Nam Gang LEE
Essays on Productivity Risk in Asset Pricing

The goal of this dissertation is to better understand the dynamics of quantities and prices in a production economy characterized by various productivity shocks. The first essay investigates the role of productivity with a stochastic trend, the growth of which is predictable, in determining the dynamics of macro variables and asset returns, in comparison to productivity with a deterministic trend. Informed by the permanent income hypothesis, my premise is that the economy characterized by the stochastic productivity trend would face a more sizable future income risk. This may result in the present discounted stream of future consumption being more uncertain, compared to the economy with the deterministic productivity trend. I estimate the productivity process from U.S. data using the Kalman filtering technique, and utilize it in a standard production economy model with Epstein-Zin preferences. My first finding is that compared to the economy with the deterministic trend, the economy facing the stochastic trend generates a more sizable long-run risk in consumption. Second, the degree of the long-run risk in consumption mainly hinges on the persistence of trend growth shocks. Third, in the face of trend shocks, agents tend to save more and demand a higher equity premium.

The second essay poses the question, "How important are asymmetric dynamics of good and bad macroeconomic shocks for asset prices?" If bad shocks have a more substantial long-run impact than good shocks, risk premia should include higher rewards for accepting the downside risk. To formalize this intuition, I relax the Gaussian assumption by introducing an asymmetric distribution, the centered exponential difference (CED), and provide estimates of the asymmetric persistence of good and bad shocks. I explore the asset pricing implications of the asymmetric dynamics of good and bad shocks in a neoclassical growth model. The model generates different responses of consumption to the two opposite shocks. Compared to good shocks, bad shocks to productivity bring the consumption down immediately, and the impulse response shows a slower pace of recovery. This asymmetric feature improves the fit of the model to the data in terms of the first-order autocorrelation. The model also helps explain the observed level and volatility of the equity risk premium with a more plausible coefficient of relative risk aversion.