to expropriate them, they will "price protect" themselves. We thus have the wealth expropriation hypothesis: Because

[1] An alternative definition of private equity includes buyouts, growth capital, and venture capital, but we will use private equity and buyout in a narrow sense, as synonyms.

PE firms have the incentive and power to expropriate the bondholders of their portfolio companies, such possibilities increase the ex ante cost of public debt financing of PE-backed IPO companies.

The reputational concerns of private equity firms can help to alleviate their incentives to expropriate bondholders. PE firms generally have more than one portfolio company and often deal with bond investors repeatedly. If one of these companies exploits its bondholders, all companies owned and to be owned by the PE firm will likely face a higher risk premium on their bonds and more restrictive covenants (see, e.g., Diamond (1989) and Fang (2005)). One component of a PE firm's reputation capital can be viewed as the present value of its (significant) share of the savings due to lower borrowing costs for its portfolio companies in the long run.[2] To protect this reputation capital, a bond issuer with a PE sponsor has a lesser incentive to engage in opportunistic behavior that hurts bondholders than does a bond issuer without a financial sponsor. A PE firm's reputational concern would also motivate it to help its portfolio companies adopt corporate governance structures that are friendly to bondholders. PE firms are even likely to use their own resources to help their portfolio companies avoid costly bankruptcies (Moody's (2009, 2010)).[3] Since all of these arguments are rooted in PE firms' protection and/or acquisition of reputation capital, we call them the reputation acquisition hypothesis.

We use bonds offered during 1992-2011 by IPO companies to study the role of PE firms. Because we require bond issuers' stock returns during the year prior to bond offerings, we exclude bonds offered during the first 365 calendar days after the IPO. Since PE firms are likely

[2] PE firms are also likely to care about their reputation for other reasons. For example, the limited partners of many PE firms are public pension funds and billionaire investors, who care about their reputation for political and/or social reasons.

[3] Anecdotal evidence also supports this statement. On March 11, 2009, Bloomberg reported that "Apollo, the New York-based private-equity firm run by Leon Black and Joshua Harris that has announced two debt exchanges for its Las Vegas-based casino operator, Harrah's Entertainment, agreed last month to pump as much as $150 million into Realogy, owner of the Century 21 and Coldwell Banker agencies, as it reels from the worsening housing slump."

to play a less important role in their portfolio companies as the time since the IPO increases, we focus on a sample of 329 bonds issued by 204 companies during the four year period at least one year but no more than five years after their IPOs. We also report some results for a sample of 724 bonds issued by 350 companies between one year and ten years after the IPO.

We first estimate ordered logit models for the determination of credit ratings of these bonds at the time of issuance. Under the reputation acquisition hypothesis, PE sponsorship will result in higher bond credit ratings, everything else being equal. Under the wealth expropriation hypothesis, the predictions would be the opposite. After controlling for borrower and issue characteristics, we find that S&P gives slightly higher ratings for bonds issued within five years of the IPO by PE-sponsored companies than for bonds issued by non-PE-sponsored companies. In contrast, bond issues by IPO companies receive similar credit ratings from Moody's whether they are PE-backed or not. These findings provide weak support for the reputation acquisition hypothesis.

We then estimate Ordinary Least Squares (OLS) regressions for the determination of offering yield spreads of these bonds. Bond investors express their opinions through the yields on bonds. If the wealth expropriation hypothesis dominates and investors view bonds offered by PE firms' portfolio companies as having greater default risk, they will require a higher promised return on the bonds. On the other hand, if the reputation acquisition hypothesis dominates and bond investors recognize the value of the PE firms' reputational concerns, PE sponsorship will be associated with lower bond yield spreads, everything else being equal.

We find that yield spreads on bonds issued by PE-backed IPO companies within five years after the IPO are on average 70 basis points lower than those on bonds issued by other IPO companies, after controlling for observed issuer and issue characteristics and unobserved

characteristics as captured by credit ratings, with the PE sponsorship effect being statistically significant at the one percent level. Economically, for an average bond offering of $410 million by our sample IPO companies, the 70 basis point lower yield spread represents a saving of $2.87 million per year on interest payments. With an average maturity of ten years for our bond offerings sample, this annual amount can be translated into a $28.7 million savings if the bond is not retired early. We also find that the yield spread is lower when PE firms maintain higher equity ownership in the issuer during the year before the bond offering. Consistent with the hypothesis that a reputation effect, rather than omitted variables, is causing the yield spread difference, there is no economically or statistically significant effect of PE sponsorship on bonds issued more than five years after the IPO, when most PE firms have exited or are about to exit. These findings provide strong support for the reputation acquisition hypothesis.

To corroborate the results on bond yields and to shed further light on the importance of the presence of PE sponsors after IPOs, we test two more hypotheses. The over-investment hypothesis posits that PE-backed IPO companies invest more aggressively around bond offerings. The excessive dividend hypothesis posits that PE-backed IPO companies are more likely to pay dividends. The rationale for these two hypotheses is simple. With the significant infusion of capital through bond offerings, PE firms as powerful shareholders could induce a portfolio company to take on more and riskier projects or pay dividends if their only goal is to maximize their short-term gains. We find that PE-backed IPO companies invest less and are less likely to pay dividends than other IPO companies during the bond offering year and the following two years. The vast majority of PE-backed companies pay no dividends at all, and those that do pay dividends do not increase dividend payouts after a bond offering. These findings, taken together with our findings of the effects of PE sponsorship on yield spreads, suggest that PE firms do not

expropriate investors who purchase bonds offered by PE-backed companies after the IPO. Our findings are generally consistent with those of Harford and Kolasinski (2013). They find little evidence that PE firms expropriate leveraged buyout (LBO) debt investors via investment and dividend policies of PE-sponsored companies.

The paper makes three contributions. First, the significant increase in PE-sponsored IPOs has drawn attention to the influence of PE firms on their portfolio companies' post-IPO stock and operating performances (Cao and Lerner (2009), Cao (2011), and Guo, Hotchkiss, and Song (2011)). Public debt financing shortly after the IPO provides an important way to shed light on how PE firms can influence a company after the IPO. Our paper thus provides important evidence on the interactions between PE firms and bond investors and the effects of such interactions on external financing.

Second, this paper is related to the literature on the effects of ownership and corporate governance on the cost of debt (e.g., Anderson, Mansi, and Reeb (2003), Ashbaugh-Skaife, Collins, and LaFond (2006), Aslan and Kumar (2012), Francis, Hasan, John, and Waisman (2010), Lin, Ma, Malatesta, and Xuan (2011), and Oritz-Molina (2006)). Our paper complements this literature by providing evidence that PE ownership lowers the cost of debt.

Finally, this paper adds to our understanding of PE firms' reputational concerns and external financing costs.[4] Demiroglu and James (2010) present evidence that borrowing costs are lower for LBO loans sponsored by high reputation PE firms. Ivashina and Kovner (2011) provide evidence that PE-sponsored companies can borrow at a lower cost from banks with which the PE firms have repeated interactions. Harford and Kolasinski (2013) find that, on average, PE firms do not transfer wealth from debt investors who finance buyouts or from

[4] Warga and Welch (1993) provide evidence that bonds of LBO target companies on average experience a negative abnormal return at deal announcements. We focus on wealth transfers between PE firms and the bondholders of their portfolio companies after the IPO.

strategic acquirers of PE-backed companies. Hotchkiss, Smith, and Strömberg (2012) find that buyout-sponsored companies are not more likely to default on their loans and are more likely to survive following bankruptcy, everything else being equal. Cain, Davidoff, and Macias (2012) provide evidence that some PE firms do suffer a reputational loss and incur higher contract termination costs when they fail to execute an agreed buyout contract. Our paper adds to this growing literature by studying publicly issued bonds and the effect of PE firms' reputational concerns on their portfolio companies after the IPO.

II. Data and Descriptive Statistics

A. Sample Construction and Distribution

We use Thomson Reuters's SDC Global New Issues database to identify all public and Rule 144A straight bond offerings of U.S. domestic non-financial firms from 1992-2011.[5] We identify 10,582 such bond offerings that can be linked to stocks in the Center for Research in Security Prices (CRSP) database. The sample is reduced to 6,876 bond offerings after excluding floating rate, putable, exchangeable, perpetual, unit, and enhanced issues and requiring Standard & Poor's Compustat data and non-missing values of key issue characteristics (ratings by both Moody's and S&P, maturity, gross proceeds, and yield to maturity).

We obtain IPO information from the SDC database for firms that went public during 1980-2011 that account for 1,565 bond issues.[6] Lagged values of key firm characteristics from CRSP/Compustat are available for a total of 1,413 post-IPO bond issues, including multiple

[5] Moody's began issuing notch ratings after April 1982 (see, e.g., Livingston and Zhou (2010)). We start our sample period from 1992 because very few bonds were offered by PE-backed IPO companies from April 1982 to 1991. Our results are qualitatively similar if our sample period starts from April 1982. Our results are slightly stronger if our sample period ends in 2007, thus excluding 2008-2011 during which the great recession happened. See Huang and Ramirez (2010), among others, for discussions on 144A bonds.

[6] We thank Jerry Cao for kindly sharing his classifications of PE-backed IPOs. As is common in the literature, IPOs of financial companies (1-digit SIC=6), American Depositary Receipts (ADRs), units, partnerships, and IPOs with an offer price of less than $5 are excluded.

issues by the same company. In particular, United Parcel Services Inc. (UPS), the most frequent issuer, had 94 issues. Keeping only the first post-IPO UPS issue reduces the sample to 1,320 issues by 450 companies, including 329 issues by 204 companies after at least one year and within five years since the IPO, and 724 issues by 350 companies after at least one year and within 10 years since the IPO. As the time since the IPO increases, the influence of PE firms in the IPO companies is likely to decrease. We thus focus on the period of after one year but no more than five years since the IPO, during which the PE-backed companies have 95 offerings and the other companies have 234 offerings. We call these 329 issues the focused sample or the (IPO+1, IPO+5] sample, and we call the 724 bond issues the extended sample or the (IPO+1, IPO+10] sample.[7]

Figure 1 reports the sample distribution sorted on several different dimensions. Graph A of Figure 1 shows the distribution of all bond issues, including those beyond 10 years since the IPO, sorted by IPO type and the number of years from the IPO to the bond offering date. Only a small fraction of companies issue bonds in the years immediately following their IPOs (Helwege and Liang (1996)). For example, during the second year after the IPO, the PE-backed companies have 29 bond offerings and the other (non-PE-backed) companies have 57 bond offerings. Only a small number of bonds are offered more than 14 years after PE-backed IPOs, partly because a firm would have had to go public before 1998 to complete 14 post-IPO years by 2011. Graph B of Figure 1 shows the distribution of the (IPO+1, IPO+5] sample by IPO type and credit ratings. Nearly 62% and 66% of the 329 bonds are rated below investment grade by S&P and Moody's, respectively. The (unreported) patterns in the extended sample are similar.

[7] Our major regression results are robust to whether we include all of the UPS issues or not. For the focused sample of 329 bond issues, after keeping only one UPS issue, Northwest Airlines is the most frequent issuer with nine issues. Our results remain essentially the same if we keep only one Northwest issue. Among the 204 companies, 141 companies had one bond issue, 38 companies had two issues, and 25 companies had more than two issues. In our regressions, we correct the standard errors of the coefficients for potential clustering at the company level.

B. Variable Definitions and Summary Statistics

We first briefly describe the variables used in our credit rating and yield spread regressions. Following the literature (e.g., Anderson, Mansi, and Reeb (2003) and Ashbaugh-Skaife, Collins, and LaFond (2006)), we convert letter ratings by Standard and Poor's and Moody's into scores, with the highest rating (AAA by S&P and Aaa by Moody's) receiving a value of 19 and the rating of CCC- or Caa3 receiving a value of 1.[8] We use these rating scores as the dependent variable in our credit rating regressions. We denote the S&P rating score as *S&P Rating* and the Moody's rating score as *Moody's Rating*. The dependent variable in our yield spread regressions is the percentage yield spread (YIELD_SPREAD (%)), defined as the difference between the bond's percentage yield-to-maturity and the percentage yield-to-maturity on the constant maturity Treasury security with a similar maturity at the time of issuance.

Among the independent variables, we focus on a private equity dummy variable, *PE Dummy*, that equals one for a bond offered by a company that has its IPO sponsored by one or more private equity groups, and zero otherwise. Note that the PE-backed IPOs include both reverse leveraged buyouts, or RLBOs, and the IPOs of PE-backed private firms or divisions of public or private firms that have never gone through public-to-private transactions. Strömberg (2007) documents that most buyout activities consist of acquisitions of private firms rather than of public firms.

We follow the literature to choose the control variables in credit rating and yield spread regressions (e.g., Anderson, Mansi, and Reeb (2003) and Livingston and Zhou (2010)). Table 1 provides the detailed definitions and the summary statistics (means, medians, and standard deviations) of these variables. Given the limited space in the table, we discuss the construction of

[8] Note that our full sample of 1,320 bonds includes 11 bonds with a rating of CCC- and 11 bonds with a rating of Caa3. We do not have any bond with a rating of below CCC or Caa2 in the focused and extended samples. Companies rarely offer new bonds with a rating of below CCC or Caa2 to the public.

the *interest coverage ratio* (ICR) variables here. We use four interest coverage ratio variables, $ICR_{i, t-1}$ (i=0, 5, 10, 20), to capture the non-linear effect of the ICR on credit risk (e.g., Ashbaugh-Skaife, Collins, and LaFond (2006)). The subscript *t-1* refers to the fact that the variable is measured for the fiscal year before the bond offering year. ICR_{t-1} is calculated as operating income after depreciation divided by interest expense during the fiscal year immediately prior to the bond offering date. We set ICR_{t-1} to zero if it is negative and to 100 if it is greater than 100, because a value less than zero or greater than 100 is unlikely to convey additional information. We define $ICR_{i, t-1}$ (i=0, 5, 10, 20) as follows:

	$ICR_{0, t-1}$	$ICR_{5, t-1}$	$ICR_{10, t-1}$	$ICR_{20, t-1}$
$0 \leqslant ICR_{t-1} < 5$	ICR_{t-1}	0	0	0
$5 \leqslant ICR_{t-1} < 10$	5	$ICR_{t-1} - 5$	0	0
$10 \leqslant ICR_{t-1} < 20$	5	5	$ICR_{t-1} - 10$	0
$20 \leqslant ICR_{t-1} \leqslant 100$	5	5	10	$ICR_{t-1} - 20$

Panel A of Table 1 reports the summary statistics for the (IPO+1, IPO+5] sample. For both S&P and Moody's ratings, the bonds offered by PE-backed IPO companies have a median rating of 7, which is BB- for S&P ratings and Ba3 for Moody's. The mean YIELD_SPREAD (%) is 2.96% on the bonds offered after PE-backed IPOs and 3.18% on the bonds after the other IPOs. The difference of 0.22% is economically significant.

The PE-backed IPO companies are on average smaller than the other bond issuers, as measured by market capitalization, although the medians are almost identical. Both the PE-backed and the other IPO companies in our sample are generally much older than IPO companies in general, which have a median age of about eight years, as reported in Table 2 of Loughran and Ritter (2004) and updated on Jay Ritter's website. Among our sample firms, the non-PE-backed

issuers are much more likely to be dividend payers than the PE-backed companies, inconsistent with the excessive dividend hypothesis. The PE-backed IPO companies and the other issuers are equally likely to have incurred a loss in the fiscal year prior to the bond offering. The PE-backed bond issuers in our sample have slightly higher mean and median leverage ratios than non-PE-backed bond issuers, although the IPO companies in our sample are much more highly levered than the IPO companies that do not issue bonds.

Panel B of Table 1 reports the summary statistics of selected variables for the extended sample. Not surprisingly, the issuers in the extended sample are older and have greater market capitalization than the issuers in the focused sample. Again, we do not see much difference in the mean and median leverage ratios between the PE-backed and non-PE-backed companies.

The wealth expropriation and the reputation acquisition hypotheses rely on an implicit assumption that PE firms play an important role in their portfolio companies after the IPO either through their continued ownership and directorships or through the corporate governance and managerial compensation structures they put in place. Although Cao (2011) suggests that this assumption is valid, it is useful to have direct evidence for the IPO companies in our sample. We collect data from EDGAR for all PE- and VC-backed IPO companies after May 1996 that did bond offerings and are thus in our (IPO+1, IPO+5] sample. For the 34 PE-backed companies in our focused sample for which we can find the prospectus, the average equity ownership of the lead buyout sponsor remains above 15% for each of the first five years after the IPO. For over 88% of the buyout-sponsored companies, the lead buyout sponsor has one or more board seats during the first two years, and this percentage remains at about 59% after the fifth annual meeting. This ownership and directorship pattern validates our implicit assumption that buyout firms remain important stakeholders for their sponsored companies during the first five years

after the IPO. For more detailed results and tables, see internet appendix Table A-1 at http://depts.washington.edu/jfqa.

III. Private Equity Sponsorship, Credit Ratings, and Yield Spreads

A. The Effect of Private Equity on Credit Ratings

Credit ratings are useful to issuers, investment banks, and investors. In this section we do multivariate analysis of the effect of private equity on credit ratings and yield spreads of bonds controlling for all related issue and issuer risk attributes. We estimate several variations of the following equation to evaluate the effect of private equity on credit ratings. Note that in this and all of the following equations, a subscript t-1 for a variable indicates that the variable is measured using information prior to the bond offering.

(1) S&P Rating/Moody's Rating = *f* (PE Dummy, DEFAULT_SPREAD, Ln(Proceeds), Ln(Maturity), SHELF_DUM, RULE_144A_DUM , SUBORD_DUM, FIRST_BOND_DUM, Ln(NUM_BONDS), $Ln(Market\ Cap)_{t-1}$, Ln(Age), $DIV\_PAYER\_DUM_{t-1}$, ROA_{t-1}, $LOSS\_DUM_{t-1}$, $ICR_{i,\,t-1}$ (i=0,5,10,20), $Leverage_{t-1}$, $BETA_{t-1}$, STD_RETURN_{t-1}, $RETURN_{t-1}$, $Market\text{-}to\text{-}book_{t-1}$, $Tangibility_{t-1}$, $UTILITY\_DUM_{t-1}$, BOND_YEAR_DUMMIES, IPO_PERIOD_DUMMIES).

Since the credit rating score takes 19 ordinal (i.e., categorical and ordered) values, we estimate ordered logit regressions. Note that the actual values of the rating score in the ordered logit regressions are irrelevant except that larger values correspond to higher rating categories.

Table 2 reports the results. The first two regressions use the (IPO+1, IPO+5] sample of 329 bond issues and the last two regressions use the extended sample of 724 bond issues. The dependent variable is the rating score by S&P in regressions (1) and (3), and the rating score by Moody's in regressions (2) and (4). In all four regressions, we include year dummy variables to capture changes in the macroeconomic environment for bond issuance, and three IPO period

dummy variables (1980-1989, 1990-1998, and 1999-2000) to control for potential differences over time in the quality of companies going public. For brevity, the coefficients and the z-statistics for the bond offering year and IPO period dummies are not reported.

The coefficients for the control variables are largely as expected and are consistent with the literature. We are particularly interested in the coefficient on the dummy variable for PE sponsorship, *PE Dummy*. The coefficient of 0.75 in regression (1) is statistically significant at the 10% level, but is not statistically significant in the other three regressions. The results suggest that, after controlling for observable issue and issuer characteristics, there is some weak evidence that S&P views bonds offered by the PE-backed IPO companies as being less risky than bonds offered by the other IPO companies.

Although it is surprising, given our subsequent findings, that the credit rating results do not provide strong support for the reputation acquisition hypothesis, weak results can arise for the following reasons. First, credit ratings can be biased because of imperfections in the rating process (e.g., John, Lynch, and Puri (2003)). The recent controversies over ratings given to mortgage-backed securities have amply demonstrated this bias. Second, since rating agencies do not buy the bonds with their own funds, they do not always have an incentive to do adequate due diligence and provide unbiased ratings (e.g., Griffin and Tang (2011)). Third, if rating agencies believe that private equity firms' wealth expropriation incentives largely offset their reputational concerns, we would also find an insignificant relation between PE sponsorship and credit ratings.

B. The Effect of Private Equity on Yield Spreads

In this section we study the view of bond investors regarding the role of private equity firms in their portfolio companies' post-IPO bond offerings. If the wealth expropriation hypothesis dominates, investors will require a higher yield on the bonds offered after PE-backed

IPOs. On the other hand, if the reputation acquisition hypothesis dominates and bond investors have developed a trust with private equity firms, the investors in bonds issued by PE-backed companies would face less default risk and a higher recovery rate if default does happen. They will then require a lower yield on the bonds offered after PE-backed IPOs. To distinguish between these competing arguments, we estimate several variations of the following equation:

(2) YIELD_SPREAD(%) = *f* (PE Dummy, DEFAULT_SPREAD, Ln(Proceeds), Ln(Maturity), SHELF_DUM, RULE_144A_DUM, SUBORD_DUM, NET_DEBT_t, FIRST_BOND_DUM, LN(NUM_BONDS), $Ln(Market\ Cap)_{t-1}$, Ln(Age), $DIV\_PAYER\_DUM_{t-1}$, ROA_{t-1}, $LOSS\_DUM_{t-1}$, $ICR_{i,\,t-1}$ (i=0,5,10,20), $Leverage_{t-1}$, $BETA_{t-1}$, STD_RETURN_{t-1}, $RETURN_{t-1}$, $Market\text{-}to\text{-}book_{t-1}$, $Tangibility_{t-1}$, $UTILITY\_DUM_{t-1}$, BOND_YEAR_DUMMIES, IPO_PERIOD_DUMMIES, S&P Rating_RES, Moody's Rating_RES).

In the previous sub-section, we examined the variables that are expected to explain credit ratings. In this sub-section, we continue to include these variables as independent variables in the yield spread regressions defined in Eq. (2). If bond investors and credit rating agencies have the same interpretation of information, then statistically significant variables in credit rating regressions will continue to be statistically significant with an opposite sign in yield spread regressions that do not include credit ratings, while statistically insignificant variables will remain statistically insignificant.

Credit rating agencies such as Standard & Poor's and Moody's use information beyond that from Compustat to evaluate credit risk. Controlling for credit ratings in yield spread regressions should help to sharpen our examination of the determination of yield spreads. If credit ratings are included as additional independent variables in yield spread regressions, however, they are likely to pick up the effects of the other independent variables. Similar to Anderson, Mansi, and Reeb (2003), we thus include purged S&P and Moody's ratings as

additional independent variables in our yield spread regressions to avoid this problem. The purged S&P rating (*S&P Rating_RES*) is the residual from an OLS regression with the S&P rating as the dependent variable and the independent variables used in the previous sub-section as independent variables. Thus, the purged S&P rating is orthogonal to the independent variables. The purged Moody's rating (*Moody's Rating_RES*) is the residual from an OLS regression with the Moody's rating as the dependent variable and the S&P rating, in addition to the other independent variables, as an independent variable. Thus the purged Moody's rating is also orthogonal to the S&P rating.[9]

Table 3 reports the regression results for both the (IPO+1, IPO+5] sample and the (IPO+1, IPO+10] sample. We estimate regressions (1), (2), and (3) for the focused sample and regression (4) for the extended sample. We use regression (1) as the baseline regression. The coefficient of -0.70 on the PE Dummy in regression (1) is statistically significant at the 1% level, and suggests that yield spreads of bonds offered by PE-backed IPO companies are on average 70 basis points lower than bonds offered by other companies.[10] Given the average proceeds of $410 million for the bonds in the focused sample, the 70 basis points reduction in the yield spread represents savings of roughly $2.87 million each year for an average bond issue. Since the average bond maturity is ten years, the issuer's interest savings average $28.7 million over the life of the bond.

We include NET_DEBT_t, which is defined as the change in the book value of debt (excluding convertible debt) during the bond offering fiscal year scaled by the beginning-of-year assets, as an additional control variable in regression (2) of Table 3. The use of current bond

[9] Our major results are slightly stronger if we use the credit rating scores instead of the residuals.

[10] In an untabulated model specification, we include a dummy variable that equals one when multiple private equity firms are major shareholders of the company at the IPO, and equals zero otherwise (see Officer, Ozbas, and Sensoy (2010) for discussions on club deals). The coefficient on this variable is not statistically significant, and the coefficient on the PE dummy is not significantly affected. Our results are also qualitatively similar if we control for the 17 industry fixed effects, using Ken French's classification at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/. The results are also similar if we control for the effects of only the five industries in which our sample companies issued the most bonds.

offering proceeds could affect the risk level of the company. For example, risk may be reduced if long-maturity debt is used to retire existing senior debt, or risk may increase if the proceeds are used to take on risky projects. Furthermore, the issuing firm could also have an external financing plan in place at the time of the bond offering and the expected future debt offerings can affect the risk level of the current bond offering. We do not include NET_DEBT_t in the baseline regression because this variable could introduce a look-ahead bias.

As expected, the coefficient on NET_DEBT_t in regression (2) is positive and statistically significant at the 10% level, suggesting that net debt issuance during the same fiscal year is positively related to the current bond yield spread. Importantly, the coefficient on the PE Dummy changes only slightly from -0.70 to -0.67 and remains statistically significant at the 1% level.

Since the literature suggests that debt issuers could simultaneously determine yield spreads and other issue characteristics (e.g., issue size, maturity, registration method, market, and subordination), we thus estimate a reduced-form regression (3) by excluding other issue characteristics from the set of independent variables. The coefficient on the PE Dummy changes slightly to -0.56 in regression (3) and remains statistically significant at the 1% level. Economically, the 56 basis point reduction in offering yield spreads still represents interest savings of about $2.30 million each year for an average bond issue.

These results suggest that bond investors view bonds offered by PE-backed IPO companies as being less risky than other bonds, consistent with Kaplan and Strömberg (2009), who find a lower default rate for companies that go through leveraged buyouts.[11] Bond investors

[11] For all US bond issuers rated by Moody's, the average annual default rate is about 1.6% during 1980-2002 (Moody's (2006)). In comparison, Kaplan and Strömberg (2009) document an average default rate of 1.2% per year for a large sample of PE-sponsored buyout transactions occurring during 1970-2002. The lower default rate is surprising, because the LBO companies often have higher debt ratios than other companies (see Figure 1 of Axelson, Jenkinson, Strömberg, and Weisbach (2013)). Kaplan and Strömberg suggest that a lack of data for some post-transaction outcomes could be responsible for the lower measured default rate for LBOs. Our analysis of yield spreads for public companies circumvents this potential problem.

do not appear to punish PE-backed IPO companies for PE firms' wealth expropriation incentives, perhaps because PE firms do not want to tarnish their reputation by taking advantage of bondholders. These results thus are supportive of the reputation acquisition hypothesis.

The role of PE firms in a PE-backed company is likely to decline as the time from the IPO increases. We thus expect the coefficient on the PE Dummy to be larger and more statistically significant for the (IPO+1, IPO+5] sample than it is for the extended sample. As expected, the effect of PE firms on yield spreads of -0.29 for the extended sample, as reported in regression (4) of Table 3, is much smaller in absolute value than the -0.70 reported in regression (1) for the focused sample. Indeed, in unreported regressions with the sample being restricted to the 395 bond offerings in years [IPO+6, IPO+10], the PE dummy variable coefficient is an economically and statistically insignificant -5 basis points.[12] This result suggests that the significance of the coefficients on the PE Dummy for the (IPO+1, IPO+5] sample is not driven by issuer fixed effects for which we do not (and cannot) control, because otherwise the PE Dummy coefficients would not be indistinguishable from zero for bond offerings after year 5, when very few companies still have appreciable ownership by their pre-IPO PE sponsors.

The coefficients for the control variables are generally consistent with the literature. For brevity, we will only highlight the rating variables. The coefficients for both variables are reliably negative in all of the regressions. In the baseline regression (1) for the focused sample, the standard deviations of S&P Rating_RES and Moody's Rating_RES are 2.06 and 0.78, respectively (untabulated). Therefore, one standard deviation increases (better ratings than

[12] An alternative specification using the 724 observations of bond offers between years 2 and 10 that interacts the PE dummy with the post-IPO year of the bond offering results in coefficients that decline with the time since the IPO: -66 basis points in year 2, -59 bp in year 3, -34 bp in year 4, -79 bp in year 5, -20 bp in year 6, -15 bp in year 7, -7 bp in year 8, +18 bp in year 9, and +6 bp in year 10. The year 2, 3, and 5 coefficients have t-statistics greater than 2 in absolute value, with standard errors being adjusted for clustering at the company level. We discuss further analysis with more detailed PE ownership information (and a smaller sample due to data limitations) in Section V. These results all suggest that the presence of PE firms matters for bond yield spreads.

predicted) of S&P Rating_RES and Moody's Rating_RES correspond to decreases of about 62 and 17 basis points, respectively, in the yield spread in regression (1). These results suggest that credit ratings contain useful information to explain yield spreads at the time of issuance beyond what is captured by the observable issuer and issue characteristics.

To summarize, the results in Table 3 are consistent with the hypothesis that the reputational concerns of private equity firms and their repeated interaction with bond investors help alleviate the typical conflicts of interest between equityholders and bondholders, resulting in a lower yield spread for bond offerings by PE-backed IPO companies.

IV. Investment and Dividend Decisions of Private Equity-Backed Companies

In addition to the "symptoms" shown in the bond offerings, if the reputation acquisition hypothesis dominates, we would be able to observe that PE firms help to alleviate the agency problems between equity and bondholders in corporate decisions. To shed light on this issue, we examine the investment decisions of PE-backed and non-PE-backed IPO companies in Section IV.A. In Section IV.B, we examine their dividend policies.

A. Private Equity Firms and Their Portfolio Companies' Investment Decisions

Agency problems among equityholders, bondholders, and the managers of a company can influence the company's investments in various ways that affect firm value and/or result in wealth transfers among different stakeholders. Theoretically, investment can either benefit or harm bondholders. Increases in investment often result in lower future stock returns, possibly due to empire building (Billett, Flannery, and Garfinkel (2011) and Titman, Wei, and Xie (2004)). Asset growth is also related to lower stock returns (Cooper, Gulen, and Schill (2008)). If lower stock returns are simply due to taking projects with lower marginal returns while the cash

flows and tangible assets of the firm are nevertheless growing, more investment could be beneficial to bondholders. However, if debt financing is used to support asset growth, the increased leverage is likely to be bad news for bondholders.

On the other hand, underinvestment could also harm bond investors (Myers (1977)). However, underinvestment is unlikely to be a concern for a firm during the period right after a bond offering. As discussed earlier, empirical studies find that firms that raise external capital and invest more are more likely to have poor post-issue stock performance. If reputational concerns are not important, the PE sponsors of an IPO company would have an incentive to engage the company in more aggressive investments, everything else being equal.[13] We call this hypothesis the over-investment hypothesis, as discussed in the introduction.

Following the literature, we use a firm's capital expenditures scaled by beginning-of-year tangible assets to measure the investment level. We use the average of the three-year investment levels beginning with the bond offering year as the dependent variable because the longer term investment policies are more relevant for bond investors. Issuer size (market capitalization), age, profitability (ROA and market-to-book ratio), leverage, and other related variables are included as control variables (see, e.g., Polk and Sapienza (2008) and Becker, Cronqvist, and Fahlenbrach (2011)). The specification of regression (1) is as follows:

(3) Average CAPX÷TANG(%)$_{t,\ t+2}$ = f (PE Dummy, Tangibility$_{t-1}$, Ln(Market Cap)$_{t-1}$, Ln(Age), DIV_PAYER_DUM$_{t-1}$, ROA$_{t-1}$, LOSS_DUM$_{t-1}$, Leverage$_{t-1}$, Market-to-book$_{t-1}$, UTILITY_DUM$_{t-1}$, BOND_YEAR_DUMMIES, IPO_PERIOD_DUMMIES).

The results of the baseline regressions are reported in columns (1) and (2) in Table 4. The means and standard deviations of the dependent variables (in percentages) are reported at the top

[13] One key prediction of the underinvestment argument in Myers (1977) is that a firm's powerful shareholders would transfer wealth from the bondholders by having the firm skip positive NPV projects and pay excessive dividends. However, our analysis of the dividend policies in the next sub-section suggests that buyout-sponsored companies are not more likely to engage in aggressive payout policies.

of the table. Both regressions, as well as regressions (3) and (4), are Tobit regressions since capital expenditures and R&D are always non-negative. For comparison purposes, in regression (2), we include the lagged dependent variable, while we do not in regression (1). To avoid losing many observations, we use the lagged one year investment level instead of the lagged three-year average. The very significant coefficient on the lagged dependent variable suggests that investment levels are quite persistent. To focus on the changes in investment levels and to remain conservative, we will focus on regression (2), which includes lagged CAPX÷TANG(%) as a control. The coefficient on the PE Dummy of -8.63% is about 27% of the mean investment level (in absolute values) for all IPO companies that issue debt, and is statistically significant at the 5% level. So both statistically and economically, the regression results suggest that PE-sponsored IPO companies pursue a conservative investment policy after they do bond offerings. This suggests that the alternative of the over-investment hypothesis is true.

The literature also uses capital expenditures scaled by total assets or uses capital expenditure plus R&D scaled by total assets as measures for investment levels (e.g., Agrawal and Nasser (2012), Anderson, Duru, and Reeb (2012), among others). We report the results using these two measures in regressions (3) and (4). Following Frank and Goyal (2003), we also use a broader and cash flow-related measure of investment that includes acquisitions and sales of assets in addition to capital expenditures. The results are reported as regression (5), which is an OLS regression. The coefficient on the PE Dummy remains negative in regressions (3)-(5), and is statistically significant at the 10% level in regression (5).

Overall, the Table 4 results suggest that even after the IPO, companies backed by private equity firms adopt a more conservative investment policy that is friendly to bondholders, consistent with the reputation acquisition hypothesis. Similarly, Harford and Kolasinski (2013)

do not find that PE firms transfer wealth from debt investors in LBO financing via investment policies of their portfolio companies. They report that the investment policy of buyout-sponsored companies does not differ from that of comparable public companies. Their sample companies, unlike ours, do not have large capital injections from IPOs and bond offerings.

B. Private Equity Firms and Their Portfolio Companies' Dividend Policies

Bond investors are always concerned about cash payouts to equity holders. Given the popular view of PE firms' big payout habits, it is interesting in itself to examine the influence of private equity firms on their portfolio companies' dividend payouts. More particularly, if the wealth expropriation hypothesis dominates, we would observe high dividend payouts after bond offerings by PE-backed companies. We call this the excessive dividend hypothesis. On the other hand, if private equity firms' reputation concerns at least offset their incentive to expropriate bond investors, we would expect that PE-backed IPO companies adopt no more aggressive dividend policies than other IPO companies.

We report information regarding dividend policies in Panel A of Table 5. For the 204 companies that make at least one bond offering that is included in our focused sample, we compare their dividend policies from the most recent fiscal year that ends before the IPO date (year IPO-1) to the sixth fiscal year that ends after the IPO date (IPO+5). Note that the IPO year is defined as the first fiscal year that ends after the IPO offer date, and part of it is before the IPO. For each fiscal year, we first report the total number of sample companies and the number of companies that do pay dividends. Note that the total number of companies varies from year to year and can be less than 204 companies because of missing data. Consistent with the issuer characteristics that suggest that PE-backed IPOs are more leveraged and more financially constrained, PE-sponsored companies are less likely to pay dividends before and after the IPO.

In the other columns of Panel A of Table 5, we report the payout ratio, the dividend yield, and the dividends/assets ratio, conditioning on the company paying dividends. We follow Barclay, Holderness, and Sheehan (2009) and use three different measures to capture the relative dividend size. The dividend payout ratio (DIV_PAYOUT) is expressed as a fraction and is defined as common dividends in the fiscal year divided by earnings before extraordinary items. The dividend yield (DIV_YIELD (%)) is defined as common dividends per share in the fiscal year as a percentage of end-of-year stock price per share, or common dividends in the year as a percentage of end-of-year market value of equity if dividends per share are missing. For fiscal year IPO-1, the end-of-year market value of equity is set to the market value of equity at the market close on the IPO date. The *Dividends/Assets* ratio is common dividends in the fiscal year as a percentage of beginning-of-year total assets. For all three measures, the mean is always greater than the median, and in many cases the difference is quite large. This positive skewness is mostly driven by small denominators, not by large dividends.

Bondholders are more at risk if a company pays a large dividend in any particular year. So for all three measures, we report the percentage of dividend-paying companies that pay big dividends. For both the payout ratio and the dividends/assets ratio, we do not see a clear pattern on whether PE-backed payers are more likely to pay big dividends (dividend payout ratio≥30% or dividends/assets ≥5%) than other payers. For dividend yields, PE-backed payers are more likely to pay big dividends (dividend yield ≥5%) than other payers except for year IPO+4.

Bondholders will be concerned if the company cannot generate enough cash to support its dividend payments. So in addition to the mean, median, and percentage of ≥30% dividend payers, we also report the payout ratio at the 75th percentile and the maximum. For the PE-backed IPO companies, the payout ratio at the 75th percentile is 5.58 (or 558% of earnings) and the maximum

is 10.67 in the year before the IPO, conditional on paying a dividend. In the IPO year, the payout ratio of the PE-backed IPO companies at the 75th percentile and the maximum are, respectively, 0.52 and 3.70.

This pattern of higher payouts by PE-backed IPOs before the IPO is an indication of special dividend payouts by a minority of the companies. Most PE-backed companies do not pay any dividends. These patterns are consistent with the pre-IPO dividend payout pattern for the broad IPO sample reported by Martin and Zeckhauser (2011). Therefore, although a few PE-backed companies have grabbed media attention when they paid big dividends, the vast majority of PE-backed companies in our sample have clearly protected their bond market reputation and refrained from paying big dividends or any dividends at all.

The summary statistics in Panel A of Table 5 are aligned by the IPO date. To provide a clearer measure of the dividend policy around the bond offering date and to provide a background measure for the dependent variables used in the regressions reported in Panel C, we report the summary statistics of the sample aligned by the bond offering date in Panel B. Note that the mean values of all dividend measures for either group of IPOs in this panel are much smaller than those in Panel A, because in this panel we include the non-dividend payers in the mean calculations, and these are the majority of the sample. Another difference between Panels A and B is that the payout ratio is reported as a fraction in Panel A and as a percentage in Panel B. Despite the calculation differences, both panels present the same pattern: The vast majority of PE-backed IPO companies have a conservative dividend policy.

We report the regression results in Panel C of Table 5 for dividend policies during the fiscal year of the bond offering and the following two years. Our choice of control variables and their coefficients are generally consistent with the literature (e.g., Bodnaruk and Östberg (2013)

and DeAngelo, DeAngelo, and Skinner (2008)). To control for potential changes in the propensity to pay, instead of a dummy variable for each bond offering year, for the regressions in this table we only include one dummy variable, which equals one for bonds offered in the 1990s and zero otherwise, because dividend policies are quite persistent. Below we focus our discussions on the coefficients on the *PE Dummy*. The dependent variable in regressions (1) and (2), $\text{DIV\_PAYER\_DUM}_{t,\,t+2}$, is a dummy variable that equals one if the issuer pays a dividend in at least one of the three years during the fiscal year of the bond offering and the next two years, and zero otherwise. The specification of logit regression (1) is as follows:

(4) $\text{DIV\_PAYER\_DUM}_{t,\,t+2} = f$ (PE Dummy, Tangibility_{t-1}, $\text{Ln(Market Cap)}_{t-1}$, Ln(Age), ROA_{t-1}, Loss Dummy_{t-1}, Leverage_{t-1}, BETA_{t-1}, STD_RETURN_{t-1}, RETURN_{t-1}, $\text{Market-to-book}_{t-1}$, UTILITY_DUM_{t-1}, BOND_PERIOD_DUMMY, IPO_PERIOD_DUMMIES, $\text{DIV\_PAYER\_DUM}_{t-1}$).

In regression (1), the coefficient on the PE Dummy is negative and statistically significant at the 10% level. This result suggests that PE-backed issuers are less likely to pay dividends than other issuers. When the lagged dependent variable is included in regression (2), however, the coefficient on the PE Dummy becomes indistinguishable from zero. The result suggests that PE-backed and non-PE-backed issuers are not different in initiating or discontinuing dividends during the bond offering year and the following two years.

Beyond the likelihood of paying dividends, it is also interesting to know if PE-backed companies pay big dividends during the bond offering year. Since the size of a dividend can never be less than zero, we estimate Tobit regressions (3)-(6) to take the censoring effect into account. To see if the PE-backed issuers' dividend policy would take a more aggressive trajectory after the bond offering, we use the three-year average dividend ratios from the bond offering year t to t+2 as the dependent variables.

The coefficient on the PE Dummy in regression (3) is negative and statistically significant at the 5% level when the lagged dividend payout ratio is not used as a control variable.[14] In regression (4), for which the lagged payout ratio is included, the coefficient on the PE Dummy is negative and statistically significant at the 10% level. Everything else being equal, the PE-backed issuers have more conservative dividend payments relative to their earnings. We also estimate Tobit regressions using the dividend yield and the dividend/assets ratio in regressions (5) and (6). PE-backed companies do not have a higher dividend yield or dividends/assets ratio.

Overall, the reported summary statistics and the regression results are not consistent with the excessive dividend hypothesis. A vast majority of PE-backed companies pay no dividends, and those that do pay dividends do not increase dividend payouts after a bond offering. These results suggest that private equity firms are less likely to engage in actions that could potentially hurt bondholders, consistent with the reputation acquisition hypothesis. Our results are consistent with those of Harford and Kolasinski (2013). In addition, they find no relation between payouts of PE-backed companies and the odds of a bankruptcy or out-of-court distressed restructuring.

V. The Effect of PE Ownership on Yield Spreads and Other Robustness Tests

The Table 3 results showed that bond yield spreads are lower when a PE sponsor is present. If this effect is due to the PE sponsors' reputational concerns, as we have argued, one would expect that the influence of private equity firms is stronger if PE firms retain substantial ownership in their portfolio companies at the time of debt issuance, when freshly raised debt capital makes subsequent wealth transfers easier. We thus collect private equity ownership data

[14] The dividend payout ratio (%) is winsorized at 200% in all regressions to reduce the impact of the outliers on the estimate of the slope coefficients on the PE Dummy. It is worth pointing out that the winsorization does not qualitatively change the statistical significance of the coefficient estimates.

from the proxy statements of the PE-backed companies prior to the bond offerings. We then replace the *PE dummy* with PE dummy variables with various ownership cutoffs. For example, with the same model specification as regression (1) in Table 3, we replace *PE dummy* with *PE30_DUM*, which equals one if the bond is offered by a PE-backed IPO company with at least 30% ownership by the original PE sponsors immediately prior to the bond offering, and zero otherwise, and a second dummy variable, *PE_OTHER_DUM*, which equals one if the bond is offered by a PE-backed IPO company but the PE ownership prior to the bond offering is either missing or less than 30%, and zero otherwise. For the focused sample, *PE30_DUM* equals one for 35 bonds. The regression coefficient on *PE30_DUM* is -0.99 and is statistically significant at the one percent level.

Detailed regression results and discussions are included in the internet appendix at http://depts.washington.edu/jfqa. Overall, the results support the reputation acquisition hypothesis. The lower yield spreads for bond offerings by PE-sponsored IPO companies are not merely because the issuing companies had been involved in a buyout. A stronger presence by the original PE sponsors at bond issuance results in even lower yield spreads for the company.

In the internet appendix, we also report and discuss the results of several other robustness tests. In particular, we examine whether differences in covenant usage between bonds issued by PE-backed and non-PE-backed companies can account for our findings. We do not find any material difference in covenant usage between bonds issued by PE-backed and non-PE-backed companies. We also examine whether companies that have venture capital (VC) sponsors, rather than buyout sponsors, are able to sell bonds at low yield spreads. Although the small sample size makes us hesitant to reach any strong conclusions, the evidence is consistent with our decision to pool VC-sponsored issues with the "other" issuers rather than the buyout-backed issuers – the

coefficients on the VC dummy are indistinguishable from zero in both credit rating and yield spread regressions.

The internet appendix also includes discussions of some other unreported robustness tests that we have conducted regarding possible omitted variable biases. For example, we use the three-year averages of ROA, ICR_0-ICR_{20}, and Leverage to reduce noise in the one-year measures. We control for the difference in earnings stability between PE-backed and non-PE-backed companies. We compare the impact of PE sponsorship for RLBOs vs. non-RLBOs as well as young issuing companies (below median age) vs. old issuing companies (above median age). We also compare the PE-sponsored issues with a sample of non-PE-backed issues identified using a propensity score matching procedure for the (IPO+1, IPO+5] sample. The bottom line is that all of these robustness tests do not uncover any patterns that suggest that our conclusions are flawed.

That said, it is always possible that an omitted variable that we have not yet identified could be responsible for our findings. As with almost all corporate financing actions, the decision to issue bonds is endogenous, and we cannot conclusively rule out the possibility that our results are affected by an endogeneity bias that we have not controlled for.

VI. Conclusion

Private equity firms (buyout groups) play an important role in preventing corporate managers from squandering free cash flow (Jensen (1989)). Since PE-backed companies rely heavily on private and public debt financing, it is important to know whether PE firms help to reduce the conflicts between shareholders and bondholders of their portfolio companies. To address this question, we examine the role of PE firms in bond offerings after the IPO of their sponsored companies. More specifically, we examine the effect of PE firms on bond ratings and

yield spreads at the time of bond issuance and the post-issuance investment and dividend policies of the issuing companies. To the best of our knowledge, this is the first paper on the role of PE firms in post-IPO bond offerings. Our focus on bond offerings after the IPO allows us to control for a comprehensive list of issuer characteristics that potentially explain the differences in the risk of public debt and in corporate decisions between PE-backed and non-PE-backed IPO companies.

We test two competing hypotheses. The wealth expropriation hypothesis suggests that PE firms will use their powerful blockholder status in their portfolio companies to transfer wealth from bondholders to themselves. This hypothesis implies that bond investors will require higher yields ex ante on bonds issued by PE-sponsored companies. The reputation acquisition hypothesis suggests that, as blockholders, PE firms have reputational concerns and do not adopt opportunistic corporate policies for their portfolio companies. This in turn suggests that PE-backed companies are able to offer lower yields on their debt offerings.

We present evidence that PE firms help to reduce the cost of public debt for their portfolio companies. Yield spreads on bonds offered by PE-backed IPO companies are on average 70 basis points lower than those on bonds by other IPO companies during the period of at least one year but no more than five years after the IPO, after controlling for other issuer and issue risk attributes. There is some evidence that Standard & Poor's views PE sponsorship as reducing bond credit risk. There is also evidence that PE-backed IPO companies are less likely to pay dividends, and that they invest more conservatively than other IPO companies during the three fiscal years following bond offerings. We also find that PE ownership is negatively related to the cost of debt for PE-sponsored companies. Our findings suggest that bond investors and credit rating agencies do not view PE firms as a threat to bondholders at the time of bond

offerings, and PE-backed companies do not pursue investment and dividend policies that hurt bondholders after bond offerings. These results are consistent with the reputation acquisition hypothesis.

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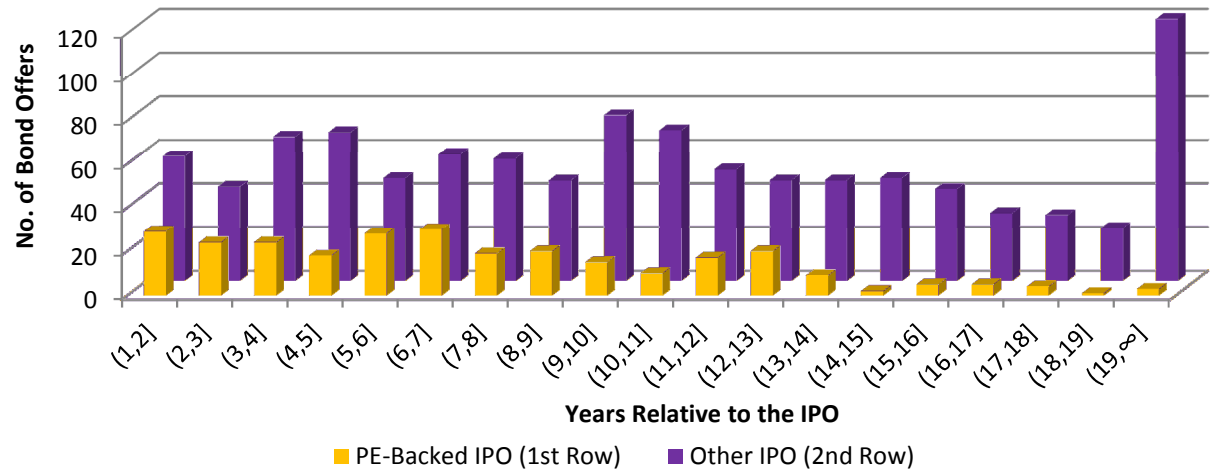
Figure 1: Sample Distribution

For the full sample of 1,320 post-IPO bond offerings from 1992-2011 by 450 companies that went public between 1980-2011, Graph A shows the number of bond offerings by IPO type (i.e., private equity (PE)-backed or not) and the number of years after the IPO, defined as the number of years from the IPO date to the bond offering date. (t, t+1] denotes that the number of years since the IPO is greater than t and less than or equal to t+1. Bond offerings within one year after the IPO are excluded from our analysis because we require information on firm characteristics for the fiscal year prior to the bond offering date and the stock return during the one year period prior to the bond offering date. The (IPO+1, IPO+5] sample includes 329 bonds offered by 204 companies at least one year after but no more than five years after the IPO, and the (IPO+1, IPO+10] sample includes all 724 bonds offered by 350 companies at least one year but no more than 10 years after the IPO. Graph B shows the distribution of ratings by S&P and Moody's (in parentheses), respectively, for the 329 bond issues in the (IPO+1, IPO+5] sample. The rating distributions for the (IPO+1, IPO+10] sample are similar and are not reported.

Graph A. Distribution by Number of Years after the IPO



Graph B. Distribution by Rating of Bonds in the (IPO+1, IPO+5] Sample

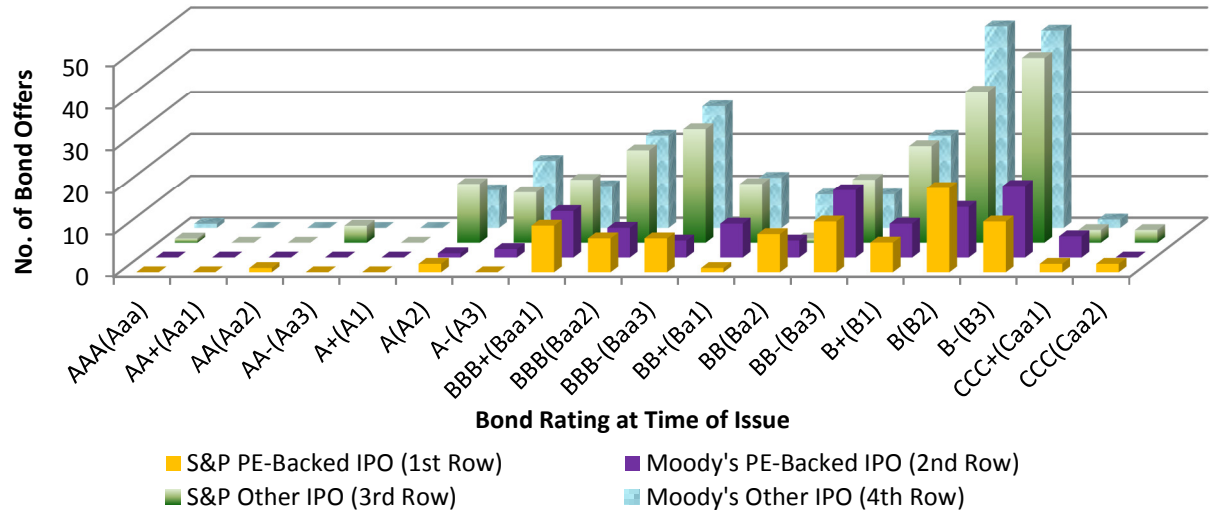


Table 1. Summary Statistics for Post-IPO Bond Issues

This table reports the means, medians, and standard deviations of the variables used in our regressions. Panel A shows the summary statistics for the (IPO+1, IPO+5] sample that includes bonds offered during the four years at least one year but no more than five years after the IPO. Panel B shows the summary statistics for the (IPO+1, IPO+10] sample that includes all bonds offered at least one year but no more than 10 years after the IPO. We only report the summary statistics for the key variables for the extended sample in Panel B. Std. denotes standard deviation. *S&P Rating* and *Moody's Rating* are scores of S&P rating and Moody's rating, respectively, where 19=AAA (S&P) or Aaa (Moody's) and 1=CCC- (S&P) or Caa3 (Moody's). YIELD_SPREAD(%) is the difference between the percentage yield-to-maturity on the bond and the percentage yield on constant maturity Treasuries with a similar maturity at issuance (3-month Treasury if Maturity ≤ 0.45, 6-month Treasury if 0.45 < Maturity ≤ 0.75, 1-year Treasury if 0.75 < Maturity ≤ 1.5, 2-year Treasury if 1.5 < Maturity ≤ 2.5, 3-year Treasury if 2.5 < Maturity ≤ 4, 5-year Treasury if 4 < Maturity ≤ 6, 7-year Treasury if 6 < Maturity ≤ 8.5, 10-year Treasury if 8.5 < Maturity ≤ 20, and 30-year Treasury if 20 < Maturity). DEFAULT_SPREAD(%) is the percentage yield difference between Moody's Baa and Aaa rated corporate bonds at http://woodrow.mpls.frb.fed.us/ research/data/us/. *Proceeds* is the gross proceeds from the bond offering in billions of dollars of January 2011 purchasing power. *Maturity* is the number of years from the offering date to the maturity date of the bond. SHELF_DUM is a dummy variable that equals one for shelf registered bonds and zero otherwise. RULE_144A_DUM is a dummy variable that equals one for Rule 144A bonds and zero otherwise. SUBORD_DUM is a dummy variable that equals one for subordinated bond issues and zero otherwise. FIRST_BOND_DUM is a dummy variable that equals one if the current bond issue is the first bond issue by the issuer and zero otherwise. NUM_BONDS is the number of prior bond offerings by the issuer including the current offering and pre-IPO bond offerings, if any. *Market Cap*$_{t-1}$ is the market capitalization of the issuer (Compustat items CSHO × TEM PRCC_F) at the fiscal year end immediately prior to the bond offering, in billions of dollars of January 2011 purchasing power. *Age* is the number of years from the issuer's founding date to the bond offering date. The founding date of a RLBO firm is the founding date of its predecessor company and is taken from the Field-Ritter dataset available on Jay Ritter's website (Loughran and Ritter (2004)). DIV_PAYER_DUM$_{t-1}$ is a dummy variable that equals one if the issuer paid a dividend (item DVC>0) during the fiscal year immediately prior to the bond offering date, and equals zero otherwise. ROA$_{t-1}$ is the issuer's net income (item NI) during the fiscal year immediately prior to the bond offering date divided by total assets (item AT) at the beginning of the fiscal year. LOSS_DUM$_{t-1}$ is a dummy variable that equals one if item NI during the fiscal year immediately prior to the bond offering date is negative and zero otherwise. ICR$_{i,\,t-1}$ (i=0,5,10,20) are defined using the interest coverage ratio (operating income after depreciation / interest expense, or item OIADP / item XINT) during the fiscal year immediately prior to the bond offering date (see the text for details). *Leverage*$_{t-1}$ is the book value of debt (total liabilities + minority interest – deferred taxes and investment tax credit + liquidating value of preferred stock – convertible debt, Compustat items LT+MTB-TXDITC+PSTKL-DCVT) divided by total assets (item AT) at the fiscal year end immediately prior to the bond offering date. Note that convertible debt (DCVT) is set to zero if it is missing in Compustat. BETA$_{t-1}$ and STD_RETURN(%)$_{t-1}$ are the beta coefficient and the standard error of residuals, respectively, from the market model using the equal-weighted CRSP market index and daily close-to-close percentage returns over the 200 trading days ending 11 days prior to the bond offering date. RETURN$_{t-1}$ is the difference between the buy-and-hold return on the issuer's stock and the buy-and-hold return on the equal-weighted CRSP market index during the one year period prior to the bond offering date. *Market-to-book*$_{t-1}$ is the sum of the market value of equity (items CSHO × PRCC_F) and the book value of debt (items LT + PSTKL – TXDITC) divided by the book value of total assets (item AT) at the fiscal year end immediately prior to the bond offering date. If item PSTKL is missing, it is replaced with item PSTKRV. If PSTKRV is also missing, it is replaced with PSTK. If it is still missing, it is set to zero. *Tangibility*$_{t-1}$ is the fraction of net property, plant, and equipment in total assets (items PPENT/AT) at the beginning of the fiscal year for bond issuance. UTILITY_DUM$_{t-1}$ is a dummy variable that equals one for bonds offered by utility firms (with item SICH of 4900-4949) and zero otherwise. For some of the variables in this table, their natural logarithms are used in the regressions. Ln(X) denotes the natural logarithm of variable X.

Panel A. Summary Statistics of the (IPO+1, IPO+5] Sample

	PE-Backed IPOs (N=95)		Other IPOs (N=234)		Both (N=329)		
	Mean	Median	Mean	Median	Mean	Median	Std.
S&P Rating	7.47	7.00	8.01	7.00	7.86	7.00	3.50
Moody's Rating	7.33	7.00	7.69	6.00	7.58	7.00	3.27
YIELD_SPREAD(%)	2.96	2.55	3.18	2.98	3.12	2.83	2.07
DEFAULT_SPREAD(%)	0.81	0.71	0.76	0.70	0.77	0.70	0.25
Proceeds ($billion)	0.37	0.27	0.42	0.27	0.41	0.27	0.36
Ln(Proceeds)	-1.24	-1.31	-1.22	-1.30	-1.22	-1.30	0.83
Maturity	10.00	10.01	10.04	10.01	10.03	10.01	4.80
Ln(Maturity)	2.22	2.30	2.21	2.30	2.21	2.30	0.43
SHELF_DUM	0.23	0.00	0.39	0.00	0.34	0.00	0.48
RULE_144A_DUM	0.63	1.00	0.55	1.00	0.57	1.00	0.50
SUBORD_DUM	0.31	0.00	0.24	0.00	0.26	0.00	0.44
FIRST_BOND_DUM	0.32	0.00	0.35	0.00	0.34	0.00	0.48
NUM_BONDS	6.15	1.00	3.14	1.00	4.01	1.00	8.61
Market Cap$_{t-1}$ ($billion)	2.20	1.39	6.78	1.41	5.46	1.40	19.64
Ln(Market Cap)$_{t-1}$	0.24	0.33	0.36	0.34	0.32	0.34	1.50
Age	34.26	19.00	27.26	15.00	29.29	16.00	29.27
Ln(Age)	3.02	2.94	2.79	2.71	2.85	2.77	1.06
DIV_PAYER_DUM$_{t-1}$	0.16	0.00	0.37	0.00	0.31	0.00	0.46
ROA$_{t-1}$	0.03	0.05	0.01	0.04	0.01	0.04	0.17
LOSS_DUM$_{t-1}$	0.22	0.00	0.22	0.00	0.22	0.00	0.42
ICR$_{0, t-1}$	2.73	2.22	2.89	2.68	2.84	2.55	1.85
ICR$_{5, t-1}$	0.68	0.00	1.11	0.00	0.99	0.00	1.78
ICR$_{10, t-1}$	0.50	0.00	0.84	0.00	0.75	0.00	2.47
ICR$_{20, t-1}$	3.37	0.00	2.84	0.00	3.00	0.00	14.52
Leverage$_{t-1}$	0.68	0.69	0.62	0.64	0.64	0.65	0.22
BETA$_{t-1}$	1.37	1.18	1.35	1.16	1.35	1.18	0.78
STD_RETURN(%)$_{t-1}$	2.61	2.35	2.96	2.66	2.86	2.53	1.23
RETURN$_{t-1}$	0.36	0.04	0.29	0.03	0.31	0.04	1.10
Market-to-book$_{t-1}$	1.55	1.37	1.79	1.47	1.72	1.42	1.01
Tangibility$_{t-1}$	0.49	0.51	0.45	0.43	0.46	0.47	0.27
UTILITY_DUM$_{t-1}$	0.00	0.00	0.01	0.00	0.01	0.00	0.08

Panel B. Summary Statistics of the (IPO+1, IPO+10] Sample

	PE-Backed IPOs (N=207)		Other IPOs (N=517)		Both (N=724)		
	Mean	Median	Mean	Median	Mean	Median	Std.
S&P Rating	7.61	7.00	8.32	7.00	8.12	7.00	3.62
Moody's rating	7.45	7.00	8.08	7.00	7.90	7.00	3.42
YIELD_SPREAD(%)	3.00	2.70	3.09	2.84	3.06	2.77	2.04
Proceeds ($billion)	0.51	0.30	0.48	0.29	0.49	0.30	0.58
Maturity	10.02	10.01	10.47	10.01	10.34	10.01	5.74
NUM_BONDS	7.08	2.00	3.60	2.00	4.60	2.00	8.50
Market Cap_{t-1} ($billion)	3.74	1.81	7.54	1.50	6.45	1.56	20.89
Age	43.04	29.00	28.01	18.00	32.31	19.00	29.46
$DIV\_PAYER\_DUM_{t-1}$	0.19	0.00	0.40	0.00	0.34	0.00	0.47
ROA_{t-1}	0.04	0.05	0.02	0.04	0.03	0.04	0.14
$Leverage_{t-1}$	0.68	0.68	0.62	0.62	0.64	0.64	0.25
$BETA_{t-1}$	1.25	1.17	1.28	1.13	1.27	1.14	0.71
$RETURN_{t-1}$	0.25	0.04	0.23	0.04	0.24	0.04	0.88
$Market\text{-}to\text{-}book_{t-1}$	1.74	1.41	1.76	1.43	1.75	1.42	1.25

Table 2. Ordered Logit Regressions Explaining Credit Ratings

This table reports ordered logit regression results. The dependent variable is either the S&P rating score (S&P Rating) or the Moody's rating score (Moody's Rating) at the time of issuance, where 19=AAA (S&P) or Aaa (Moody's) and 1=CCC- (S&P) or Caa3 (Moody's). See Figure 1 for the other ratings by S&P and Moody's. PE Dummy is a dummy variable that equals one for bonds issued by PE-backed IPO companies and zero otherwise. See Table 1 for the definitions of the other independent variables. The z-statistics are calculated using robust standard errors corrected for heteroskedasticity and clustering at the company level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, in a two-tailed test. The ordered logit regressions include intercepts and bond offering year and IPO period dummies. For brevity, the intercepts and the coefficients on the bond offering year dummies and the IPO period dummies and their corresponding z-statistics are not reported.

	(IPO+1, IPO+5]				(IPO+1, IPO+10]			
	S&P Rating		Moody's Rating		S&P Rating		Moody's Rating	
	(1)		(2)		(3)		(4)	
Independent Variable	Coeff.	z-stat.	Coeff.	z-stat.	Coeff.	z-stat.	Coeff.	z-stat.
PE Dummy	0.75*	1.71	0.48	1.12	-0.22	-0.78	-0.19	-0.66
DEFAULT_SPREAD(%)	0.40	0.27	0.80	0.33	0.90	0.89	0.93	0.82
Ln(Proceeds)	-0.17	-0.93	-0.47**	-2.07	-0.07	-0.44	-0.27*	-1.84
Ln(Maturity)	-0.12	-0.42	-0.10	-0.36	0.19	1.09	0.19	1.43
SHELF_DUM	-0.30	-0.41	-0.23	-0.28	0.16	0.24	0.53	0.75
RULE_144A_DUM	-1.30*	-1.78	-0.61	-0.72	-0.72	-1.04	-0.12	-0.17
SUBORD_DUM	-2.28***	-5.86	-2.10***	-5.74	-2.07***	-8.08	-2.21***	-9.44
FIRST_BOND_DUM	0.21	0.54	0.29	0.69	0.02	0.05	-0.13	-0.41
Ln(NUM_BONDS)	0.16	0.59	0.31	1.01	0.06	0.29	0.03	0.14
$Ln(Market\ Cap)_{t-1}$	0.79***	3.81	1.26***	5.19	0.69***	4.81	0.96***	7.35
$Ln(Age)_{t-1}$	0.05	0.30	0.22	1.36	0.10	0.78	0.26*	1.87
$DIV\_PAYER\_DUM_{t-1}$	0.78*	1.95	0.51	1.28	1.02***	3.57	0.96***	3.45
ROA_{t-1}	1.58*	1.91	2.49**	2.53	1.07	1.56	2.09**	2.49
$LOSS\_DUM_{t-1}$	-0.61	-1.39	-0.61	-1.19	0.07	0.18	0.13	0.39
$ICR_{0,\ t-1}$	0.28**	2.07	0.14	1.18	0.28***	2.93	0.19**	2.09
$ICR_{5,\ t-1}$	0.02	0.16	0.20*	1.70	0.03	0.33	0.09	0.94
$ICR_{10,\ t-1}$	0.08	0.75	0.04	0.49	0.02	0.28	0.07	1.10
$ICR_{20,\ t-1}$	-0.02	-1.55	-0.02*	-1.75	-0.01	-0.79	-0.01	-1.18
$Leverage_{t-1}$	0.25	0.28	0.78	0.86	-0.97*	-1.77	-0.89*	-1.83
$BETA_{t-1}$	-0.43**	-2.35	-0.43**	-2.07	-0.04	-0.26	0.06	0.37
$STD\_RETURN(\%)_{t-1}$	-0.58***	-2.84	-0.58***	-3.04	-0.62***	-4.66	-0.57***	-4.54
$RETURN_{t-1}$	-0.14	-1.02	-0.15	-0.84	-0.17*	-1.74	-0.12	-1.17
$Market\text{-}to\text{-}book_{t-1}$	-0.18	-1.09	-0.28*	-1.71	-0.12	-1.50	-0.25**	-2.38
$Tangibility_{t-1}$	-0.40	-0.74	0.06	0.11	-0.49	-1.14	-0.43	-1.12
$UTILITY\_DUM_{t-1}$	0.06	0.10	0.23	0.36	-0.14	-0.25	-0.28	-0.50
N	329		329		724		724	
Pseudo R^2	0.286		0.322		0.266		0.292	

Table 3. OLS Regressions Explaining Yield Spreads

The dependent variable is the percentage yield spread on the bond (YIELD_SPREAD(%)) at the time of issuance. PE Dummy is a dummy variable that equals one for bonds issued by PE-backed IPO companies and zero otherwise. S&P Rating_RES is the residual from an OLS regression with the S&P rating score as the dependent variable and the same set of independent variables as in Table 2. A positive residual represents a better credit rating than predicted. Moody's Rating_RES is the residual from an OLS regression that uses the Moody's rating as the dependent variable and further includes the S&P rating score, as well as the set of independent variables as in Table 2, as an independent variable. NET_DEBT_t is defined as the change in the book value of debt (Compustat items LT+MTB-TXDITC+PSTKL-DCVT) during the bond offering fiscal year scaled by beginning-of-fiscal-year assets. Note that convertible debt is excluded. See Table 1 for the definitions of the other independent variables. The t-statistics are calculated using robust standard errors corrected for heteroskedasticity and clustering at the company level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, in a two-tailed test. For brevity, the coefficients on the bond offering year dummies and the IPO period dummies and their corresponding t-statistics are not reported.

	(IPO+1, IPO+5]						(IPO+1, IPO+10]	
	(1)		(2)		(3)		(4)	
Independent Variable	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.
PE Dummy	-0.70***	-3.91	-0.67***	-3.80	-0.56***	-3.24	-0.29**	-2.49
DEFAULT_SPREAD(%)	1.07	1.63	0.99	1.48	1.25*	1.94	1.44***	3.86
Ln(Proceeds)	-0.06	-0.57	-0.10	-0.97			0.00	0.03
Ln(Maturity)	0.08	0.54	0.09	0.63			-0.05	-0.53
SHELF_DUM	-0.44**	-2.20	-0.37*	-1.73			-0.37**	-2.34
RULE_144A_DUM	0.21	0.85	0.25	0.95			0.05	0.28
SUBORD_DUM	0.29*	1.66	0.32*	1.88			0.36***	2.95
NET_DEBT_t			0.18*	1.75				
FIRST_BOND_DUM	0.11	0.60	0.13	0.72	-0.04	-0.21	0.21	1.43
Ln(NUM_BONDS)	0.00	0.02	-0.00	-0.03	-0.14	-1.37	0.06	0.79
$Ln(Market\ Cap)_{t-1}$	-0.37***	-5.42	-0.33***	-4.79	-0.50***	-9.08	-0.44***	-7.80
$Ln(Age)_{t-1}$	0.08	1.06	0.08	1.12	0.06	0.86	-0.02	-0.27
$DIV\_PAYER\_DUM_{t-1}$	-0.56***	-3.03	-0.58***	-3.10	-0.61***	-3.35	-0.46***	-4.23
ROA_{t-1}	-1.25*	-1.86	-1.08	-1.55	-1.40*	-1.89	-1.21**	-2.54
$LOSS\_DUM_{t-1}$	0.02	0.06	0.02	0.08	-0.00	-0.00	0.04	0.25
$ICR_{0,\ t-1}$	-0.14**	-2.17	-0.14**	-2.24	-0.14**	-2.12	-0.07	-1.65
$ICR_{5,\ t-1}$	0.04	0.78	0.03	0.51	0.02	0.34	-0.01	-0.33
$ICR_{10,\ t-1}$	0.01	0.26	0.03	0.56	0.03	0.53	0.02	0.55
$ICR_{20,\ t-1}$	0.01	0.80	0.00	0.62	0.01	0.98	0.00	0.98
$Leverage_{t-1}$	0.89	1.58	0.99*	1.67	0.86	1.54	0.39*	1.67
$BETA_{t-1}$	0.35*	1.92	0.34*	1.89	0.36**	2.23	0.04	0.28
$STD\_RETURN(\%)_{t-1}$	0.27***	3.62	0.25***	3.14	0.27***	3.74	0.36***	4.55
$RETURN_{t-1}$	-0.17	-1.53	-0.18	-1.52	-0.22*	-1.85	-0.11	-1.63
$Market\text{-}to\text{-}book_{t-1}$	-0.01	-0.19	-0.05	-0.78	-0.00	-0.04	0.00	0.05
$Tangibility_{t-1}$	-0.17	-0.61	-0.18	-0.65	-0.22	-0.80	0.16	0.75
$UTILITY\_DUM_{t-1}$	-0.19	-0.78	-0.43	-1.40	-0.29	-1.45	-0.20	-0.75
S&P Rating_RES	-0.30***	-8.61	-0.30***	-8.58	-0.28***	-10.18	-0.30***	-12.11
Moody's Rating_RES	-0.22**	-2.47	-0.21**	-2.48	-0.18**	-2.05	-0.11**	-2.27
Intercept	-0.51	-0.47	-0.56	-0.53	-0.15	-0.15	5.08***	3.43
N	329		329		329		724	

Table 4. Tobit and OLS Regressions Analyzing the Effect of PE Sponsorship on Investment Decisions

The investment regressions in this table use the (IPO+1, IPO+5] sample. The subscript t denotes the fiscal year of the bond offering. The dependent variables are the three-year averages from year t to t+2. CAPX÷TANG(%) is defined as 100 × capital expenditures (Compustat item CAPX) scaled by beginning-of-fiscal-year tangible assets (item PPENT). CAPX÷AT(%) is 100 × capital expenditures scaled by beginning-of-fiscal-year total assets (AT). (CAPX+RD)÷AT(%) is 100 × the sum of capital expenditures and R&D (item XRD) scaled by beginning-of-fiscal-year total assets. INVEST÷AT(%) is 100 × total investment expenditures (capital expenditures + increase in investments (IVCH) + acquisitions (AQC) + other uses of funds (FUSEO) – sale of property (SPPE) – sale of investments (SIV) if the cash flow statement format code is 1–3; and capital expenditures + increase in investments (IVCH)+ acquisitions (AQC) – sale of property (SPPE) – sale of investments – change in short-term investments (IVSTCH) – other investing activities (IVACO) if the format code is 7) in the fiscal year of the bond offering scaled by beginning-of-fiscal-year total assets. We set capital expenditures and R&D to zero if they are missing in Compustat. See Table 1 for the definitions of the independent variables. The dependent variables and the lagged investment variables of the independent variables are winsorized to 200% if they are greater than 200%. The mean and standard deviation (Std. Dev.) for each dependent variable are reported at the top of the table. Regressions (1) through (4) are Tobit regressions with lower bound of 0, and regression (5) is OLS. The t-statistics are calculated using robust standard errors corrected for heteroskedasticity and clustering at the company level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, in a two-tailed test. For brevity, the coefficients on the bond offering year dummies and the IPO period dummies and their corresponding t-statistics are not reported.

Dependent Variable	Average CAPX÷TANG(%)$_{t, t+2}$		Average CAPX÷AT(%)$_{t, t+2}$		Average (CAPX+RD)÷AT(%)$_{t, t+2}$		Average INVEST÷AT(%)$_{t, t+2}$	
Descriptive Statistics:								
Mean	32.22		14.16		14.82		24.29	
Std. Dev.	25.08		15.89		15.76		29.21	
Regressions:	(1) Tobit		(2) Tobit		(3) Tobit		(4) Tobit		(5) OLS	
Independent Variable	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.
PE Dummy	-10.69**	-2.27	-8.63**	-2.31	-3.69	-1.47	-3.86	-1.54	-7.86*	-1.77
Tangibility$_{t-1}$	-3.98	-0.64	-1.52	-0.28	25.57***	6.63	24.29***	6.17	19.10***	2.67
Ln(Market Cap)$_{t-1}$	-0.73	-0.60	-1.55	-1.49	-0.71	-1.12	-0.78	-1.19	-6.21***	-3.71
Ln(Age)	-4.44**	-2.54	-2.23	-1.55	-2.14**	-2.30	-1.76*	-1.88	-2.65	-1.60
DIV_PAYER_DUM$_{t-1}$	-8.89**	-2.54	-4.88	-1.65	-3.45*	-1.72	-2.50	-1.21	0.34	0.09
ROA$_{t-1}$	-28.11	-1.04	-19.61	-0.69	5.35	0.44	5.16	0.41	-28.65	-0.75
LOSS_DUM$_{t-1}$	10.39*	1.77	7.15	1.42	3.43	1.03	2.84	0.83	3.01	0.53
Leverage$_{t-1}$	4.61	0.53	6.62	0.85	4.35	0.80	5.73	1.03	-8.51	-0.82
Market-to-book$_{t-1}$	2.13	1.15	1.33	0.96	0.90	1.07	1.74*	1.90	5.64**	2.36
UTILITY_DUM$_{t-1}$	-20.51***	-3.79	-18.69***	-3.68	-16.18***	-4.22	-16.40***	-4.18	-7.86*	-1.77
CAPX÷TANG(%)$_{t-1}$			0.21***	4.79						
CAPX÷AT(%)$_{t-1}$					0.14***	2.76				
(CAPX+RD)÷AT(%)$_{t-1}$							0.15***	2.91		
INVEST÷AT(%)$_{t-1}$									0.04	0.47
Intercept	30.86***	3.24	16.77**	2.20	-0.01	-0.00	-2.22	-0.60	18.75*	1.70
No. of Observations	268		268		268		268		264	
Pseudo R^2 / Adjusted R^2	0.043		0.062		0.086		0.080		0.238	

Table 5. Logit and Tobit Regressions Analyzing the Effect of PE Sponsorship on Dividend Policies

Panel A reports summary statistics for dividends around the IPOs of the 204 companies in the (IPO+1, IPO+5] sample. Note that if a company has more than one debt issue, it counts only once for the summary statistics in Panel A. Panel B reports summary statistics for dividends around the bond offering dates for the 329 bonds in the (IPO+1, IPO+5] sample, where a company can be counted multiple times at different bond offering dates. Panel C reports regression results for the debt issues in the (IPO+1, IPO+5] sample. IPO-1 denotes the most recent fiscal year that ends before the IPO date, IPO denotes the first fiscal year that ends after the IPO date, and IPO+t denotes the t^{th} fiscal year that ends after the IPO date. P75 and P95 denote the 75^{th} and 95^{th} percentiles, respectively. A dividend payer (DIV_PAYER_DUM equals one) in a fiscal year is a company that pays common dividends (Compustat item DVC) in the year. DIV_PAYOUT in a fiscal year is common dividends (DVC) in the year divided by income before extraordinary items (item IB) in the year. DIV_YIELD(%) in a fiscal year equals 100 × dividends per share (Compustat item DVPSX_F) in the year divided by end-of-fiscal-year price per share (item PRCC_F). For the fiscal year of IPO-1, the end-of-year market value of equity is set to the market value of equity at the market close on the IPO date. Dividends/Assets (%) in a fiscal year is 100 × common dividends (DVC) in the year divided by beginning-of-fiscal-year assets (AT). The summary statistics for DIV_PAYOUT, DIV_YIELD, and Dividends/Assets in Panel A are reported conditional on dividends being paid. %(≥5%) denotes the percent of companies that have a dividend yield and Dividends/Assets ratio of at least 5%, respectively. %(≥30%) denotes the percent of companies that have a dividend payout ratio of at least 30%. In Panels B and C, the subscript t denotes the fiscal year of the bond offering, and (t, t+2) denotes fiscal year t to year t+2. $DIV\_PAYER\_DUM_{t,t+2}$ equals one if the company is listed on Compustat from t to t+2 and is a dividend payer in at least one of the three years and zero otherwise. Average $DIV\_PAYOUT_{t,t+2}$, Average $DIV\_YIELD_{t,t+2}$, and Average $Dividends/Assets_{t,t+2}$ are the three-year averages from t to t+2. See Table 1 for the definitions of the independent variables. Regressions (1) and (2) are logit regressions, with the base being the bond issues by firms that pay no dividends in any of the three years from t to t+2. Regressions (3)-(6) are Tobit regressions with a lower bound of 0. In regressions (3)-(6), the dependent variables and lagged dividend ratio variables are winsorized at 200% if it is greater than 200%. The z-statistics and t-statistics are calculated using robust standard errors corrected for heteroskedasticity and clustering at the company level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, in a two-tailed test. For brevity, the coefficients on the IPO period dummies and the dummy variable for bonds offered in the 1990s and their corresponding z-statistics or t-statistics are not reported.

Panel A. Summary Statistics for Issuers aligned by Years from the IPO, Conditional on Paying Dividends

	PE-backed	# Issuers	# Payers	DIV_PAYOUT						DIV_YIELD(%)			Dividends/Assets(%)		
				Mean	Std.	Median	P75	Max	%(>30%)	Mean	Median	%(≥5%)	Mean	Median	%(≥5%)
IPO-1	No	131	38	1.36	3.00	0.37	0.76	13.06	58.33	7.35	1.40	15.79	5.53	2.93	30.77
	Yes	60	6	2.83	5.23	0.30	5.58	10.67	50.00	2.00	0.51	16.67	2.87	0.65	20.00
IPO	No	140	53	0.89	1.26	0.33	0.97	4.93	52.17	0.64	0.20	1.89	166.99	1.86	37.25
	Yes	60	12	0.58	1.10	0.06	0.52	3.70	41.67	1.40	0.08	8.33	1.57	0.23	16.67
IPO+1	No	144	40	0.27	0.29	0.19	0.29	1.57	25.00	1.94	1.17	2.50	2.15	1.47	5.00
	Yes	60	11	0.48	0.69	0.16	1.15	1.81	27.27	1.69	0.39	9.09	1.40	0.43	9.09
IPO+2	No	142	42	0.25	0.24	0.17	0.35	1.08	30.00	1.56	1.29	2.38	1.66	1.30	4.76
	Yes	59	12	1.21	2.88	0.19	0.66	9.75	36.36	2.11	0.71	16.67	1.21	0.44	8.33
IPO+3	No	139	44	0.40	0.86	0.16	0.45	5.54	31.71	1.73	1.23	2.27	1.56	1.21	4.55
	Yes	55	12	0.17	0.18	0.08	0.26	0.54	25.00	3.95	0.67	8.33	1.22	0.56	8.33
IPO+4	No	133	43	2.78	10.40	0.25	0.51	57.50	44.44	1.86	1.09	6.98	2.22	0.98	6.98
	Yes	54	12	0.23	0.30	0.11	0.20	0.93	22.22	0.97	0.66	0.00	0.81	0.66	0.00
IPO+5	No	119	37	0.71	2.45	0.23	0.38	13.63	36.67	2.00	1.27	5.41	1.68	0.94	8.11
	Yes	50	12	0.42	0.60	0.17	0.51	2.05	40.00	2.10	0.98	8.33	1.42	0.87	8.33

Panel B. Summary Statistics for Issuers around Bond Offerings

	PE-backed IPO				Other IPO				Both				
Variable	N	Mean	Median	P95	N	Mean	Median	P95	N	Mean	Median	P95	Std.
DIV_PAYOUT(%)$_{t-1}$	94	5.25	0.00	36.60	226	8.30	0.00	36.07	320	7.40	0.00	36.33	20.01
Average DIV_PAYOUT(%)$_{t,t+2}$	69	4.34	0.00	28.93	165	10.89	0.00	44.31	234	8.96	0.00	44.31	26.45
DIV_YIELD(%)$_{t-1}$	95	0.26	0.00	1.71	234	0.57	0.00	2.49	329	0.48	0.00	2.31	1.34
Average DIV_YIELD(%)$_{t,t+2}$	78	0.49	0.00	2.53	191	0.61	0.00	2.76	269	0.57	0.00	2.57	1.31
Dividends/Assets(%)$_{t-1}$	95	0.17	0.00	1.00	234	0.71	0.00	2.09	329	0.55	0.00	2.00	2.24
Average Dividends/Assets(%)$_{t, t+2}$	78	0.26	0.00	2.76	188	0.49	0.00	2.23	266	0.42	0.00	2.38	0.99

Panel C. Regressions Results

Dependent Variable	DIV_PAYER_DUM$_{t,t+2}$				Average DIV_ PAYOUT(%)$_{t,t+2}$				Average DIV_YIELD(%)$_{t,t+2}$		Average Div/Assets(%)$_{t,t+2}$	
	(1) logit		(2) logit		(3) Tobit		(4) Tobit		(5) Tobit		(6) Tobit	
Independent Variable	Coeff.	z-stat.	Coeff.	z-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.
PE Dummy	-1.33*	-1.95	0.39	0.35	-16.01**	-2.16	-10.36*	-1.88	-0.40	-0.88	-0.62*	-1.66
Tangibility$_{t-1}$	1.08	1.23	2.91**	2.14	13.80	1.49	4.11	0.51	0.49	0.84	0.79*	1.65
Ln(Market Cap)$_{t-1}$	0.63**	2.39	0.15	0.65	7.69***	3.69	3.43**	1.98	0.17	1.47	0.32***	2.82
Ln(Age)	0.26	1.23	0.16	0.44	3.46	0.99	3.79*	1.83	0.17	1.20	-0.02	-0.16
ROA$_{t-1}$	9.03**	2.18	13.09***	2.76	83.72*	1.74	74.56**	2.19	4.60*	1.73	7.83**	2.38
LOSS_DUM$_{t-1}$	-0.96	-1.07	0.32	0.23	-10.99	-1.01	-1.49	-0.14	-0.54	-0.82	-0.50	-0.85
Leverage$_{t-1}$	2.51**	2.01	0.59	0.48	23.44	1.59	18.86	1.62	1.22	1.37	1.44	1.58
BETA$_{t-1}$	-2.07***	-3.04	-1.11*	-1.80	-27.01***	-3.50	-13.10***	-3.72	-0.81**	-2.28	-1.28***	-3.39
STD_RETURN(%)$_{t-1}$	-0.68	-1.24	-0.40	-1.23	-4.84	-1.20	-0.36	-0.20	-0.30	-1.64	-0.37	-1.28
RETURN$_{t-1}$	0.29	0.89	0.41***	2.82	-3.56	-1.02	-7.06**	-2.13	-0.06	-0.35	0.11	0.79
Market-to-book$_{t-1}$	-0.27	-0.67	-0.44	-1.37	-9.74**	-2.13	-8.36*	-1.92	-0.13	-0.54	-0.15	-0.84
UTILITY_DUM$_{t-1}$					19.96***	3.53	-12.28	-1.52	-1.72**	-2.24	-0.02	-0.09
DIV_PAYER_DUM$_{t-1}$			6.85***	6.71								
DIV_PAYOUT(%)$_{t-1}$							1.16***	6.21				
DIV_YIELD(%)$_{t-1}$									0.79***	3.55		
Dividends/Assets(%)$_{t-1}$											0.14	1.24
Intercept	1.07	0.64	-4.29**	-2.47	17.89	0.83	-13.64	-0.89	-0.13	-0.12	0.97	1.09
No. of Observations	266		266		234		228		269		266	
Pseudo R^2	0.423		0.780		0.191		0.279		0.308		0.280	