**Tomo Amano**

*Doctoral Candidate*

*Stanford University*

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# Ratcheting, Competition, and the Diffusion of Technological Change: The Case of Televisions under an Energy Efficiency Program

*ABSTRACT*: The study of the diffusion of innovation and technological change enjoys a long tradition in marketing and often places an emphasis on the role of consumer adoption. Complementing this process of diffusion are firms, which differentiate in the extent to which they provision technological change in their products. In markets with societal implications or externalities, policy is implemented to avoid the under provision of innovation. Firms have clear incentives to engage in strategic behavior in such markets because policymakers use market outcomes as a benchmark in designing regulation. This study examines a unique energy efficiency standard for television sets, under which future minimum efficiency standards are explicitly a function of current product offerings. The setting illustrates firms’ dual incentives at work: Depending on the competitive environment, they have strategic incentives to both ratchet up, and ratchet down, the quality of their product offerings in order to influence future standards. These incentives affect the pace at which innovation reaches consumers. I develop and estimate a structural model of product entry and endogenous regulation to illustrate how such dynamic standards affect product release decisions, consumer purchases, and the competitive environment. My analysis provides evidence that firms are more likely to ratchet down quality when they have similar cost structures or when the market is concentrated.