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The bright and dark side of staging: Investment performance and the varying motivations of private equity firms

Philipp Krohmer [a], Rainer Lauterbach [a,*], Victor Calanog [b]

[a] Frankfurt University, Berger Str. 185, 60385 Frankfurt am Main, Germany
[b] The Wharton School of the University of Pennsylvania, United States

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ABSTRACT

Previous papers that examined investment decisions by private equity funds are divided on whether staging has a positive or negative effect on returns. We believe these opposing views can be reconciled by studying *when* staging is used during the life of the investment relationship: We find that staging has a positive effect on investment returns in the beginning of the investment relationship, consistent with the notion that staging helps mitigate information asymmetry. However, staging appears to be negatively associated with returns when used prior to the exit decision. Our unique dataset allows us to measure these intertemporal effects precisely.

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1. Introduction

Staging involves the sequential disbursement of capital from a private equity (PE) or venture capital (VC) fund to a portfolio company, often dependent on whether companies receiving funding have satisfied predetermined targets. Our objective is to study whether the use of staging has a positive or negative influence on investment performance. Previous theoretical and empirical studies have yielded mixed predictions and results. Neher (1999), Hsu (2002) and Wang and Zhou (2004) provide theoretical models that predict positive returns from the use of staging. Gompers (1995) asserts that companies that successfully go public (and that earn the highest returns for their PE/VC investors) receive more total financing over a greater number of rounds than companies that go bankrupt or are acquired, providing empirical support for the optimistic view. On the other hand, Bergemann and Hege (1998) and Cornelli and Yosha (2003) suggest that there may be a theoretical basis for expecting negative returns from the use of staging. Hege et al. (2003) provide supporting empirical evidence, finding that the number of financing rounds appears to result in negative IRR and inferring that "... [their results are] at odds with standard manager–shareholder agency theory that predicts that stage financing and monitoring are value increasing."

We believe these opposing views can be reconciled by examining *when* staging is used during the life of the investment relationship: We define the beginning of the investment relationship as that point when the PE/VC fund provides the initial cash injection into the portfolio company and becomes a shareholder in the portfolio company. The end of the investment relationship is marked by that point when the PE/VC fund liquidates its investment in a particular firm, whether by taking the company public, selling the company in the private markets, or writing off the bad investment as a loss. Note that the life of the investment relationship is independent of the age of the portfolio company: A PE/VC fund may invest money in a startup company that has yet to launch its first product, or in a 20 year old privately owned firm looking for financing to enable its expansion into different product or geographical markets.

Like any other investor, PE/VC funds are concerned with maximizing returns while minimizing risks. We speculate that investors disbursing capital at the beginning of an investment relationship may have different motivations and expectations compared to investors disbursing funds prior to making an exit decision. We test whether these different motivations and resulting behavior, manifested during the beginning and end of the investment

* Corresponding author. Tel.: +49 (0) 170 340 1248.
E-mail addresses: pkrohmer@rz.uni-frankfurt.de (P. Krohmer), rlauterbach@alumni.upenn.edu, rainer.lauterbach@gmail.com (R. Lauterbach), vcalanog@wharton.upenn.edu (V. Calanog).

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relationship, explain the varying impacts of staging on investment returns. Given the intertemporal nature of our approach, it is necessary for us to measure the precise amount and timing of cash injections and withdrawals over the complete life of the investment relationship. No other study has been able to do this in the past because of data limitations. In order to address these difficulties, we rely on a unique database that we created using the combination of information on PE and VC deals from *Venture Economics* and CEPRES. Our results suggest that staging does appear to have a positive influence on investment returns when used at the beginning of the investment relationship. This is in line with standard agency theory, where investors apply staging as a monitoring instrument to mitigate agency problems and provide needed resources to the portfolio company. At the end of the investment relationship, however, we find that firms in distress receive more frequent rounds of cash injections as investors "gamble for resurrection," perhaps attempting various turnaround efforts in the hope of minimizing losses. We interpret this as the potentially "dark" side of staging, and offer a set of explanations as to why financing rounds may be inefficiently employed in this stage of the investment relationship, often not achieving goals of minimizing losses, and perhaps even as an attempt at window dressing to obtain the best price possible from whichever (unfortunate or uninformed) buyer ends up taking over the distressed investment.

The paper is organized as follows. Section 2 reviews the literature on staging behavior. In Section 3, we explain our empirical approach in defining various stages in the life of the investment relationship. Section 4 provides hypotheses regarding the influence of staging on investment performance, conditional on when staging is employed over the life of the investment relationship. We describe the data in Section 5 and present analyses in Section 6. Section 7 concludes the paper. Tables are collected at the end of the paper.

2. Literature

Several theoretical models explore how PE and VC firms in general, and staging in particular, may influence investment performance positively, increasing efficiency in financial contracting and leading to optimal investment decisions both on the part of the investor as well as the entrepreneur. Mantecon and Chatfield (2007) show that shared control is associated with greater wealth creation upon asset disposal, justifying PE and VC influence over a company. Admati and Pfleiderer (1994) develop a model of robust financial contracting, showing how inside investors like a PE/VC fund help resolve various agency problems that arise in multistage financial contracting. Neher (1999) argues that upfront financing may be suboptimal since the entrepreneur has an incentive to lower outside investors' shares of the enterprise through renegotiation once the investment is sunk. In this view, staging helps mitigate the commitment problem since early rounds of investment generate collateral that support future rounds. Hsu (2002) analyzes VC investments using a real options framework, concluding that staging not only gives the investor a "wait and see option" but also provides disincentives against underinvestment by entrepreneurs. Wang and Zhou (2004) show how staging for companies with high growth potential is superior to upfront financing, but qualify that upfront financing may be better for projects that are not too promising.

Other theoretical models provide reasons why staging may result in poor investment returns. Lerner (1998) discusses the Bergemann and Hege (1998) model and how portfolio companies' control over information flow limits benefits that funds may receive from using staging to elicit information about the firm's performance, concluding that "this appears to contradict the critical evidence in Gompers' empirical examination of staged financing." Cornelli and Yosha (2003) explore how staged financing creates a conflict of interest between the investor and entrepreneur, inducing the entrepreneur to focus on meeting the immediate hurdle of the next stage instead of focusing on long-term returns. They develop a model showing that this type of window dressing by the entrepreneur reduces the investor's payoff because the refinancing/liquidation decision is based on lower quality information. Baker (2000) similarly concludes that managers have incentives to inflate interim returns, with career concerns reducing any efficiency benefits conferred by staging.

Empirical studies reflect these conflicting findings. Gompers (1995) provides evidence of the positive effects of staging, linking staging behavior with exit decisions. His paper studies investments from the perspective of portfolio companies, showing how companies that go public (his measure of "investment success") receive more total financing and a greater number of financing rounds. In an approach analogous to ours, Sahlman (1990) differentiates different stages in the company's development, including seed, startup, first to fourth stage, bridge and finally liquidity stage at the exit event. He finds that staging is a powerful instrument that influences the company's development (with positive results for investment returns). Note however that his definition of the life of the investment relationship is directly linked to the age of a particular company: As we stated in the introduction, our approach defines the life of the investment relationship based on when the PE/VC fund enters as a shareholder and liquidates the investment. This is independent of the age of the company.

Hege et al. (2003) provide empirical evidence that suggest that staging may have a negative influence on investment performance. They calculate investment returns from reported valuations in the *Venture Economics* database, suggesting that negative returns are associated with a larger total number of financing rounds. They point out that this result is at odds with standard manager–shareholder agency theory that predicts that stage financing and monitoring are value increasing.

3. Empirical strategy

In contrast to several of the previous studies that focused on the performance of portfolio companies, this paper focuses on the investor's concerns. Specifically, we measure particular PE/VC funds' decision to inject capital into specific portfolio companies, capturing each capital injection from the fund to the portfolio company until the exit stage is reached and proceeds flow back into the PE/VC fund. From the investor's perspective the life of the investment relationship starts with the initial capital injection into the portfolio company. The investment relationship ends with the exit decision as capital is distributed back into the PE/VC fund. Investors can time their initial investment at any stage of a given portfolio company's development, whether in the early stages for seed financing, or in more mature stages (expansion or pre-IPO). Although PE and VC investments are frequently syndicated, implying that any one fund has only partial influence on the company's performance, each investor independently decides on whether to pull out and exit from the deal, or provides follow-on financing, implying specific influence on the return of individual fund investments.

PE/VC funds can use staging as an instrument that helps determine whether follow-on financing will be provided. Associated with this decision is the choice of what level of supervision and support to provide. At each round of financing, the fund decides on whether to exercise predetermined options like providing follow-on financing or abandoning the project and terminating the investment. Given the evolving nature of portfolio companies'

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