

Homework 3
Monetary Theory and Policy: ECO 403
Due: Wednesday, April 18, 2012

Question 1.

Classify each of the following as either rule or discretion and as either counter-cyclical, procyclical, or neither.

- a. The FED increases the money supply growth rate by 1% for each 1% of unemployment above the natural rate.
- b. The FED votes to reduce interest rates in response to the current recession.
- c. The Taylor rule.
- d. The FED votes to decrease interest rates by 2% since GDP growth is 2% above its usual level.
- e. Milton Friedman's idea of a constant money supply growth rate.

Question 2.

Can a Central Bank independently control both the interest rate and the nominal exchange rate? Explain.

Question 3.

The European Central Bank (ECB) has a rule of no more than 2% inflation, yet inflation has frequently exceeded 2%.

- a. The ECB's charter states that the ECB should focus strictly on price stability and that unemployment is a problem to be dealt with by individual European countries using fiscal policy. How (if at all) does the ECB charter differ from the FED charter.
- b. Can the ECB's charter resolve the time inconsistency problem? Explain carefully.

Question 4.

The ECB recently announced a new "Securities Markets Programme" in which it would purchase (among other things) sovereign debt from Greece, Italy, Portugal, Spain, and Ireland. Sovereign debt from all of these countries face possible default, and indeed Greece subsequently defaulted. The ECB charter also has a provision prohibiting the ECB from "purchasing sovereign debt from sovereign countries." The ECB said that, since it was buying sovereign debt in the open market, it was not in violation of this provision.

- a. Explain the likely effect of the Programme on inflation.

- b. Is the programme consistent with the ECB monetary policy rule (see question 3).
- c. Explain the time inconsistency problem.
- d. Did the charter help resolve the time inconsistency problem? Explain.

Question 5.

Suppose instead of a high powered money target or an interest rate target, the FED adopts a target for the money multiplier (k^*).

- a. Is k measurable? Explain carefully what data is required and whether or not the FED has this data.
- b. Is k controllable? That is, explain how the FED increase or decrease k ?
- c. Suppose money demand is volatile. Which has a more predictable effect on m , a high powered money target or an k^* target? Show graphically.
- d. Suppose money supply is volatile. Which has a more predictable effect on m , a high powered money target or an k^* target? Show graphically.

Question 6.

Suppose the FED cares about both low inflation and low unemployment. Specifically, the FED objective is:

$$\text{OBJ} = \min \left\{ \frac{2}{3} + \frac{1}{3}u_t^2 + \frac{2}{3}\pi_t^2 \right\}$$

Ie the FED dislikes both high inflation and high unemployment, but dislikes high inflation more. Unemployment evolves according to the Lucas Monetary misperceptions model with $k \cdot a = \frac{3}{2}$ and $NR = 4$:

$$u_t = 4 - \frac{3}{2}(\pi_t - \pi_t^e)$$

- a. Compute the optimal rule and the optimal discretionary policy.
- b. Calculate the *long run* unemployment and inflation under both the optimal rule and discretion.
- c. Compute the FED's long run objective for the rule and discretion. Which better achieves the FED objective of low inflation and unemployment, the optimal rule or the optimal discretion?
- d. Is the optimal discretion pro-cyclical, counter-cyclical, or neither? Explain.

- e. Is the optimal rule pro-cyclical, counter-cyclical, or neither? Explain.
- f. Suppose expectations are 3%. Calculate the *short run* inflation and unemployment under the optimal rule and the optimal discretion. Calculate the value of the FED's objective in the short run for both the optimal rule and discretion. Which better achieves the FED's objective in the short run, the optimal rule or the optimal discretion?
- g. Is there a time inconsistency problem when expectations are 3%? Explain.
- h. Is there a time inconsistency problem when expectations are 0%? Explain.