

Patents as Collateral and the Market for Venture Lending^{*†}

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Debt is an unlikely vehicle for financing the innovative activities of startups, yet growing evidence suggests that the market for venture lending is in fact quite large. We explore this under-studied source of entrepreneurial capital by mapping startups to loans through patents, a common form of collateral used to secure such loans. Based on patents filed by 1,519 venture capital (VC)-backed startups from 1987 through 2008, we find pervasive lending across three sectors: medical devices, semiconductor devices, and software. More than 35 percent of sample startups secure loans with patents prior to exit, with increased lending activity over time. The results are not driven by changes in entry or the patenting proclivity of startups.

Drawing insights from incomplete contracting theory and qualitative accounts on venture lending, we explore two mechanisms that could facilitate trade in this market: (1) the thickness of trade in secondary markets for patents, which could alter lender expectations of salvage value; and (2) the ability of VCs to credibly convey to lenders that they will effectively build and monitor fledgling companies. We provide the first systematic evidence that both mechanisms ‘matter.’ Sector-level proxies for trading in patent assets mirror venture debt trends within our sample, particularly among startups with top-tier investors. Controlling for secondary-market activity, the

likelihood of a startup receiving venture debt also is higher after a startup's first VC equity infusion and for startups backed by top-tier investors.

To further investigate the relationship between VC-intermediaries and venture lending, we exploit a shock to the VC capital stock in software—the collapse of the Internet bubble. For software startups with VCs managing older (non-investment-mode) funds in 2000, lending plummeted in the wake of the collapse. In striking contrast, lending to startups backed with VCs with investment-mode funds continued apace. Startups backed by these VCS are otherwise comparable, and remain active in the 3-year period following the crash. Although VC intermediaries may facilitate lending to otherwise-risky companies, we find systematic differences among VCs in their abilities to fulfill this role.

The study contributes novel evidence on lending to new science and technology companies and on factors that facilitate exchange in this surprisingly active yet opaque arena for entrepreneurial capital. The results raise the intriguing possibility that increased trade in the secondary market for patent assets is altering the financing activities of entrepreneurial firms—a topic that we aim to explore more fully in future work.

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