Extreme Growth of Innovative Nomads in the Perennial Gale of Creative Destruction

Euc Man Lee

Abstract

Our analysis of U.S. patents shows that the numbers of patents owned by firms follow a power-law distribution—many firms only have tens or hundreds of patents, whereas a handful of firms have more than hundreds of thousands of patents. To understand the underlying mechanism that generates this extreme kind of fat-tailed distribution, we develop a computational model. Our numerical results show that such an extreme fat-tail phenomenon can arise when competition for innovation is characterized by positive feedback between R&D and profits, where winners with more innovations perform better and better over time as they invest in R&D more aggressively. We propose that this positive feedback process could be a potential explanation for why some firms grow extremely larger than others.