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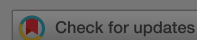
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Articles

Patents as quality signals? The implications for financing constraints on R&D

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ABSTRACT

Information about the success of a new technology is usually held asymmetrically between the research and development (R&D)-performing firm and potential lenders and investors. This raises the cost of capital for financing R&D externally, resulting in financing constraints on R&D, especially for firms with limited internal resources. Previous literature provided evidence for start-up firms on the role of patents as signals to investors, in particular to Venture Capitalists. This study adds to previous insights by studying the effects of firms' patenting activity on the degree of financing constraints on R&D for a panel of established firms. The results show that patents do indeed

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Disclosure statement

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Notes

1. See Hubbard ([1998](#)), Hall and Lerner ([2010](#)) and Czarnitzki and Hottenrott ([2010](#)) for surveys of the literature.
2. One might think that this lack of access to debt would lead to firms issuing equity. However, small firms may be particularly reluctant to issue equity, even if this excludes them from certain projects. In Belgium, as in many other European countries, raising equity for financing investment projects generally appears to be disfavored and only relatively few firms are listed at stock exchanges. Particularly small, family-owned firms view issuing of new equity as not particularly desirable, as it dilutes their ownership position. For example, Deloof and Jegers ([1999](#)) point out that there were no public issues of a straight bond by a Belgian company between 1990 and 1995. Borrowing from bank sources is internal.
3. Note that the signaling effect is expected to be low, especially on the Pottelsbosch (Van der Pottelsbosch and Hottenrott, 2009).
4. The signaling effect is expected to be low, especially on the Pottelsbosch (Van der Pottelsbosch and Hottenrott, 2009).


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our sample contains firms that are at least active for five years, that is, are not truly nascent firms. The results in the paper also show that the variable age itself is never statistically significant in predicting R&D intensity in the presence of the other variables.

13. We also experimented with using a series of dummies for different levels of average citations per patent, as in Hall, Jaffe, and Trajtenberg ([2005](#)), but without success.

14. Note that the number of citations is always truncated. Moreover, in our case, observations in the years later than 2008 have a shorter citation window than five years. We tested the sensitivity of our results to dropping these observations and found that the coefficients' magnitude and significance is hardly affected.

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