# Patent Holdup and Royalty Stacking

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## Abstract

We study several interconnected problems that arise under the current U.S. patent system when a patent covers one component or feature of a complex product, This situation is common in the information technology sector of the economy. First, we show using bargaining theory that the threat to obtain a permanent injunction greatly enhances the patent holder's negotiating power, leading to royalty rates that exceed a natural benchmark level based on the value of the patented technology and the strength of the patent. Such royalty overcharges are especially great for weak patents covering a minor feature of a product with a sizeable price/cost margin. These royalty overcharges do *not* disappear even if the allegedly infringing firm is fully aware of the patent when it initially designs its product. However, the holdup problems caused by the threat of injunctions are reduced if courts regularly grant stays to permanent injunctions to give defendants time to redesign their products to avoid infringement when this is possible. Second, we show how holdup problems are magnified in the presence of royalty stacking, i.e., when multiple patents read on a single product. Third, using third-generation cellular telephones and Wi-Fi as leading examples, we illustrate that royalty stacking has become a very serious problem, especially in the standard-setting context where hundreds or even thousands of patents can read on a single product standard. Fourth, we discuss the use of "reasonable royalties" to award damages in patent infringement cases. We report empirical results regarding the measurement of "reasonable royalties" by the courts and identify various practical problems that tend to lead courts to over-estimate "reasonable royalties" in the presence of royalty stacking. Finally, we make suggestions for patent reform based on our theoretical and empirical findings.