Experience Effects and Technology Adoption: Evidence from Aortic Valve Replacement

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Abstract

There have been concerted efforts in the medical profession to centralize certain surgical procedures in hopes that patients can benefit from treatment at hospitals with extensive experience or recent practice. In 2012, the Centers for Medicare and Medicaid (CMS) introduced minimum volume requirements that hospitals must satisfy to receive reimbursement for a new surgical procedure, transcatheter aortic valve replacement (TAVR). I examine the desirability of this regulation and the trade-offs that CMS faces between enhanced learning-by-doing, reduced patient access to hospitals offering TAVR, and fixed adoption costs. Using Medicare claims data, I find that doubling hospital experience reduces TAVR in-hospital mortality by one-sixth. I then develop and estimate a dynamic industry equilibrium model with learning-by-doing, patient choice, and hospital TAVR adoption. Counterfactual simulation shows that removing the policy restriction would have increased adoptions at hospitals that are relatively less desirable to patients. Further, this small access gain would be offset by reduced learning-by-doing and higher mortality. Overall, relative to the free-adoption counterfactual, the current Medicare policy achieves the same technology utilization and total consumer welfare with 13% lower fixed costs, thus improving social welfare.

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