Automation, Growth and Redistribution

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October 2017

Abstract

This paper studies the link between automation and the decrease in the US labor share. To do so I develop a model with heterogeneous firms in which production requires completion of a set of tasks that can be performed by workers or machines (capital). Aggregate output in this economy can be represented as a Constant Elasticity of Substitution (CES) function with total factor productivity and capital share parameter ($\alpha$) determined by the firm-level distribution of automation in the economy. Taking this model to US macro data, I find that automation has contributed significantly to the decline in the labor share. I conclude that a model of automation can reconcile three important empirical findings on US production and growth: declining labor shares, capital biased technical progress and aggregate capital-labor complementarity.