

Center for Economic Dynamics
Washington University in St. Louis

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Endogenous TFP

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In these lectures we will examine endogenous TFP models. In particular, we will focus on models based on Jovanovic (1982), Hopenhayn (1992), and Hopenhayn and Rogerson (1993). These models endogenize TFP by considering a distribution of firms heterogeneous in their productivity and allowing for entry and exit of firms. We will focus on applications in three main areas: growth/development, multiple equilibria, and business cycle fluctuations. Another area which we will not cover and where similar models are becoming increasingly popular is trade.

1 Growth/Development

An important part of the cross-country differences in income per capita is attributable to differences in TFP. Barseghyan and DiCecio (2006) analyze a model² where the most productive technologies are the same in rich and poor countries. However, in poor countries the pool of producers is sullied by a large fraction of low-productivity firms. Thus, small variations in entry costs across countries, through a threshold effect, translate into dramatic differences in TFP and output. Armenter and Lahiri (2007) analyze a similar model with capital vintages. Buera and Shin (2008) focus on financial frictions as a source of persistence in the dynamic misallocation of resources across sectors.

¹The views expressed are my own and do not necessarily reflect official positions of the Federal Reserve Bank of St. Louis, the Federal Reserve System, or the Board of Governors.

²The model is a variant of the growth model of the life cycle of plants used by Atkeson and Kehoe (2005) to measure the role of organizational capital in the U.S. economy.

2 Multiple Equilibria

Endogenizing firms entry gives a powerful amplifying mechanism to increasing returns to scale. It is possible to obtain multiple steady-state equilibria and/or indeterminacy in otherwise standard one-sector neoclassical models. Barseghyan and DiCecio (2006) present a poverty traps model along these lines. Barseghyan and DiCecio (2008) analyze indeterminacy and sunspot fluctuations in an endogenous TFP model. Jaimovich (2007) analyzes a model where endogenous net business formation is procyclical: This implies endogenous countercyclical variations in markup and indeterminacy.

3 Business Cycles

Bilbiie, Ghironi, and Melitz (2007) argue that endogenizing entry provides a powerful propagation mechanism for real business cycle models. Similarly, Jaimovich and Floetotto (2008) argues that endogenously procyclical business formation can make up to 40 percent of measured TFP fluctuations endogenous. Bilbiie, Ghironi, and Melitz (2008) analyze the implications of endogenous entry with nominal rigidities for monetary policy and business cycle dynamics.

4 Trade

Models with heterogeneous firms and endogenous TFP have been very successful in the trade literature. Although we are not going to discuss this literature, I encourage you to have a look at Melitz (2008) and the references therein.

Contact information

I can be reached by email at dicecio@stls.frb.org. I will be glad to talk to you on March 31 and April 1 after my lectures. Also, I am usually on campus Tuesdays and Thursdays to teach ECON402. I have office hours by appointment after class at 5:30pm. Finally, you are welcome to come and visit me downtown at the Bank.

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