

Monetary Economics

Exam

Two hours.

Course presentation slides allowed, in paper format, possibly with hand-written annotations. No other document allowed, nor any electronic device (calculator, mobile phone...).

1 Exercise (10 points)

The goal of this exercise is to study the positive and normative implications of subsidy and taste shocks in the basic New Keynesian model. To that aim, we remove technology and cost-push shocks from the model considered in Chapter 1 of the course (i.e. we set $A_t = 1$ and $\varepsilon_t = \varepsilon$); we replace the constant exogenous employment subsidy τ by a stochastic one, noted τ_t and referred to as a “subsidy shock”; and we assume that the period utility is now

$$U(C_t, N_t) = \frac{C_t^{1-\sigma} - 1}{1-\sigma} - \xi_t \frac{N_t^{1+\varphi}}{1+\varphi}$$

where $\xi_t > 0$ is an exogenous “taste shock”.

As a reminder, in the basic New Keynesian model without any shock, the following log-linearized equilibrium conditions hold, up to first order :

$$\begin{aligned} y_t &= (1-\alpha)n_t && \text{(aggregate production function),} \\ w_t - p_t &= \sigma c_t + \varphi n_t && \text{(labor-consumption trade-off condition),} \\ c_t &= \mathbb{E}_t \{c_{t+1}\} - \frac{1}{\sigma} (i_t - \mathbb{E}_t \{\pi_{t+1}\} - \bar{i}) && \text{(Euler equation),} \\ \pi_t &= \beta \mathbb{E}_t \{\pi_{t+1}\} + \kappa \tilde{y}_t && \text{(Phillips curve),} \\ y_t &= c_t && \text{(goods-market-clearing condition),} \end{aligned}$$

where the notations are the same as in the course (in particular, the output gap $\tilde{y}_t \equiv y_t - y_t^n$ is the difference between the equilibrium output level y_t and the natural level of output y_t^n , both expressed in log).

Question 1 Briefly explain why only one of these equilibrium conditions is changed by the introduction of subsidy and taste shocks into the model, and determine how this equilibrium condition is changed.

Question 2 Derive an expression for the (log) average real marginal cost mc_t as a function of y_t , τ_t , ξ_t , and the parameters α , σ , and φ .

Question 3 Briefly explain why, under flexible prices and at the first order, $mc_t = -\mu \equiv -\log\left(\frac{\varepsilon}{\varepsilon-1}\right)$. Deduce, from the latter equation and the previous question, an expression for the natural level of output y_t^n as a function of τ_t , ξ_t , and the parameters α , σ , φ , and μ . Do a positive subsidy shock (i.e. a rise in τ_t) and a positive taste shock (i.e. a rise in ξ_t) increase or decrease the natural level of output? Briefly explain the mechanism.

Question 4 Rewrite the Euler equation as

$$\tilde{y}_t = \mathbb{E}_t \{\tilde{y}_{t+1}\} - \frac{1}{\sigma} (i_t - \mathbb{E}_t \{\pi_{t+1}\} - r_t^n) \quad (\text{IS equation})$$

and derive an expression for the natural rate of interest r_t^n as a function of τ_t , τ_{t+1} , ξ_t , ξ_{t+1} , and the parameters α , σ , φ , and \bar{z} . Can monetary policy implement the natural allocation? Briefly interpret.

Question 5 Write down the social-planner optimization problem and solve it to get the social-planner output level as a function of ξ_t and the parameters α , σ , and φ . Under what condition do the social-planner output level and the natural level of output coincide with each other? Briefly interpret.

2 Commentary (10 points)

Comment briefly, in the light of the course, upon the following excerpt from the speech entitled “A View from the Fed” made by J.H. Powell – member of the Federal Open Market Committee (FOMC) of the Federal Reserve – on November 30, 2016, and, in so doing, explain in particular : (i) why the private sector’s expectations of the future interest-rate path matter for monetary policy ; (ii) why it is important that the private sector gets information about the interest-rate reaction function (i.e., the interest-rate rule) ; and (iii) why you think or do not think that greater transparency is always desirable.

“Our communications are intended to enable the public to better understand how the Committee sees the economic situation and outlook, as well as what the Committee is likely to do if incoming data differ from that outlook – the Committee’s “reaction function.” My sense is that market participants and other members of the public focus instead mainly on the timing of the next policy change or on how many policy moves will occur in a given year. It also seems that the public may not fully appreciate the uncertainty that surrounds the outlook. (...)

The benefits of greater transparency are typically thought to include more efficient pricing of financial assets and a closer alignment between the market’s views and those of the Committee. Transparency should allow asset prices to respond immediately to incoming economic data, which would foster progress toward the Committee’s objectives. Those who supported the publication of some form of policy rate path generally saw it as part of a forecast-based approach to policymaking, in which policy plans depend in a complex way on policymakers’ outlooks, risk assessments, and objectives. The whole forward interest rate curve matters for financial conditions, not just the overnight rate. Monetary policy was therefore thought to be made more effective by communication of the full expected path of policy, which could then be incorporated into private-sector expectations and longer-term interest rates. But all along, there have been other voices urging caution and asking, in effect, “How much transparency is too much?” As Don Kohn noted in 2005 remarks, “more

is not necessarily always better” when it comes to Fed communication. Critics have often argued that too much discussion of the likely path of policy could be taken as a commitment to a particular path and timing and could ultimately constrain the Committee from pursuing what it views to be the optimal path. Indeed, to the extent that the Committee’s talk about the path of policy is given weight, that talk may leave “too little scope for private assessments of economic developments to show through” in market prices. (...)

In my view, communications should do more to emphasize the uncertainty that surrounds all economic forecasts, should downplay short-term tactical questions such as the timing of the next rate increase, and should focus the public’s attention instead on the considerations that go into making policy across the range of plausible paths for the economy.”