

# ***Global Drug Diffusion and Innovation with a Patent Pool: The Case of HIV Drug Cocktails***

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Patent protection often leads to high drug prices that make life-saving medicines less affordable to patients. To bring down prices, particularly in developing countries, government and generic drug firms increasingly infringe and invalidate patents. The situation is severe for treatments require multiple drugs owned by different firms with numerous patents, including drug bundling, or cocktails, for HIV. I study the impact of the first joint licensing platform for drug bundling (the Medicines Patent Pool) on global drug diffusion and innovation. To study this issue, I construct a novel dataset from licensing contracts, public procurement, clinical trials, and drug approvals. Using difference-in-differences and event study methods, I find that, when the pool includes a drug for bundled licensing, generic firms worldwide can sublicense the drug cheaply and conveniently for sales in a set of developing countries, which leads to the supply of generic drugs increasing by 7% of the total drugs purchased in the country. In addition, the original drug manufacturers and other entities, such as public institutions, respond to the pool with higher R&D input measured by clinical trials. While R&D increases among other entities are likely driven by the increased openness of the pool, the original drug firms strategically reallocate resources to new drugs that can further complement existing drugs. Furthermore, the pool results in more generic drug product approvals, as the pool lowers the licensing costs to produce and distribute quality-assured generic drugs. I am working on a simple structural model using nested discrete choice model for the demand side and a bundled licensing model for the supply side. I will simulate counterfactuals on potential pool expansions. The implications to policy and firm strategies are two-fold: market-based novel institutions can help balance technology diffusion and innovation, and firms can utilize these institutions to increase market shares while creating new products.