Economics 435                                                              Menzie D. Chinn
Fall 2019                                                                   Social Sciences 7418
University of Wisconsin-Madison

## Problem Set 4

Due *in lecture* on Wednesday, November 13th. Be sure to put your name on your problem set. Put
"boxes" around your answers to the algebraic questions.

1. Suppose the demand for reserves is stable. Use a graph of the market for Bank Reserves to
show how the Open Market Trading Desk would implement a decision by the FOMC to raise the
target federal funds rate. You should assume that the discount and deposit rates are adjusted so
that the spreads between them and the target federal funds rate are maintained.

2. Suppose, one morning, the Open Market Trading Desk drastically under-estimates the demand
for reserves when deciding the quantity of reserves to supply to the market. Use the graph of the
Market for Bank Reserves to show why the market federal funds rate will not exceed the
discount rate regardless of how large the gap between estimated and actual reserve demand.

3. Consider a Taylor rule of the following form:

$$i_t^{FedFunds} = \pi_t + 0.5 \times (y_t - y_t^*) + 0.5 \times (\pi_t - \pi_t^*) + r_t^*$$

3.1 Calculate the implied Fed funds rate for 2019Q3, assuming the equilibrium real rate is 2.0%,
    and target inflation rate is 2%. You will need to obtain information on the output gap and
    inflation rate. Show your work.
    You can obtain information St. Louis Fed FRED system on potential GDP and actual GDP
    (both reported in 2012$), to calculate the output gap. You can also obtain data for personal
    consumption expenditure deflator inflation from there as well (use four quarter inflation in
    your calculations).
3.2 Show what happens to the implied Fed Funds rate if the real natural rate is 0%.