



# Debt financing, venture capital, and the performance of initial public offerings <sup>☆</sup>



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## ABSTRACT

We examine the roles of two financial intermediaries, lenders and venture capitalists, in a sample of more than 6000 IPO firms during 1980–2012. Venture capitalists and lenders generally fund different types of firms and, on average, are substitutes; however, in some instances we observe interactions and complementary roles between the two funding sources. Firms with high debt have lower valuation uncertainty, and lower initial day returns than those backed by venture capital. However, firms with high debt levels underperform in the long-run, especially those without venture capital. We provide some evidence that firms backed by reputable venture capitalists perform better.

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## 1. Introduction

We examine the roles of two providers of intermediated capital, venture capitalists (VC) and lenders, on the characteristics of the initial public offerings (IPO) firms, their initial returns (or underpricing), and their long-term performance following the IPO. While a number of IPO studies examine the effects of VC backing on the initial returns and long-run performance of IPOs, few examine the role of debt financing on the process of going public, and to our knowledge, none empirically examine the comparative roles and effects of debt financing versus venture capital in this process.

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Using a sample of more than 6000 IPOs during 1980–2012, we provide three main results that extend the literature. First, we show that the characteristics of firms with high levels of debt financing are consistent with less uncertainty about firm value than those backed primarily by VC, and those characteristics generally support the theoretical predictions of [James and Wier \(1990\)](#), [Ueda \(2004\)](#), and [Winton and Yerramilli \(2008\)](#). We also provide evidence that debt financing and VC backing are substitutes, on average. However, this relationship is more complex: we show that VC and debt interact in more nuanced ways, and play complementary roles in certain cases (i.e., some firms have both VC backing and high debt use, similarly to the positive associations between the existence of VC and bank relationships documented by [Gonzalez and James, 2007](#), and some firms have neither VC backing nor debt).

Second, we find that debt backing is associated with lower underpricing, with the effect especially pronounced in periods of high uncertainty. For the full period of our sample, firms in the highest quartile of debt financing averaged 14.1% initial day returns, while those in the lowest debt quartile averaged 22.9%. Our results complement and extend the finding of [James and Wier \(1990\)](#) who find lower underpricing for firms with bank or other private lending relationships during 1980–1983, and [Schenone \(2004\)](#), who reports negative association between debt and initial day returns for a narrow subset of IPOs whose underwriters were also the firms' bankers during 1998–2000 (the peak

of the Internet “bubble”), and whose debt is reported by DealScan, which eliminates a large set of smaller firms. In contrast, our study covers a very long period with varied market conditions (1980–2012), a large number of firms, and a very general, representative sample, that extends the findings from the shorter time periods studies by Schenone or James and Wier. On the other hand, this approach restricts our ability to identify the sources of debt only to information from existing databases such as Compustat, SDC and DealScan, which limits our inferences on the effect of the identity of various lenders on the IPO process.

Our results hold when we control for the endogeneity related to the selection of VC or debt financing. The economics of the firm determines its use of VC or debt, and when the firm goes public that is realized in market valuation. The results show that the VC/debt choice is a strong signal of underlying firm characteristics and quality which investors pick up on.

Our third contribution is examining the comparative effects of debt financing and VC on the long-term performance of IPO firms. We find that long-term performance is monotonically decreasing by debt quartiles (controlling for risk factors), and that VC-backed firms outperform non-VC backed firms, on average. Furthermore, we find that the underperforming firms, characterized by [Brav and Gompers \(1997\)](#) as small (in market capitalization) and without VC, are frequently also firms with high level of debt financing. We also explore the interaction of VC backing and debt, and find that firms with high debt use and no VC backing perform particularly poorly compared to firms with VC backing (especially those with high VC reputation) and low levels of debt financing. We provide some additional evidence that firms with more reputable VCs tend to perform better.

Lenders and venture capitalists tend to examine carefully the risk associated with firms to which they make loans or equity investments. Unlike venture capitalists, the lenders do not generally share in the upside in equity value from the companies they finance, and so their tendency is to provide backing to firms with characteristics that make the lending relatively safe. Accordingly, we would expect firms with high levels of debt financing to have predictable cash flows, to show less volatility, and to be comparatively easier to value. These characteristics tend to be associated with less valuation uncertainty and, therefore, less underpricing at the IPO stage (see, for example, [Rock, 1986](#)). Those same characteristics may be associated with lower upside potential in equity value and hence lower long-term equity performance on average, in contrast with VC-backed IPO firms that perform better in the long-run, on average. Our empirical results are consistent with both the initial offer performance and aftermarket performance associated with the characteristics of major borrowers.

The remainder of the paper proceeds as follows: Section two provides a discussion of the theories and prior evidence of debt financing and VC for firms that are going public and for their performance following their IPO. Section three describes the data. Section four provides results on debt financing and the performance of debt-backed firms at the IPO stage. Section five provides results on the long-term performance of debt-backed and VC-backed firms. Section six provides a summary of the main results of the paper and the conclusions derived from those results.

## 2. Debt financing and venture capital: Theory and empirical hypotheses

When companies issue common stock in their IPOs, there is uncertainty on the part of the market about the value of the company. There may also be substantial information asymmetry between the firm and the market because of the limited disclosure that private firms are subject to and because of their lack of an

established reputation in the public debt and equity markets. Lenders and venture capitalists overcome this difficulty by screening and monitoring the companies in which they invest. In obtaining debt financing before going public, such companies have to provide information about their assets and operations, and the lenders then are able to serve a role of certifying the nature of the company prior to its IPO. Moreover, lenders can take on a role of monitoring since they often have the ability to make choices about whether to renew maturing debt, and those choices may depend on the quality of the firm’s investment decisions, operating performance, and financial results. The monitoring role of banks or other private lenders can serve further to certify the quality of the offering. On the other hand, venture capitalists tend to provide even more detailed monitoring activities than do lenders, and the venture capitalists may affect the choices and risk-taking activities of the firm as well (see [Winton and Yerramilli, 2008](#)). For example, [Bottazzi et al. \(2008\)](#) show that VC help recruit managers and directors, help raise funds, and interact frequently with their portfolio companies. [Hellmann and Puri \(2002\)](#) demonstrate that VC firms are active in recruiting outside CEOs or VPs, in developing stock option plans or human resource policies.

The differences that exist between lenders and VCs follow from the structure of their investment contracts (debt versus equity), monitoring technologies (more active monitoring by VCs relative to banks) and involvements in operating decisions (considerable involvement by VC versus little or none by banks). Based on these differences and existing theory, we hypothesize about the relative underpricing and post-IPO stock returns of lender-backed firms vs. venture-backed firms. On the one hand, one could expect venture-backed companies to have less underpricing because VCs likely provide a stronger certification than banks (VCs are compensated mostly in good states of the world, and have to put in effort on active monitoring and operational support). On the other hand, one could also expect venture-backed companies to have worse underpricing because the VCs’ private information may enhance the adverse selection problem for prospective buyers of the newly listed shares.

Many prior studies have suggested that financial intermediaries help resolve problems of information asymmetry and moral hazard. [Leland and Pyle \(1977\)](#), [Boyd and Prescott \(1986\)](#), [Diamond \(1984\)](#), and [Chemmanur and Fulghieri \(1994\)](#) emphasize the advantages that financial intermediaries have for monitoring costs relative to other market participants. [Fama \(1985\)](#) hypothesizes that private lenders are also better monitors because of their access to proprietary information. [Ivashina et al. \(2009\)](#) examine the effect of information transfer from lenders to the outside market in the case of takeovers. We hypothesize that, *all else equal*, the incentive to monitor should be an increasing function of the amount of lending.<sup>1</sup>

Given the abundance of theories of lenders’ role in resolving problems of information asymmetry through monitoring and certification, it is somewhat surprising that there have been few theoretical predictions on their role in the going public process. [James and Wier \(1990\)](#) extend the above theories to the IPO setting, and predicts that debt-financed firms can experience less underpricing (lower first-day returns) than firms without such financing. [Beunza and Garud \(2005\)](#) argue that creditors face very different exposure than stockholders in the companies in which they invest. They argue that creditors and debt analysts are more concerned about the potential downside risk than are shareholders and equity analysts.

<sup>1</sup> We note that a primary determinant of monitoring is the degree of lender protection in terms of collateral or other forms of ability to repossess in case of default. Only if those terms are equal, the level of monitoring will increase in the amount of the loan.

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