Private equity firms' role as agents and the resolution of financial distress in buyouts

Abstract

Previous research has focused on a private equity (PE) firm's role as principal in its relationship with the investee, but few studies have looked into their role as agents to their investors. We examine how a PE firm's relationship as agent toward limited partners (LPs) and banks influences its incentives to resolve financial distress in the investee. We examine the effect of PE fundraising reputation, PE fundraising activity, and PE bank affiliation on the likelihood of a financially distressed buyout ending in bankruptcy. We build a unique dataset of 338 distressed buyouts in the UK to test our hypotheses.

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Keywords: private equity, buyouts, distress, agency theory, signaling theory

Introduction

Private equity (PE) firms invest in buyouts of established firms to realize efficiency improvements and to exploit entrepreneurial growth opportunities (Meuleman, Amess, Wright, and Scholes 2009; Zahra 1995). PE-backed buyouts involve acquisitions in which PE investors and a management team pool their own funds together with raising substantial debt to buy shares in a company from its current owners to create a new independent entity (Cumming, Siegel, and Wright 2007). Buyouts offer an important mechanism for SME owners to exit their business (Ahlers, Hack, Kellermanns, and Wright 2016).

Using the traditional agency perspective, research has generally stressed the positive effect of buyouts on profitability and growth through the active ownership by PE investors, the discipline imposed by leverage and the incentives provided through managerial ownership (Cumming et al. 2007; Harris, Siegel, and Wright 2005; Jensen 1986; Kaplan and Strömberg 2009). PE investors, as main orchestrators of buyout transactions, play a key role in this process through deal structuring, monitoring, and value-adding (Wright and Robbie 1998). A significant number of studies have stressed the positive impact of specialized and experienced PE sponsors on the performance of the underlying buyout targets (Acharya, Gottschalg, Hahn, and Kehoe 2013; Cressy, Munari, and Malipiero 2007; Meuleman et al. 2009).

Whereas previous research examining the impact of PE firms on the performance of buyouts has mostly focused on the PE firm's role as *principal* in its governance relationship with the investee (Acharya et al. 2013; Kaplan and Schoar 2005; Manigart and Wright 2013), few studies have looked into their role as *agent* to their limited partners (LPs) (for example, pension funds) and the banks that provide debt financing. PE firms have a "dual identity" (Arcot, Fluck, Gaspar, and Hege 2015; Pratt and Foreman 2000) as they act both as principal and agent in a buyout

transaction. A key question that has received limited attention is how a PE firm's role as agent toward investors (LPs and banks) might impact the outcome of the underlying buyout investments.

To study PE firms' role as agents on investment outcomes, we focus on a setting in which the relationships of PE firms with LPs and lenders may be particularly influential, namely when portfolio firms enter financial distress. Financial distress is not uncommon in PE-backed buyouts and is often related to the use of excessive amounts of debt to finance the transaction (Andrade and Kaplan 1998; Kaplan and Stein 1993). Evidence, for example, shows a bankruptcy rate for UK PE-backed buy-outs ranging from 5.3 percent (Wilson and Wright 2013) to eight percent (Stromberg 2008). Financial distress will place major demands on the governance role of PE firms to avoid bankruptcy, given the involvement of different stakeholders with different interests (Ayotte, Hotchkiss, and Thorburn 2013; Wright, Amess, Weir, and Girma 2009). Effective governance will be key since financial distress increases the likelihood of agency conflicts (Gilson 1990) as well as the need for corrective management actions to improve firm performance (Cuny and Talmor 2007).

Agency theory provides an important perspective to understand the incentives of PE firms as agents to LPs and banks to resolve financial distress and prevent a portfolio company from going bankrupt. First, raising follow-on funds is critical for PE firm success. To continue investing in new buyout opportunities, PE firms generally raise new funds from LPs well before the investment period of existing investment funds has expired (Kaplan and Schoar 2005; Sahlman 1990). The reputation and track record of the PE firm will be key to successfully raising follow-on funds from LPs (Balboa and Marti 2007; Chung, Sensoy, Stern, and Weisbach 2012; Kuckertz, Kollmann, Röhm, and Middelberg 2015). Prospective investors face significant levels of informational asymmetry as the ultimate performance of an existing PE fund only becomes clear

at the end of the lifetime of a fund once all investments have been exited, and the cash is returned to investors (Balboa and Marti 2007; Cumming and Walz 2010). In a context of high informational asymmetries, performance-related signals that help prospective investors to assess the expected performance of a fund will be important to influence their decision to provide follow-on funds (Vanacker, Forbes, Knockaert, and Manigart 2019). We hypothesize that PE firms without a track record in fundraising and PE firms that are actively raising funds will have higher incentives to prevent a financially distressed portfolio company from entering bankruptcy to avoid negative performance signals, which may harm future fundraising efforts. Second, we examine whether bank-affiliated PE groups are more effective as compared to independent PE firms in resolving financial distress. Bank-affiliated PE groups frequently rely on loans provided by the parent bank to finance the transaction (Fang, Ivashina, and Lerner 2013). Proximity between the bank-affiliated PE investor and the parent bank might help mitigate agency problems in a distressed buyout and contribute to the resolution of distress (Hoshi et al., 1990).

So, how does a PE firm's reputation in fundraising, involvement in fundraising activities, and affiliation with banks influence the outcome of financial distress in buyout transactions? We examine 338 distressed buyout transactions in the United Kingdom during the period 1995 to 2009 using unique data collected from Companies House and the Insolvency Service, the Centre for Management Buyout Research and ThomsonOne to identify what influences whether they enter bankruptcy or remain as a going concern. We employ Cox regression techniques to model the outcome of distressed buyouts.

Our study contributes to the literature in several ways. First, we go beyond previous research that has focused mostly on PE firms' roles as principals to their portfolio companies, and how this impacts the performance of buyout transactions (Manigart and Wright 2013), to examine how PE

firms' roles as agents to their LPs and lenders might impact the outcome of buyout transactions. Using agency theory, we contribute to an emerging stream of literature focused on the relationship between PE firms and their LPs and how this might impact portfolio companies (Arcot et al. 2015; Gompers 1996; Krohmer, Lauterbach, and Calanog 2009). Specifically, while previous literature has mostly focused on successful exits as a way to boost a PE firm's reputation, our results indicate that avoiding failures (that is, bankruptcies) might well be a way to prevent harm to one's reputation. By doing so, we also contribute to the literature on signaling. Existing research in the context of venture capital and private equity has focused on successful exits as a positive signal of realized performance and predictor of successful future fundraising. However, the signaling value of a bankruptcy – that is, a negative signal of future expected performance – has been largely neglected. Overall, there has been limited empirical research on the role of negative signals and how companies deal with those signals (Connelly, Certo, Ireland, and Reutzel 2011). Second, our results extend insights regarding the impact of PE firm heterogeneity on the incentives and effectiveness to resolve financial distress (Hotchkiss, Strömberg, and Smith 2014; Tykvova and Borell 2012). More specifically, our study clearly distinguishes between a PE firm's ability and a PE firm's incentives to resolve financial distress. Controlling for a PE firm's investment experience, we show that once a firm enters financial distress, PE firms without a reputation for successful fundraising have more incentives to keep the business as a going concern to secure future fundraising. As such, we disentangle the effect of previous investment experience from reputational concerns toward investors in PE. Third, our results also indicate that bank-affiliated PE firms are better positioned to resolve financial distress, and hence, we contribute to an emerging stream of literature that has compared practices of bank-affiliated PE firms with independent PE firms (Fang et al. 2013; Yoshikawa, Phan, and Linton 2004). Fourth, we contribute to the general

literature on the failure of entrepreneurial ventures. Research in this area has focused mainly on the failure of entrepreneurial start-ups rather than mature entrepreneurial firms and has largely focused on closure (Ucbasaran, Shepherd, Lockett, and Lyon 2013) rather than the possibility of a turnaround as a going concern of a venture in distress. Moreover, financial distress does not equal firm death, and restructuring often has beneficial outcomes for the different stakeholders involved (Jenkins and McKelvie 2017; Wruck 1990).

Theory and Hypotheses

PE-backed Buyouts, Financial Distress and Bankruptcy

PE-backed buyouts have become a widespread phenomenon (Castellaneta and Gottschalg 2016), historically perceived as an efficiency tool to streamline organizational processes, reduce workforces, and decrease unit costs (Harris et al. 2005). Traditional agency theory has been the predominant theoretical lens employed to study buyouts, with buyouts aligning the incentives of managers as agents through the discipline of high leverage, concentrated ownership, and better governance through monitoring by equity-holding professional investors as principals (Cotter and Peck 2001; Jensen 1989). Besides being efficiency-enhancing, buyouts may also be a vehicle for strategic innovation and renewal that fosters upside entrepreneurial growth potential (Meuleman et al. 2009; Wright, Hoskisson, Busenitz, and Dial 2000).

Notwithstanding the generally perceived positive effects of buyouts on firm performance (Cumming et al. 2007; Kaplan and Strömberg 2009), the use of excessive leverage by PE investors has been criticized for increasing the risk of financial distress and bankruptcy, leading to economic and social costs (Wilson and Wright 2013). Studies of the first wave of PE-backed buy-outs during the eighties identified high leverage as a significant contributory factor to financial distress and

bankruptcy (Kaplan and Stein 1993). Following the second wave of PE-backed buy-outs at the end of the nineties and the financial crisis beginning in 2008, several recent studies have looked at distress and failure rates. In an extensive UK study over the period 1995 to 2010, Wilson and Wright (2013) find buy-outs have a higher failure rate than the population of non-buy-out companies. These findings indicate a bankruptcy rate for UK PE-backed buy-outs of 5.3 percent, slightly lower than Strömberg (2008), who found a six percent bankruptcy rate for a worldwide sample of PE-backed buyouts. Further, Tykvová and Borell (2012) show for a sample of European buyout transactions over the period 2000 to 2008 that the risk of financial distress increases after a buyout.

A key question that has generally been neglected is how PE firms deal with financial distress and whether or not they are effective in resolving it (Hotchkiss et al. 2014). Purnanandam (2008) calls *financial distress* an 'intermediate state' in-between a solvent and an insolvent firm. Missed interest payments and violated debt covenants are seen as signs of financial distress (Asquith, Gertner, and Scharfstein 1994; Wruck 1990). If financial distress is not resolved, the firm risks ending up in *bankruptcy* or *insolvency*, defined as entering liquidation, receivership, or administration (Franks and Sussman 2005).[1] Addressing financial distress will require effective governance as the PE firm will generally become deeply involved in restructuring the distressed company. Hotchkiss et al. (2014) show that, compared to firms not backed by PE investors, PE-backed firms are generally more efficient in resolving financial distress when they enter it and are more likely to survive as an independent going concern. However, a growing body of research recognizes that PE firms also have a role as agent toward investors, which may have implications

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[1] In English law, the term "bankruptcy" is reserved for individuals only; the word "insolvency" applies to corporations. The term "bankruptcy" is used in line with international practice.

for how PE firms address financial distress and the effectiveness by which they can resolve it (Arthurs, Hoskisson, Busenitz, and Johnson 2008; Hoskisson, Arthurs, White, and Wyatt 2013).

PE Firm's Role as Agent

Previous PE research has often relied on traditional agency theory and examined the role of a PE investor as principal, with respect to the underlying investee as agent (Manigart and Wright 2013). The multiple agency perspective moves beyond this simple principal-agent dichotomy and considers multiple governance roles of the same participants (Allcock and Filatotchev 2010; Arthurs et al. 2008; Deutsch, Keil, and Laamanen 2010). Even though PE firms may be principals in their dealings with management of the underlying buyout target, they act as agents in their relationship with their LPs and the banks that provide them with funds to finance the buyout transaction. These multiple governance roles may cause ambiguity in terms of whose interests are served and will be prevalent in settings such as bankruptcy and restructuring in a buyout context. Additionally, the relationships between PE firms and their investors transcend the focal buyout transaction, which may create potential goal incongruence and lead to conflicts of interest (Hoskisson et al. 2013; Hoskisson, Hitt, Johnson, and Grossman 2002).

PE investing is generally organized through a limited partnership structure in which the managers of the PE firm serve as general partners (GPs). The LPs are composed of institutional investors (for example, pension funds and insurance companies) and wealthy families or individuals who commit a certain amount of capital to a fund that will be managed by the GPs. The lifespan of a typical PE fund is about 10 to 12 years. Within this period, the GPs invest the money committed to them to buy targets (generally GPs try to deploy all capital in the first three to five years), and by the end of the fund's life, they have to return the investors' original money,

plus any additional returns made. The GPs will run the day-to-day activities of the fund, including generating deal flow and screening investments, executing due diligence, setting up deal structures and, finally, monitoring and exiting investments. As the lifetime of independent PE funds is limited in time (on average, 10 years), GPs will raise funds on a regular basis to continue their investment activities. When the investment period of the existing fund ends after three to five years, GPs typically engage in raising new funds to maintain deal flow (Sahlman, 1990). If PE investors fail to convince enough investors for a follow-on fund, they will end operations. A large percentage of PE firms fail to raise a second fund and exit the market (Rider and Swaminathan 2011).

The relationship between the GPs and the LPs is subject to a principal-agent problem as the LPs face informational asymmetries with respect to the ability and behavior of GPs. The ultimate performance of a fund only becomes clear at the end of the lifetime of a fund once all investments have been exited, and the cash is returned to investors (Cumming and Walz 2010). Therefore, current and prospective investors face difficulties when assessing the expected performance of a fund to decide whether or not to provide future funding (Vanacker et al. 2019). GPs as agents might engage in opportunistic behavior in an attempt to influence the beliefs of LPs to boost their own reputation and become more successful at future fundraising (Arcot et al. 2015). The main mechanisms used by LPs to control the agency relationship with GPs include the limited lifetime of the fund, the covenants included in the partnership agreement, and in extreme cases, an early termination and liquidation of the fund (Kandel, Leshchinskii, and Yuklea 2011). However, even if those mechanisms exist, principal agency conflicts might still lead to suboptimal investment outcomes (Arcot et al. 2015; Gompers 1996; Jenkinson, Sousa, and Stucke 2013).

The GPs of a PE fund also act as agents to banks that provide debt financing to finance buyout transactions (Cotter and Peck 2001). PE firms use substantial amounts of debt in buyouts

to provide financial leverage and to impose discipline on the managers to efficiently run the buyout company. Commercial banks and investment banks provide the majority of buyout debt, often in the form of short-term and covenant-heavy, long-term loans and revolving lines of credit. Banks monitor borrowers to deter moral hazard by imposing debt covenants (Demiroglu and James 2010). PE firms sometimes use excessive amounts of leverage to finance transactions, which might lead to costly financial distress (Kaplan and Stein 1993). The amount of leverage used increases in times of easy credit and leads to higher transaction prices and lower overall fund returns (Axelson, Jenkinson, Strömberg, and Weisbach 2013). Overall, leverage increases insolvency risks of PE-backed buyout transactions and imposes agency costs on lenders (Wilson and Wright 2013).

In the following sections, we develop hypotheses on how a PE firm's role as agent to LPs and banks will influence its incentives to resolve financial distress and keep the portfolio company as a going concern.

PE Firms' Roles as Agents to Investors and their Incentives to Resolve Financial Distress

The GPs of a PE fund act as agents toward the LPs investing in their fund. PE firms generally raise new funds every 3 to 5 years (Sahlman 1990). Their previous track record and reputation are key in their ability to successfully do so (Arcot et al. 2015; Chung et al. 2012). The future income earned by GPs depends heavily on the performance of past and recent funds: good performance should lead to higher expected future income through more successful fundraising in the future. These fundraising dynamics pose challenges for first-time funds without a historical track record (Vanacker et al. 2019).

Previous research in a venture capital (VC) setting has indicated that younger VC firms have more incentives to build a strong reputation than already established funds. Gompers (1996) shows

that in the context of VC backed IPOs, young VC firms exit their winners faster and more underpriced than more established VC funds to signal quality and increase the likelihood of raising follow-on funds. While Gomper's study focuses on the investment behavior related to the exit of winners, Krohmer (2009) shows that VC firms have different incentives with respect to exit decisions regarding loss-making investments. Disclosing loss-making investments might hamper VC investors in raising the next fund from existing or new LPs (Gompers and Lerner 1998). Less reputable VC investors will try to avoid loss-makers in their investment portfolio and have a higher incentive to provide follow-on financing to avoid the surfacing of write-offs, thereby window dressing the reported track record. Overall, the pressure to show attractive returns to LPs may actually lead to suboptimal investment decisions and impose agency costs on the LPs of VC funds (Arthurs et al. 2008; Brown, Gredil, and Kaplan 2016).

Similarly, to secure future fundraising, we expect PE investors who are managing a first-time fund and, therefore, have not established a track record yet to have higher incentives to resolve financial distress and keep the business as a going concern to avoid any negative publicity a bankruptcy would convey toward potential future LPs. For first-time PE funds, prospective LPs cannot rely on a historical track record. Therefore, the performance of existing investments will be key. Performance-related signals that help prospective investors to assess the expected performance of a fund will be extremely important to influence their decision to provide follow-on funds (Vanacker et al. 2019). In the absence of positive or biased performance signals, the signaling value of a bankruptcy – that is, a negative signal of future expected performance – might seriously harm future fundraising efforts. As stated by Arcot et al. (2015, p. 107) "LPs' beliefs about GP ability are less (more) likely to be influenced by a single bad deal … if the GP's

reputation is strong (weak)." GPs with limited fundraising experience, therefore, will have more incentives to address financial distress and keep distressed portfolio firms as a going concern.

Additionally, reputational concerns with banks provide incentives for PE firms to resolve distress effectively. If a bank incurs significant losses because of a distressed buyout entering bankruptcy, it might be reluctant to provide future loans to the associated PE firm on favorable terms (Hotchkiss et al. 2014). This may be particularly problematic for first-time PE firms that have not yet built strong relationships with the banking community, leading to higher spreads and more stringent loan covenants (Ivashina and Kovner 2011). This limits their future capacity to raise debt financing and hence their overall ability to successfully complete buyout deals.

Following our previous argumentation, we expect PE firms that manage a first-time fund to have more incentives to avoid bankruptcies following financial distress and devote more managerial attention to keep the portfolio company as a going concern. Research in the context of venture capital and private equity has shown that investors are generally constrained with respect to the tangible resources (for example, financial capital) as well as intangible resources, including managerial attention and effort, they can allocate to their portfolio companies (Fulghieri and Sevilir 2009; Ozmel and Guler 2015). Given the importance of raising follow-on funds to survive and secure future income as a PE firm, we hypothesize that first-time PE funds will allocate more time and effort to avoid bankruptcy. For example, they might go to great lengths to negotiate with different stakeholders including banks and unions to restructure the company. Indeed, managers of distressed companies often renegotiate credit agreements with banks to avoid bankruptcy (Saleh and Ahmed 2005). Additionally, many firms have highly liquid asset structures that enable managers to subsidize unprofitable operations and postpone bankruptcy if need being (DeAngelo, DeAngelo, and Wruck 2002). Overall, the preceding discussion leads us to hypothesize:

Hypothesis 1. The likelihood of a financially distressed PE buyout entering bankruptcy is lower when PE investors manage a first-time fund.

We expect PE firms to have higher incentives to resolve financial distress during fundraising activities to convince existing and new LPs to provide new funds. First, disclosing write-offs in the investment portfolio will be especially harmful during periods when new investment funds are being raised. A typical PE firm has several funds running at the same time. When committing capital to a PE firm, prospective LPs will consider both the historical track record and the performance of more recent funds (Chung et al. 2012). Current LPs dissatisfied with the returns of the existing fund will be more reluctant to invest in subsequent funds. Portfolio firm bankruptcies will provide a negative performance signal with respect to the expected fund return and might lower their willingness to invest.

Second, PE firms often need to go to the capital market to attract new LPs as current LPs might be cash constrained (Cumming, Fleming, and Suchard 2004; Lerner and Schoar 2004). During this fundraising process, potential new LPs face information asymmetry problems as the overall performance of the existing fund might not yet be fully clear (Lerner and Schoar 2004). PE firms have significant discretion in the way they value their existing portfolio and, therefore, could exploit their discretion by increasing the valuation of existing investments (Vanacker et al. 2019). The incentives to do this will be especially high when PE firms try to raise their next fund. Indeed, prospective LPs should be extremely wary of using reported returns of current funds to make investment decisions (Jenkinson et al. 2013). Brown et al. (2016) present evidence that under-performing managers boost returns when fundraising takes place. As bankruptcies are generally

widely covered by media and PE investors involved frequently receive negative publicity (Bacon, Wright, Ball, and Meuleman 2013), this might well send an unbiased negative performance signal with respect to the expected performance of the existing fund thereby hampering future fundraising efforts.

Based on the previous discussion, we expect PE investors to spend more time and effort to avoid bankruptcies when raising new funds. Hence:

Hypothesis 2. The likelihood of a financially distressed PE buyout entering bankruptcy is lower when PE investors are involved in fundraising activities.

PE firms are highly dependent on banks as they provide loans to fund the buyout transaction. Banks also specify and closely monitor detailed loan covenants (Citron, Robbie, and Wright 1997). High leverage puts pressure on managers to improve performance to be able to service the debt (Jensen 1986), but also increases the likelihood of financial distress (Kaplan and Stein 1993; Wilson and Wright 2013). When the buyout portfolio company encounters distress, agency costs of debt associated with conflicts between equity and debt providers will surface as the two parties have inherently different interests (Myers 2001). PE firms, as shareholders in the portfolio firm and agents to the bank, might be incentivized toward more risk taking, increasing debt levels and overinvestment, which harms the interests of more risk averse banks (Myers, 2001). A key question, therefore, is how do relationships between PE firms and banks influence their effectiveness to resolve financial distress?

PE firms are heterogeneous. Besides independent PE firms, bank-affiliated PE groups are prominent players in the buyout setting, accounting for 30 percent of all PE investments in the

United States (Fang et al. 2013) and the UK (Wang 2017). Bank-affiliated PE groups can act as equity investors or both equity and debt investors in buyout transactions. The different nature of agency relationships between bank-affiliated PE firms and independent PE firms and their debt providers may impact their incentives and effectiveness to resolve buyout distress.

We expect bank-affiliated PE firms to have a lower likelihood of financial distress ending up in bankruptcy. First, bank-affiliated PE groups are often exposed to both the equity and the debt of the target (at least partially), resulting in a better alignment of equity and debt investors' interests, and reducing potential agency problems between equity and debt investors and the distressed portfolio firm (Jiang, Li, and Shao 2010). Proximity between the bank and its borrowers can reduce the costs of financial distress by reducing information asymmetries and improving coordination (Hoshi, Kashyap, and Scharfstein 1990). Problems of informational asymmetries are less likely as the bank will have better access to "soft" information, including information on the management's ability to overcome distress, the underlying causes of distress, and the veracity of the firm's financial statements (Rosenfeld 2014). Because the bank has access to more reliable data, it may be more feasible for the PE firm to renegotiate financial claims and, therefore, easier to resolve financial distress. Renegotiating financial claims was particularly pertinent during the 2008 credit crisis, which saw a significant number of debt-equity swaps between PE firms and banks to avoid bankruptcy (Wilson and Wright 2013). Second, the parent banks of bank-affiliated PE firms frequently arrange the loan syndicate to source the debt financing in the buyout (Fang et al. 2013). If the underlying buyout target fails to repay its debt following financial distress, this will harm the reputation of the parent bank in the loan syndication market. Research indicates that bankruptcies among a lead arranger's borrowers cause severe reputational damage and limit its future success in the syndication market (Gopalan, Nanda, and Yerramilli 2011). Therefore, the

negative implications of financial distress ending up in bankruptcy are likely to be more severe for bank-affiliated PE firms and their incentives to resolve distress should, therefore, be higher. Third, it is frequently the bank that makes the decision to place the company in bankruptcy (Franks and Sussman 2005). Therefore, bank-affiliated PE firms might receive more leeway from their parent banks to resolve financial distress. Hence, we expect:

Hypothesis 3. The likelihood of a financially distressed PE buyout entering bankruptcy is lower when PE investors are affiliated with banks than for independent PE investors.

Methods

Data

We built a unique dataset that covers the population of UK companies that filed statutory accounts during a 15-year period (1995–2009). The United Kingdom offers a unique setting to analyze distressed buyouts because all UK companies, including all privately held companies, are required to publish detailed financial accounts. The time frame includes the recovery from the early 1990's recession, a downturn during 2000 to 2003, a very stable period in terms of the insolvency rate from 2003 to 2007, and the recessionary cycle from 2007 to 2009 including the rapid rise (and peak) in PE-backed buyout entering financial distress (Wilson, Wright, Siegel, and Scholes 2012). We collected data from Companies House, the national database on limited companies, and the Insolvency Service. To these databases, we matched information on UK buyouts during the sample period provided by the Center for Management Buyout Research (CMBOR), the most comprehensive data source of buyouts in the United Kingdom. To have at least one year of accounting data available post-buyout, we included PE-backed buyout

transactions up until 2008. We excluded buyouts that resulted from a distressed company seeking restructuring as PE investors specializing in distress typically have a different investment approach and might not be subject to the dynamics described in this paper. Based on this sampling procedure, we identified 1,769 PE-backed buyouts over the period 1995 to 2009.

In the next step, using this sample of 1,769 PE-backed buyouts, we employed the definition of Asquith et al. (1994) for financial distress to identify portfolio companies entering financial distress in the years following the buyout transaction. We considered a firm to be in financial distress if in any two consecutive years after the buyout, the firm's earnings before interest, taxes, depreciation, and amortization (EBITDA) was less than its reported interest expense; or if in any one year, EBITDA was less than 80 percent of its interest expense (Asquith et al., 1994). Based on this definition, we identified 589 buyouts that in any given year after the buyout experienced a situation of financial distress.

Lastly, data on the lead PE firm characteristics and fundraising activities were added by using Thomson's VentureXpert and the CMBOR dataset. Distressed buy-outs that involved a foreign lead PE firm or other types of institutional investors (for example, sovereign wealth funds) as lead investors were excluded due to limited data availability and different investor dynamics (153 cases). We also lost 99 observations because of limited availability of PE firm data or financial accounting data. In total, our final sample includes 996 firm-year observations representing 337 distressed buyouts, of which 67 failed between 1998 and 2009. We examined whether there were any systematic differences between the observations retained in the final dataset and the overall population of distressed buyouts identified in the sample. Using Mann-Whitney tests we did not observe any statistically significant differences in size as measured by

the total assets, profitability as measured by the operating cash flow divided by total assets and the age of the companies in the year of the buyout.

Analytical Framework

To test our hypotheses, we employed survival analysis techniques (Shumway 2001). Our basic estimation technique was the Cox proportional hazard model, a robust technique for hazard rate analysis that does not place restrictive assumptions about the exact nature of a hazard's probability distribution. Strengths of the Cox proportional hazard model include the ability to handle censored observations, to isolate the influence of specific variables on firm survival over time and the robustness of the results to non-normal conditions. The Cox proportional hazard model derives a hazard rate giving the likelihood of the particular event (bankruptcy) occurring in the next instant, conditional upon it having not occurred up to that point in time. The model then estimates parameter values for the covariates being analyzed by comparing the proportional effects on the hazard rate with a baseline hazard, that is, the rate determined when all independent variable values are arbitrarily set to zero. To take into account industry effects, we assume a separate baseline hazard for different industries based on two-digit SIC industry codes using the strata option in Stata 13. Our Cox proportional hazard model can be expressed as follows:

$$h_{ij}(t) = h_{0j}(t) \exp[x_i B],$$

where $h_{ij}(t)$ is the hazard rate for the ith subject who belongs to the jth stratum as defined by the two-digit SIC industry codes at time t, $h_{0j}(t)$ is the baseline hazard function for the jth stratum, x_i is the vector of time-varying predictors, and B is the vector of estimated coefficients. All independent and control variables are time-varying. As some PE firms appear multiple times in the database, we applied robust standard errors that were clustered at the PE firm level.

Variables

Our dependent variable indicates whether a financially distressed PE-backed buyout enters bankruptcy in a particular year, rather than remaining in going concern. Bankruptcy is defined as entering liquidation, receivership, or administration, the UK's formal bankruptcy regime for firms (Franks and Sussman 2005).

We included three independent variables. First, we operationalized PE investors running a first-time fund with a dummy (*PE first-time fund*) indicating whether for a particular buyout the lead PE firm invested via a first-time fund (= 1) or a follow-on fund (= 0). Second, we included a dummy *(PE fundraising)* indicating whether the PE firm was involved in fundraising activities in a particular year (= 1) or not (= 0). We assumed a PE firm to be involved in raising funds in a given year when the PE firm initiated a follow-on fund within a period of two years. We thus assumed PE firms to take approximately two years to solicit money and close new funds (Gompers and Lerner 1998; Krohmer 2007).[2] We used the fund starting year as reported by VentureXpert as a cut-off point for the starting date of the follow-on fund. Third, we add a dummy *PE bank affiliation* to indicate whether the PE firm was bank affiliated (= 1) or not (= 0) as indicated in the VentureXpert database.

We added several control variables. First, we included the general investment experience of the lead PE investor (*PE experience*) measured by the cumulative number of buyout investments the PE firm carried out prior to the year of analysis as reported in the CMBOR database (Demiroglu and James 2010). We log-transformed this variable to account for skewness. Tykvova and Borell (2012) show that experienced investors are better able to manage distress risks compared to less

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[2] For robustness testing, we also narrowed the fundraising period to one year prior to the year of the first investment. Results were similar but less significant.

experienced investors. Second, to account for the reputation of the PE firm, we add a variable that measures the total number of previous funds a PE firm has launched (*PE total funds*). Successful PE investors are more likely to raise follow-on funds (Vanacker et al. 2019). We log-transformed this variable to account for skewness. Third, we also controlled for the human capital at the level of the portfolio company by measuring the operating experience of the directors active in the company (*Director experience*). More specifically, we calculated the total number of days each director within the portfolio company served as a director in different companies active in the UK. We log-transformed this variable to account for skewness. Fourth, we included dummy variables to distinguish between management buy-outs, management buy-ins (*MBI*), a combination of a buy-in and a buyout (*BIMBO*), and investor-led buyouts (*IBO*). Previous research has indicated that management buy-ins are more risky compared to management buy-outs (Wilson and Wright 2013). The management buy-out category is the reference category. Fifth, there are a number of different buy-out sources, such as independent private buyouts, divestments *(Divestment)*, public-to-private transactions (*Public-to-private*), secondary buyouts (*Secondary*), and other sources such as family firm buyouts (*Other*), which may impact the probability of distress leading to bankruptcy. We included dummy variables to distinguish between these buyout sources. The independent private buyout category is the reference category and is, therefore, not included. Sixth, we constructed several financial ratios following previous corporate failure studies (Altman and Hotchkiss 2005). We use *ROA* and operating cash flow to total assets (*Cashflow/TA*) lagged one year to control for firm profitability and *Leverage* measured as total debt divided by total assets lagged one year. Where buy-outs are excessively funded with debt, the probability of a distressed company leading to failure may be higher (Kaplan and Stein 1990; Wilson and Wright 2013). Seventh, we added dummy variables representing firms at particular risk of failure owing to their

age, that is, firms younger than 3 years (*AgeRisk1*) and firms between 3 and 9 years of age (*AgeRisk2*). Eight, as the size of the firm may impact the scope for restructuring, we controlled for firm size by using the natural logarithm of total assets lagged one year (*Total assets*). Finally, we controlled for the number of years after the buyout *(Time from buyout)* and included year dummies to control for the general economic climate.

In the robustness tests, we control for the average risk taking propensity of PE firms. Therefore, we calculated the private firm Altman Z-score for each buyout included in our full sample of buyouts (including both distressed and non-distressed firms). Altman's (1983) Z-score is an indicator of how far a firm is from bankruptcy with a high score indicating that the risk of bankruptcy is limited whereas a low score indicates a high likelihood of bankruptcy. Based on the Altman Z-score we created a dummy variable that captures whether a buyout can be classified in the 'grey' zone ($1.23 < Z' < 2.9$) or 'distress' zone ($Z' < 1.23$) in a specific year (Altman 1983). To capture the risk taking propensity of a PE firm, we took the average of this dummy variable across the portfolio of firms a PE firm invested in within a specific year. This longitudinal variable, therefore, captures the overall riskiness of a PE firm's investment portfolio across time. Additionally, we also control whether "throwing good money after bad money" might explain the results of our analyses. Therefore, we include two dummy variables that measure whether the total shareholder funds as a percentage of total assets (*Increase shareholders' funds dummy)* or the total financial debt to total assets (*Increase total debt dummy*) increased at least with 5 percent from one year to another. We lagged these two variables with one year.

Results

The summary statistics and correlations are shown in Table 1. In total, 26 percent of the distressed buyout transactions are conducted by PE firms running a first-time fund. At any given time, on average 31 percent of the PE firms were involved in fundraising activities. Lastly, in line with US data (Fang et al. 2013), 34 percent of all buyouts are backed by bank-affiliated PE firms. The correlations between all variables used in the regression analyses were well below 0.50 with the exception of the experience and reputation related variables (*PE first time fund dummy, PE experience, PE total funds*). We ran multiple models including and excluding these highly correlated variables and the results remain consistent.

Insert Table 1 about here

Table 2 presents the results of the Cox proportional hazard regressions. We tested the proportional hazard assumption for each of the models included in the analyses and could not reject the null hypothesis that the hazard was proportional. The Cox proportional hazard model, therefore, seems to be appropriate. Model 1 only includes the control variables. The control variables indicate that buyouts with a higher level of profitability are less likely to end up in bankruptcy.

In models 2 to 4, we added our independent variables separately to test our different hypotheses. All the models are statistically significant. In model 2, we introduced *PE first-time fund* indicating whether the PE investor is a first-time fund investor to test hypothesis 1. The hazard ratio is significant and suggests that the likelihood that PE investors without a track record of raising follow-on funds experience a bankruptcy following financial distress is 75 percent lower as compared to PE investors running follow-on funds, lending support for hypothesis 1. In model

3, we introduce *PE fundraising*. The likelihood of a financially distressed buyout entering bankruptcy is lower when the PE firm is involved in fundraising activities, lending support to hypothesis 2. The hazard ratio indicates the likelihood of a financially distressed buyout ending up in bankruptcy is 74 percent lower for PE firms involved in fundraising activities compared to PE firms not raising funds. In model 4, we investigate the impact of *PE bank affiliation*. In line with hypothesis 3, bank-affiliated PE firms are more likely to resolve financial distress as bank affiliation lowers the likelihood of a financially distressed buyout entering bankruptcy, as indicated by the hazard ratio of 0.58. In model 5, we introduce all the variables together. The results are consistent, providing support for hypotheses 1, 2, and 3.

Insert Table 2 about here

In Table 3, we ran a number of additional analyses to test the robustness of our results. Because of space limitations, we did not report the dummies related to the *buyout source* and the *buyout type* even though they have been included in each of the models. In model 1, we use an alternative measure to identify financial distress. We classified firms as financially distressed when the firm's earnings before interest, taxes, depreciation, and amortization (EBITDA) were less than its reported interest expense in any given year. Using this definition, we identified 453 distressed buyouts, of which 85 entered bankruptcy. The results are highly consistent. In model 2, using our original definition of financial distress, we measured fundraising activities within a time frame of one year as compared to two years. The PE fundraising variable is not significant ($p = 0.14$), even if it has the expected sign. In model 3, we address potential selection bias. More specifically, we constructed a variable capturing the average risk-taking propensity of PE firms. Some PE firms

(for example, bank-affiliated PE firms) might select targets that are less likely to enter distress and end up in bankruptcy. Relying on the Altman Z score, we included a variable that captures the average risk profile of a PE firm's portfolio of firms at any given year. Including this variable does not change our main results. Lastly, in model 4 we test whether PE firms throw "good money after bad money" by including two dummy variables that capture an increase in the shareholders' funds or total financial debt as a percentage of total assets by at least five percent. An increase in shareholders' funds to total asset decreases the likelihood of bankruptcy even though the effect is only marginally significant ($p = 0.12$). Our results remain consistent when adding these two dummy variables. Overall, our results provide some support for hypothesis 2 and strong support for hypothesis 1 and hypothesis 3.

Discussion and Conclusion

Traditional agency theory has been a popular framework to examine the impact of PE on buyout targets and has generally treated the PE investor as principal managing the relation with the underlying investee as agent (Cumming et al. 2007; Manigart and Wright 2013). However, few studies have looked into the relationship between PE investors as agents and their investors, including LPs and banks as principals, and how this relationship might influence the outcome of the underlying buyout transaction. We acknowledge this dual identity of PE investors as principals and agents and examine how this influences outcomes of financial distress in a sample of 338 distressed buyout transactions in the United Kingdom over the period 1995 to 2009. Understanding how the principal-agent relationship between LPs and lenders as principals and PE firms as agents influences the performance of investments is of key importance as it might indicate inefficiencies in the functioning of the traditional PE model (Arcot et al. 2015).

Our aim has been to address this research gap in a setting in which principal-agent conflicts are likely to emerge, that is, the context of financially distressed buyout transactions (Hoskisson et al. 2013). Previous research has indicated that a significant number of buyout transactions suffer from financial distress and end up in bankruptcy (Wilson et al. 2012). Using an agency perspective, we developed a number of hypotheses regarding the impact of PE fundraising reputation, PE fundraising activity, and PE bank-affiliation on the likelihood of a financially distressed buyout ending up in bankruptcy rather than remaining as a going concern. Our results provide evidence that PE firms managing a first-time fund are less likely to let financially distressed buyouts enter bankruptcy. Additionally, our results provide support that PE firms that are involved in fundraising activities at the time of distress are less likely to have bankruptcies following financial distress. These results indicate that PE firms are clearly concerned about their reputation with LPs to secure future fundraising and hence have more incentives to keep distressed portfolio companies as a going concern. Lastly, we find significant evidence that bank-affiliated PE firms are more effective in resolving financial distress, suggesting that bank-affiliated PE firms are better aligned with their creditors to resolve distress.

Our results contribute to the literature in different ways. First, previous studies examining the impact of PE firms on portfolio companies have generally neglected the complex interplay between different types of principal-agent relationships on the outcome of investments (Cumming and Groh 2018; Hoskisson et al. 2013). Whereas previous studies on PE have examined the interplay between GPs and LPs to explain the performance of secondary buyouts (Arcot et al. 2015), to the best of our knowledge, our study is the first to show how fundraising dynamics in PE influence the outcome of distressed investments. Whether or not a financially distressed portfolio firm ends up in bankruptcy does not only depend on portfolio firm characteristics (for example,

profitability) and the capabilities of the PE firm (for example, investment experience), but also on reputational concerns providing incentives for the PE firm to keep the portfolio firm as going concern. Additionally, while previous literature has mostly focused on showing successes (that is, successful exits) as a way to boost a PE firm's reputation, our results indicate that avoiding failures (that is, bankruptcies) might well be a way to prevent harm to one's reputation. By doing so, we also add to previous studies in a VC setting that have highlighted inefficiencies in the way VC firms manage winners and losers in their portfolio (Gompers 1996; Kandel et al. 2011; Krohmer et al. 2009). Additionally, existing research has largely neglected the signaling value of a bankruptcy – that is, a negative signal of future expected fund performance – and how PE investors manage negative signals to build a reputation. Overall, there has been a lack of research in the signaling literature that has looked at signals that communicate negative information and how agents deal with this (Connelly et al. 2011).

Second, a number of studies have started to highlight the importance of looking into PE heterogeneity (Cressy et al. 2007; Cumming 2005; Cumming, Deloof, Manigart, and Wright 2019; Wright et al. 2009) and how this impacts the performance of portfolio companies. We contribute to this literature by examining differences in investment outcomes between independent PE investors and bank-affiliated PE investors. Fang et al. (2013) show how parent banks of bank-affiliated PE firms provide better financing terms to the underlying buyout targets compared to unaffiliated banks. Our results add to this literature by showing that bank-affiliated PE firms seem to be better positioned to avoid bankruptcy when financial distress takes place. This downside protection, however, might come at the expense of limited upside value creation potential given the fact that independent PE investors seem to be superior equity investors (Fang et al. 2013).

Third, previous studies have looked into the role of experience in causing and resolving financial distress in buyout transactions (Hotchkiss et al. 2014; Tykvova and Borell 2012). These studies indicate that more experienced investors are more skilled in managing financial distress and, therefore, are more likely to avoid bankruptcy. However, these studies do not explicitly disentangle the investment experience effect from the reputational effect. Tykvova and Borell (2012) explicitly argue that experienced investors have higher incentives to avoid distress as compared to inexperienced investors because they have a higher reputational stakes vis-à-vis their capital providers and lenders. By examining distressed transactions and explicitly controlling for previous investment experience, our study shows that PE investors without a reputation in fundraising have higher incentives to resolve distress. Reputational concerns clearly have an impact above and beyond investment experience.

Fourth, a number of studies have looked into the likelihood of financial distress and bankruptcy in the context of PE-backed buyout transactions (Kaplan and Stein 1993; Stromberg 2008; Tykvova and Borell 2012; Wilson and Wright 2013; Wilson et al. 2012). However, with the exception of Hotchkiss et al. (2014), none of these studies have looked into the possibility of a turnaround when financial distress occurs. We, therefore, add to the general governance literature that has stressed the importance of effective governance to resolve agency conflicts between different stakeholders to overcome distress (Hoskisson et al. 2013). More generally, although our focus was on PE-backed, established later-stage firms, our analysis also has implications for research on VC backed early stage firms and the study of entrepreneurial failure more generally. Studies of failure in VC backed firms need to explore the extent to which such firms are restructured to continue as going concerns or enter bankruptcy. Such analyses may provide new insights into the extent and nature of VC backed firm failure. Studies of entrepreneurial failure

have tended to focus on the drivers and effects of firm bankruptcy on entrepreneurs (Ucbasaran et al. 2013). However, in line with Jenkins and McKelvie (2017), future studies might usefully examine what drives some entrepreneurs to be able to turnaround their firms when they enter distress and prevent them from entering formal bankruptcy. For example, studies might include entrepreneurial experience and cognitive factors, as well as the role of investors. Such studies might usefully compare and contrast the role of these factors in distressed entrepreneurial firms that fail and those that are turned around.

Our study has limitations that suggest avenues for extending and enhancing future research. First, we examined how principal-agent relationships between LPs and banks, on the one hand, and PE investors on the other, influence the outcome of the principal-agency relationship between the PE investor and the underlying investee. However, leveraged buyout transactions also include other stakeholders, including the board of directors, executives, and employees, who might have opposing interests. These principal-agent dynamics might also influence the outcome of a buyout investment. For example, the extent to which managers are entrenched in and dependent on the underlying buyout target could also impact their incentives to resolve distress. Future research could further explore these additional complexities to enrich our understanding of multiple agency theory. Second, due to limited data availability, we did not look into the underlying mechanisms that helped some PE investors resolve financial distress. Key questions to be answered include whether the financial accounts of PE-backed companies might have been manipulated to postpone a firm's distressed condition (Charitou, Lambertides, and Trigeorgis 2007). For example, earnings might be managed upwards to avoid debt covenant violations. Another possibility is that some PE investors spend more time with their distressed companies to execute a turnaround. Examining these questions in detail offers a fruitful avenue for future research. Third, we cannot make any

claims about whether or not the resolution of financial distress is efficient from a fund management perspective. In some cases, letting a firm go bankrupt might be the better option given the opportunity costs involved in resolving distress. We did not have access to fund performance data to make any claims with respect to this. Using fund-level performance data, future research could examine the potential economic cost of principal-agency conflicts between LPs and GPs in the context of PE. Fourth, our focus was on a sample of UK PE-backed buyouts. Further analysis might usefully explore the extent to which our findings hold in other institutional contexts (for example, US). Bankruptcy regimes differ significantly between different countries and, therefore, the dynamics involved might have different implications for the incentives to resolve distress. Lastly, even if we have tried to tackle selection issues, we cannot completely rule out selection bias. Bank-affiliated PE investors and PE investors running a first-time fund might be more selective and pick targets with specific (unobserved) characteristics that help them to recover more easily from financial distress.

From a practitioners' point of view, our results highlight a number of issues. First, existing and prospective investors in first-time PE funds should be aware that the GPs of these funds have different incentives to manage investments and, therefore, should be cautious when assessing the performance of these funds and pay special attention to the investment decisions of these funds (for example, providing follow-on financing to distressed investments). Second, in line with Brown et al. (2016) and Krohmer et al. (2009), our study indicates that LPs should be wary about the investment behavior of PE firms when fundraising activities take place. Third, managers seeking investment capital from PE investors to conduct a buyout should be aware of differences in investment behaviour between bank-affiliated PE investors and independent PE investors. These differences might have important implications for the future performance of the buyout target.

Overall, we have addressed the dual identity of PE investors and how this influences the outcome of their investments. We have contributed to a recent stream of literature examining the principal-agency relationships between LPs and GPs and offer fruitful avenues to study the complex interplay between different stakeholders in PE-backed and VC-backed transactions.

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Table 1

Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. PE first time fund	0.26	0.44	0	1	1.00																			
2. PE fundraising	0.31	0.46	0	1	-0.32*	1.00																		
3. PE bank affiliation	0.34	0.47	0	1	0.17*	-0.27*	1.00																	
4. PE experience	131.44	137.66	0	394	-0.37*	0.44*	-0.18*	1.00																
5. PE total funds	11.62	10.54	1	56	-0.65*	0.41*	-0.56*	0.52*	1.00															
6. Director experience	12306.39	7176.11	26	70734	-0.04*	-0.08*	0.03*	-0.11*	0.01	1.00														
7. Divestment	0.33	0.47	0	1	-0.10*	0.07*	-0.07*	0.11*	0.12*	-0.08*	1.00													
8. Public-to-private	0.06	0.24	0	1	0.00	-0.01	-0.13*	-0.07*	-0.02	0.04*	-0.17*	1.00												
9. Secondary	0.02	0.15	0	1	0.00	0.01	0.00	0.02	-0.02	0.00	0.01	0.01	1.00											
10. Other	0.04	0.19	0	1	-0.04*	0.03	-0.04*	0.05*	0.09*	0.00	-0.13*	-0.04*	0.00	1.00										
11. MBI	0.12	0.32	0	1	0.03*	0.00	-0.01	0.06*	0.02	-0.11*	-0.07*	-0.06*	-0.02	0.06*	1.00									
12. BIMBO	0.08	0.28	0	1	0.03	0.02	-0.03	-0.01	0.02	0.02	-0.05*	-0.07*	-0.01	-0.02	-0.11*	1.00								
13. IBO	0.16	0.37	0	1	0.01	-0.03	-0.06*	-0.18*	-0.06*	0.05*	-0.02	0.15*	-0.02	-0.02	-0.16*	-0.13*	1.00							
14. ROA	0.06	0.51	-13.6	3.44	0.03	-0.03	0.02	-0.05*	-0.05*	0.03*	-0.04*	-0.02	0.00	-0.02	-0.03	0.01	0.01	1.00						
15. Cashflow/total assets	0.05	0.12	-1	0.7	0.03*	0.00	0.03*	-0.03*	-0.05*	0.07*	-0.08*	-0.01	-0.01	0.01	0.02	0.03	0.03*	0.08*	1.00					
16. Leverage	0.34	0.42	0	14	0.01	-0.01	-0.03*	-0.02	0.00	-0.01	0.05*	-0.04*	0.01	0.00	0.05*	-0.01	0.02	-0.09*	-0.01	1.00				
17. AgeRisk1	0.02	0.13	0	1	0.03*	0.00	0.04*	-0.02	-0.05*	-0.04*	0.01	-0.01	-0.02	0.01	-0.02	0.03	-0.02	-0.01	0.01	0.06*	1.00			
18. AgeRisk2	0.37	0.48	0	1	0.05*	0.06*	0.03*	0.05*	-0.03*	-0.12*	0.08*	-0.04*	0.02	0.04*	-0.01	0.04*	0.04*	-0.05*	0.13*	0.13*	-0.09*	1.00		
19. Total assets	25.1	41.1	0.64	179	-0.05*	-0.04*	-0.03*	-0.15*	-0.06*	0.14*	0.05*	0.21*	0.04*	0.01	-0.06*	-0.06*	0.27*	0.20*	0.03	0.07*	0.02	-0.01	1.00	
20. Years after buyout	5.54	3.56	0	14	-0.17*	0.02	-0.15*	0.16*	0.31*	0.12*	0.18*	-0.07*	0.00	0.08*	0.10*	0.02	-0.17*	-0.06*	-0.10*	0.01	-0.11*	-0.17*	-0.09*	1.00

N = 996 firm-year observations, * Significant at *p* < .05, Mean, standard deviation, minimum and maximum: PE experience expressed in absolute number of investments. Total director experience expressed in number of days. Total assets expressed in million pounds.

Table 2
Stratified Cox Proportional Hazard Regressions for the Likelihood of a Financially Distressed Buyout Ending Up in Bankruptcy[a][b]

	Variable	(1)	(2)	(3)	(4)	(5)
	PE first-time fund		0.25**			0.17**
			(0.11)			(0.1)
	PE fundraising			0.26*		0.21*
				(0.18)		(0.15)
	PE bank affiliation				0.58*	0.35**
					(0.15)	(0.14)
Controls						
	PE experience	1.01	1.03	1.06	1.03	1.17
		(0.1)	(0.11)	(0.15)	(0.1)	(0.19)
	PE total funds	1.01	0.68+	1.19	0.84	0.51*
		(0.16)	(0.15)	(0.25)	(0.14)	(0.16)
	Director experience	0.81	0.73+	0.76	0.83	0.69
		(0.14)	(0.13)	(0.16)	(0.14)	(0.19)
Buyout type	MBI	1.47	1.66	1.33	1.44	1.73
		(0.47)	(0.54)	(0.42)	(0.45)	(0.64)
	BIMBO	0.57	0.58	0.71	0.53	0.73
		(0.22)	(0.22)	(0.4)	(0.23)	(0.44)
	IBO	0.82	0.88	0.74	0.77	0.69
		(0.27)	(0.29)	(0.27)	(0.24)	(0.3)
Buyout source	Divestment	0.49*	0.42**	0.46**	0.47*	0.38***
		(0.14)	(0.13)	(0.13)	(0.14)	(0.1)
	Public-to-private	1.7	1.4	1.63	1.49	1.33
		(1.49)	(1.29)	(1.64)	(1.22)	(1.21)
	Secondary	4.11**	4.30**	3.50***	4.10**	4.05**
		(1.95)	(2.04)	(1.28)	(2.18)	(1.93)
	Other	2.49	1.81	1.46	2.65	1.01
		(1.51)	(1)	(1.06)	(1.61)	(0.64)
Financial ratios	ROA	0.85+	0.87	0.82*	0.85*	0.85
		(0.07)	(0.08)	(0.08)	(0.07)	(0.09)
	Cashflow/TA	0.22+	0.15+	0.14+	0.24+	0.06*
		(0.19)	(0.15)	(0.14)	(0.2)	(0.08)
	Leverage	1.99	1.74*	2.38**	1.93*	1.89*
		(0.59)	(0.48)	(0.79)	(0.56)	(0.59)
Other controls	Agerisk1	3.97	4.45+	3.9	4.71+	6.06*
		(3.61)	(3.6)	(3.37)	3.99	(4.96)
	Agerisk2	1.15	1.27	1.07	1.23	1.25
		(0.32)	(0.38)	(0.32)	0.33	(0.4)
	Total assets	1.16	1.06	1.2	1.19	1.13
		(0.17)	0.18	(0.2)	0.17	(0.21)
	Time from buyout	1.15+	1.16+	1.15+	1.15+	1.16+
		(0.08)	(0.09)	0.09	0.09	(0.1)
	Year dummies	Yes	Yes	Yes	Yes	Yes
	Industry effects	Yes	Yes	Yes	Yes	Yes
Diagnostics	Pseudo R²	0.15	0.17	0.18	0.16	0.22
	Wald chi²	293.20***	431.38***	319.24**	357.29***	647.32***
	Log pseudolikelihood	-100.37	-98.00	-96.92	-98.75	-91.84

[a] This table presents the hazard ratios of a financially distressed buyout ending up in bankruptcy. Two-digit SIC industry codes are used to stratify the models. Robust standard errors clustered at the PE firm level are reported in parentheses. Significance reported (two-tailed test) at $p<0.10$ (+), $p<0.05$ (*), $p<0,01$ (**), $p<0.001$ (***).
[b] $N = 338$ distressed buyouts over a 15-year period (1,008 firm-year obs.). Ending up in bankruptcy: $N = 67$.

Table 3
Stratified Cox Proportional Hazard Regressions for the Likelihood of a
Financially Distressed Buyout Ending Up in Bankruptcy: Robustness Tests[a][b]

	Variable	(1)	(2)	(3)	(4)	(5)
	PE first-time fund	0.19***	0.19**	0.17**	0.18**	
		(0.08)	(0.10)	(0.10)	(0.10)	
	PE fundraising	0.18***	0.44	0.21*	0.20*	
		(0.06)	(0.25)	(0.15)	(0.15)	
	PE bank affiliation	0.28**	0.38**	0.35**	0.37**	
		(0.11)	(0.13)	(0.14)	(0.13)	
Controls						
	PE experience	1.12	1.10	1.19	1.16	
		(0.15)	(0.16)	(0.21)	(0.19)	
	PE total funds	0.48***	0.51*	0.51*	0.53*	
		(0.09)	(0.14)	(0.15)	(0.15)	
	Director experience	0.51***	0.70	0.69	0.66	
		(0.09)	(0.17)	(0.19)	(0.22)	
Financial ratios	ROA	0.79***	0.87	0.86	0.85	
		(0.05)	(0.08)	(0.10)	(0.08)	
	Cashflow/TA	0.079*	0.10*	0.07*	0.08+	
		(0.08)	(0.12)	(0.08)	(0.11)	
	Leverage	1.62	1.63+	1.83+	2.11*	
		(0.53)	(0.47)	(0.58)	(0.67)	
Other controls	Agerisk1	7.14**	5.50*	6.21*	6.73*	
		(4.91)	(3.92)	(5.37)	(6.23)	
	Agerisk2	1.35	1.27	1.23	1.21	
		(0.41)	(0.37)	(0.39)	(0.41)	
	Total assets	1.10	1.12	1.13	1.12	
		(0.14)	(0.19)	(0.21)	(0.21)	
	Time from buyout	1.11	1.16+	1.16+	1.16+	
		(0.08)	(0.09)	(0.10)	(0.10)	
	Risk taking propensity			1.46		
				(1.23)		
	Increase shareholders' funds dummy				0.55	
					(0.21)	
	Increase total debt dummy				0.70	
					(0.24)	
	Buyout type dummies	Yes	Yes	Yes	Yes	
	Buyout source dummies	Yes	Yes	Yes	Yes	
	Year dummies	Yes	Yes	Yes	Yes	
	Industry effects	Yes	Yes	Yes	Yes	
Diagnostics	Pseudo R²	0.25	0.19	0.22	0.23	
	Wald chi²	455.65***	727.28***	588.20***	784.18***	
	Log pseudolikelihood	-112.84	-94.92	-91.60	-90.83	

[a] This table presents the hazard ratios of a financially distressed buyout ending up in bankruptcy. Two-digit SIC industry codes are used to stratify the models. Robust standard errors clustered at the PE firm level are reported in parentheses. Significance reported (two-tailed test) at $p<0.10$ (+), $p<0.05$ (*), $p<0,01$ (**), $p<0.001$ (***).

[b] In model 1 $N = 453$ distressed buyouts over a 15-year period (1,297 firm-year obs.). Ending up in bankruptcy: $N = 85$. In model 2 and 3 $N = 338$ distressed buyouts over a 15-year period (1,008 firm-year obs.). Ending up in bankruptcy: $N = 67$.