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What patents are used as collateral?—An empirical analysis of patent reassignment data

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ABSTRACT

Only anecdotal evidence exists that ventures use patents as collateral to access debt financing. In this paper, we use a novel dataset on patent reassignments with a security interest to explore quantitatively what patents are used as collateral. We analyze characteristics of patents to disentangle whether it is the technology underlying a patent or the patent's exclusion right per se matters for collateralization. We do find empirical support only for technology-related characteristics, suggesting that lenders use patents to collateralize high-quality technology that can, in case of default, be redeployed to ventures in similar technology fields. On the other hand, patent-related characteristics like scope, which are, in general, related to patent value and are particularly important for non-practicing entities, do not matter.

1. Executive summary

Debt is an important source for financing across all firm sizes. However, ventures lacking tangible assets that can serve as collateral often face difficulties obtaining debt. In this paper, we empirically study the usage of intangible assets—namely, patents—as collateral that can help resource-constrained ventures access debt financing. We know that ventures make use of patents as collateral; however, so far there is no systematic empirical analysis of what patents are utilized. In this paper, we provide an empirical analysis to disentangle whether characteristics of the technology underlying the patent or the patent's legal exclusion right matters in the lending decision. Such knowledge helps us understand how lenders tend to monetize patents. They can focus on technology that can be redeployed to other practicing entities, or on the patent's exclusion rights that can be sold to non-practicing entities—so-called patent trolls, whose main business is to enforce patents against (involuntary) infringers.

Using a random sample of 1000 distinct security agreements between 2000 and 2006, we study the characteristics of collateralized patents. We find empirical support for characteristics related only to the underlying technology. This suggests that lenders make use of patents to collateralize technology that at cases of default can be redeployed to practicing entities in similar technological fields. This also means that the full liquidation value that a patent can offer as collateral is not exploited, potentially limiting its use.

This finding is of special interest as there is an ongoing debate about inefficiencies in the patent system, particularly regarding the effects of non-practicing entities. Mostly large corporations that are routinely targeted for attack by these non-practicing entities argue that they are welfare destructing. Others contend that non-practicing entities could provide liquid markets for

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patents that would support their use as collateral, thus providing new venture access to debt financing. Our findings suggest that lenders use the patent system to specify 'only' tradable assets in technology that can be collateralized. We also find no evidence that non-practicing entities do provide a liquid market for collateralized patents.

2. Introduction

An important source for firms of all sizes to raise financing is debt (Berger and Udell, 1998). Corporations as well as new ventures rely on this source (Bates, 1997; Cassar, 2004). However, because of information asymmetries that arise, particularly with young, fast-growing startups with uncertain future prospects, securing debt financing is often difficult for new ventures (Berger and Udell, 1995; Petersen and Rajan, 1994). Hence, new ventures often revert to either equity financing, which solves information asymmetries at the cost of dilution (De Bettignies and Brander, 2007; Hustedde and Pulver, 1992; Ueda, 2004), or to informal financing (Cassar, 2004). A typical way to overcome agency problems related to debt financing is to offer collateral (Bosse, 2009; Smith and Warner, 1979; Ueda, 2004). However, new ventures often lack the tangible assets that can serve as collateral (Bannock, 2005; Cassar, 2004; Denis, 2004; Zimmerer and Sarborough, 2007). The use of intangible assets such as patents can help resource-restricted ventures to access debt financing. However, aside from anecdotal evidence of its existence, we have no empirical knowledge regarding the use of patents as collateral (e.g., Amable et al., 2010; Bezant, 1997; Mann, 1999; Munari et al., 2011). In this paper we provide the first empirical study to find what patents are used as collateral.

In some cases, patents yield constant royalties and, hence, can be considered a liquid asset with a clear future revenue stream. In these rather rare cases, the use of patents as collateral is not surprising. However, in most cases, lenders have to evaluate the patent for collateralization and sell it in order to monetize in case of default.[1] One strategy to sell the patent is to redeploy its underlying technology to another entity for its productive or strategic use. Presumably, a competitor could be interested in acquiring the patented technology to use in its own products or to preempt other competitors from doing so. Another possibility is to sell the patent to entities that could liquidize it by exploiting its legal exclusion rights. Hence, another group of potential buyers that could be considered are the so-called patent trolls or non-practicing entities that seek to generate profits only from licensing patented technology to a firm that already infringes on the patent. Such a firm would be under pressure to find an agreement to avoid shutdown of its operations (Reitzig et al., 2007, p. 137).[2]

These distinct groups of potential buyers reflect two basic components that determine a patent's liquidation value: the underlying technology and its associated intellectual property rights. Interestingly, intellectual property rights and technology often diverge with patents because entities other than the rights' holder can reinvent the technology that underlies those rights (e.g., Fischer and Henkel, 2012; Graham and Mowery, 2003; Reitzig et al., 2007).[3] An empirical analysis of characteristics of collateralized patents can reveal which component of patents mattered in the collateralization decision. In this study, we make use of such an analysis to shed light on the question of whether in cases of default patent collateralization is driven by redeploying the underlying technology or by liquidating the patent per se. From a practical perspective, it is important to understand whether lenders make use of both components of patents—technology and exclusion rights—and hence exploit their full potential as collateral. If this is not the case, it is important, particularly for innovative ventures that do not possess many physical assets that can serve as collateral, to know which component matters to lenders.

Interestingly, we do find support for our hypotheses on technology-related patent characteristics, but not for those based on characteristics that favor the value of the exclusion right, which usually also relates to a patent's value (cf. Fischer and Leidinger, 2014). Hence, our results indicate that it is the technology underlying the patent that serves as collateral and not the exclusion right itself. This suggests that lenders do not exploit the full liquidation value of patents and, thus, potentially limit the use of patents as collateral. From a theoretical perspective, this knowledge adds to our understanding of how the patent system enables entrepreneurs and innovative firms to collateralize intangible assets; either by specifying tradable assets in technology or by creating intangible assets that only gain liquidation value due to inefficient divergence between asset and intellectual property rights (cf. Arora and Ceccagnoli, 2006; Arora et al., 2001; Lamoreaux and Sokoloff, 1999). The technology focus we find suggests that lenders collateralize technology and make use of patents 'only' to specify tradable assets in technology. Furthermore, our results lend insight into the ongoing debate of whether or not the presence of non-practicing entities has welfare-enhancing effects. Non-practicing entities acquire patents, search for potential infringers, and threaten to enforce the patent's exclusion rights in order to receive damages or settlement payments (e.g., Golden, 2007; Lemley and Shapiro, 2007; Reitzig et al., 2007). Hence many, particularly the larger corporations that are preferred targets for non-practicing entities, argue that they pose a serious threat to innovation (e.g., Jaffe and Lerner, 2004; Lemley and Shapiro, 2007; U.S. Federal Trade Commission, 2003). However, non-practicing entities could make a liquid market for collateralized patents by supporting creditors to monetize them in cases of default[4] and hence support entrepreneurs and innovative firms that do not have access to conservative debt markets

[1] While the market for patents is not as efficient and as liquid as markets for physical assets, patents can be traded to monetize them. Intermediaries like Ocean Tomo and other specialized agencies have emerged in the last decade to overcome associated valuation, buyer identification, and redeployment problems.

[2] We use the term non-practicing entity throughout this paper to avoid the derogative terms patent troll or patent shark.

[3] Exclusion right and technology may diverge in both directions: an entity reinvents and practices an invention without holding or even knowing about a related patent (e.g., Bessen and Meurer, 2008; Gans et al., 2008; Lemley and Shapiro, 2007) or an entity holds a patent but does not use or even know about its underlying technology.

[4] McDonough (2006: 190) summarizes this argument: "patent trolls provide liquidity, market clearing, and increased efficiency to the patent markets—the same benefits securities dealers supply capital markets."