CENTRE FOR MACROECONOMICS

Economic and Social Research Council

General-Purpose Technologies and Stock Market Bubbles

CFM-DP2026-20

Tomohiro Hirano[1,5], Keiichi Kishi[3], and Alexis Akira Toda[2,4]

[1]Centre for Macroeconomics, [2]Emory University, [3]Kansai University, [4]Kobe University, [5]Royal Holloway, University of London

We present a macro-finance model with innovation and knowledge spillover. Our model has three distinctive features. First, the advent of general-purpose technologies (GPTs, such as electricity, IT, and AI), has a positive spillover effect on the entire economy. During this process, stock price bubbles inevitably emerge as a unique equilibrium outcome, despite the expectation that they may collapse at some point in the future. Conversely, once the positive spillover effects begin to diminish, the bubbles collapse. Second, the diffusion process of GPTs generates unbalanced growth, with different production factors growing at different rates. As a result, the macroeconomy temporarily shifts onto a different dynamic path from a balanced growth path. Third, stock bubbles are characterized by being attached to assets with high growth rates rather than to assets with lower productivity growth, such as land. Even if they are eventually to collapse, stock bubbles and technological innovation reinforce each other, and technologies and ideas developed during the bubble era prevail.