**NK\_CFP10: Carlstrom, Fuerst and Paustian (2010)**

Carlstrom, Fuerst and Paustian (2010) build a small-scale calibrated New Keynesian DSGE model with agency costs, which are modelled as constraint on the firm’s hiring of labour as in the holdup problem of Kiyotaki and Moore (1997).

* Aggregate demand: Households maximize their lifetime utility, where the per-period utility function is separable in consumption and two types of labour. They can buy standard one-period bonds and firm shares, with the latter paying of dividends.
* Aggregate Supply: Entrepreneurs have linear consumption preferences and operate the intermediate good firms. These firms combine both types of labour into the intermediate good using a Cobb-Douglas production function. Due to a hold-up problem, entrepreneurs face a collateral constraint on their hiring of one labour input, in that the wage bill cannot exceed a Cobb-Douglas combination of net worth and profits. This introduces a credit friction. Monopolistically competitive final goods firms purchase intermediate goods from entrepreneurs and create final goods using a linear production function. Final goods pricing is subject to Rotemberg quadratic adjustment costs. The final goods are aggregated to an output bundle according to a CES function.
* Shocks: A productivity shock, a mark-up shock, a net worth shock and a monetary policy shock.
* Calibration/Estimation: The model is calibrated using standard values in the literature, in particular following Woodford (2003). Credit-related parameters are calibrated using the average spread between BB+ and 10-year Treasury bonds from 1996 to present.
* Replication: We simulated the impulse response functions to a monetary policy shock and a technology shock under a simple Taylor rule, Figure 1 and Figure 2 in the paper.