

# Time to Innovate and Aggregate Fluctuations: a New Keynesian Model with Endogenous Technology

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## Abstract

This paper develops a new Keynesian DSGE model with endogenous technology and explores the role of the endogenous mechanism of technology in macroeconomic fluctuations. It particularly considers the implications for the Phillips curve, the effects of news shocks and the persistence of the impacts of shocks. It has three main results. First, the model solves the "*inflation persistence puzzle*." It explains the persistence in inflation (the existence of the backward-looking term in the estimation of the new Keynesian Phillips curve) without relying on the ad hoc and empirically inconsistent assumptions made by conventional new Keynesian models. Second, the model solves the "*disinflationary news shock puzzle*." It explains the disinflationary effect of a news shock, which conventional new Keynesian models have difficulty explaining. Third, the model shows that the mechanism of an endogenous technological change generates larger volatility (a 12 percent increase in the standard deviation of output growth). It also shows that even monetary policy and government expenditure shocks have some persistent impacts on TFP and output.