Generation Length of Hardware in Multi-Sided Markets with Indirect Network Effects

Josh Hoy

ABSTRACT

Many markets are characterized by hardware and software provided by distinct firms. The impact of a change in hardware units sold on the provision of software is termed an indirect network effect. Furthermore, many of these markets are for "high-tech" goods for which technological advances occur rapidly. Hardware firms may introduce new products to take advantage of these advances, leading to successive generations of hardware. For each new generation, software provision begins anew to make full use of the new hardware's capabilities.

An agent-based modelling approach is applied to capture the dynamics of these markets. Consumers preferences are drawn randomly from several distributions. Hardware firms react to consumers' actions following predetermined rules. Software provision occurs according to a realistic, exogenously imposed growth function of market share and hardware age. The results of simulation and experimentation are presented and explained.