Final
Econ 205B, Winter 2016

- *You have 60 minutes to complete the exam. The maximum points possible is 50.*
- *Be concise. Long answers with redundant statements, even if they contain correct answers, will likely be penalized.*

1. Consider an MIU model without labor. Households choose $\{C_t, M_t, I_t, K_t\}$ to maximize

$$E_t \sum_{i=0}^{\infty} \beta^i U(C_{t+i}, M_{t+i}/P_{t+i})$$

subject to the budget constraint

$$C_t + I_t + \frac{B_t}{P_t} + \frac{M_t}{P_t} = r_t K_{t-1} + (1 + i_{t-1})\frac{B_{t-1}}{P_t} + \frac{M_{t-1}}{P_t} + \tau_t,$$

and the capital accumulation

$$K_t = (1 - \delta)K_{t-1} + I_t.$$

The production function is $Y_t = z_t K_{t-1}$, where z_t is a productivity shock.

(a) (10 points) Derive the equilibrium conditions of the model.

(b) (10 points) Assume now that the stock of money that yields utility is the real value of money holdings available for spending on consumption and investment:

$$E_t \sum_{i=0}^{\infty} \beta^i U(C_{t+i}, X_{t+i}/P_{t+i})$$

where X_{t+i}/P_{t+i} is the real value of money holdings after bonds have been purchased but before income has been received or consumption and investment goods have been purchased:

$$\frac{X_t}{P_t} = \frac{M_{t-1}}{P_t} + \tau_t + \frac{(1 + i_{t-1})B_{t-1}}{P_t} - \frac{B_t}{P_t}.$$

Derive the equilibrium conditions of the model under this specification. Briefly comment on how they differ from those under the previous specification.

2. Consider a New Keynesian model without capital. Assume that the utility function is given by

$$E_t \sum_{i=0}^{\infty} \left[\frac{(C_{t+i} - bC_{t+i-1})^{1-\sigma}}{1-\sigma} + \frac{\gamma}{1-b}\left(\frac{M_{t+i}}{P_{t+i}}\right)^{1-b} - \chi \frac{N_{t+i}^{1+\eta}}{1+\eta} \right],$$

where $0 < b < 1$ is a habit persistence parameter. The rest of the model is the same as in the one covered in the class.

(a) (10 points) Derive the linearized Euler equation in terms of output.

(b) (10 points) Derive the linearized Euler equation in terms of output gap.

(c) (10 points) Briefly comment on the response of output gap in response to a monetary policy shock and compare it to the standard case where $b = 0$.