The influence of companies' relative technological positions on market values

LONG ABSTRACT

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Abstract

In this paper we seek to answer the question whether patent thickets affect the market value of a company or not. More precisely we also seek to establish whether a patent thicket has a general negative effect for companies' market value, as exploratory regressions indicate, or whether companies' relative positions within the patent thicket have to be taken into account in such regressions.

Our study draws on two different strands of literature on patenting behaviour. First, we add to the literature focusing on the relationship between companies' R&D activities as well as patenting and their market value. Previous studies show that capital markets reward companies engaging in R&D activity (Hall et al., 2005; Hall and Oriani, 2006). Moreover, patent citations seem to play a crucial role in signaling the quality of a company's R&D activity as patenting is related to higher company value even after controlling for R&D expenditure. Using a data-set on 2093 listed companies we present results from market value regressions relating companies' Tobin's q to R&D expenditures, patent stocks, advertising and trade marks. This dataset is previously used and described by von Graevenitz and Sandner (2009).

Second, we also draw on the literature that studies effects of patent thickets (Shapiro, 2001; Hall and Ziedonis, 2001; Ziedonis, 2004; von Graevenitz et al., 2008). We hypothesize that patent thickets may reduce the efficiency of R&D within affected industries and seek to determine whether this affects companies' market values. We are particularly interested to see whether companies that have stronger positions in a patent thicket can offset potentially adverse effects of such thickets on market value, or whether they may even benefit from the existence of thickets if their positions within the thickets is one of dominance.

To measure the strength of thickets and the relative positions of firms within them we build on recent work by von Graevenitz et al. (2008) in which the intensity of patent thickets across industries is determined with a new measure. This measure exploits the fact that patent examiners at the EPO indicate which prior patents block or restrict the breadth of the patent application under review. Counting how often three or more firms

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apply for mutually blocking patents within a three year period gives rise to a measure of mutually blocking firm Triples in a given technology area. This measure captures effects of complex blocking relationships which arise in technologies even if patent ownership remains relatively concentrated.

The main contribution of our paper is to construct measures of companies' relative positions within the patent thicket. Here we exploit the Triples measure as an indicator of the density of thickets. We conceive of each thicket as a network. Each blocking relationship constitutes an edge in the network graph. Building on this graph we construct measures of network centrality and the level of in- and outdegrees within each thicket network. These measures are then used to establish effects of companies' relative positions in a patent thicket on the valuation of such firms.

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