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Ex-post Anti-competitive Effects of Patent Overlap: The Case of 3D Printer Industry

When relevant technologies are sequentially patented, the first patent can be a 'blocking patent' for the second one. This can cause the under-use of technologies ex post the invention. Moreover, a firm that vertically integrates R&D and manufacturing can increase the rival manufacturers' costs by raising the patent royalties. The implications of merger and patent pool formation depend on the degree of these externalities. In this paper, we develop an oligopoly model of patent overlaps that allows us to quantitatively predict the consequences of hypothetical policies. We estimate the structural parameters of this model using data from the 3D printer industry. After estimating the model, we demonstrate several policy experiments regarding merger and patent pool formation.