Macroeconomics Field
Exam August 2025
Department of Economics
UC Berkeley

(3 hours)

Answer Both Parts

Part I (Emi Nakamura): 90 points = 90 minutes

1. **10 points**
   a. **5 points** Stock and Watson (2012) used a dynamic factor model to compare the Great Recession to earlier recessions. Explain the differences and similarities.
   b. **5 points** Stock and Watson updated their analysis recently for the Covid recession. Do you think they found similar results? Why or why not? No need for you to have actually read the paper.

2. **10 points**
   a. **3 points** Basu, Fernald and Kimball propose a method of "purifying" standard measures of productivity. What impurities are they trying to remove?
   b. **3 points** Qualitatively, what are two differences (in terms of magnitude and correlation) between standard and purified technology shocks.
   c. **2 points** Basu, Fernald and Kimball estimate the effect of their purified technology shocks on hours of work. What are their results?
   d. **3 points** Which classes of models are their results consistent with (if any)? Be specific.

3. **5 points**
   Why do Karabarbounis and Neiman employ a fixed-effects regression as opposed to an average or index in constructing their cross-country estimate of the decline in the labor share?

4. **10 points**
   a. **5 points** Robert Barro argues in recent work that GDP double counts investment. What does he mean by this?
   b. **5 points** Is this "double counting" relevant to how the capital share has changed over time? Why or why not?

5. **10 points**
   a. **5 points** What structural parameters can be identified by comparing estimates of the response of nominal and real interest rates to an identified monetary policy shock?
   b. 5 points Romer and Romer (2004) estimate the following specification on their data, where the left-hand side is industrial production growth and S represents monetary shocks.

$$\Delta y_t = a_0 + \sum_{k=1}^{11} a_k D_{kt} + \sum_{i=1}^{24} b_i \Delta y_{t-i} + \sum_{j=1}^{36} c_j S_{t-j} + e_t$$

   They then calculate impulse responses one quarter out as c_1, two periods out as $c_1 + c_2 + b_1 c_1$, and so on. Critique this procedure on econometric grounds.

6. **20 points**
    a. **(True, False or Uncertain, 5 points)** In the presence of substantial "information effects" of monetary policy, stock prices will inevitably rise in response to a contractionary monetary shock
    b. **(True, False or Uncertain, 5 points)** As prices become more sticky, the effects of monetary policy inevitably grow larger.
    c. **(True, False or Uncertain, 5 points)** Forward guidance played little role in the conduct of monetary policy before the Great Financial Crisis.
    d. **(True, False or Uncertain, 5 points)** Suppose I aim to estimate the effects of monetary policy shocks, while accounting for the role of credit spreads. To identify these effects, it is natural to use a 4-variable structural VAR with short-run/timing restrictions—i.e., a "Cholesky decomposition"). Be specific.

7. **10 points**
    a. **5 points** Why do macroeconomists sometimes say there is no "discounting" in the consumption Euler equation?
    b. **5 points** Why does that matter?

8. **10 points**
    a. **5 points** Why do Gali and Gertler (1999) use IV in estimating the Phillips curve?
    b. **5 points** Critique their approach.

9. **5 points** I plan to obtain an empirical estimate of the fiscal multiplier using panel data for Canada. I can obtain data at the neighborhood, city or provincial level. Which should I choose? Why?

Macroeconomics Field Exam (Chen's Part: 90 minutes & 90 points)

July 27, 2025

1 Short Questions (45 points, choose 5 out of 6 questions)

1. Describe the Chamley-Judd result on optimal capital-income taxation.
2. Describe the differences between the state-space representation and the sequence-space representation of a heterogeneous agent macro model.
3. Consider optimal monetary policy under discretion and commitment in a baseline New Keynesian model. If the steady state is not distorted, what bias does a discretionary central bank have compared to one under commitment? What if the steady state is distorted?
4. Describe the key economic lessons of Kaplan, Moll, and Violante (2018) in "Monetary Policy According to HANK."
5. Describe the similarities and differences between the rational inattention approach and the sparsity approach.
6. Describe the Barro-King conundrum of modeling the macroeconomic impact of aggregate demand shocks and how nominal rigidities help resolve it.

2 Long Question (45 points)

Consider an economy with Calvo-type staggered price setting whose equilibrium dynamics are described by the system[1]

$$x_t = E_t\{x_{t+1}\} - \frac{1}{\sigma}\left(i_t - E_t\{\pi_{t+1}\} - \rho\right) + \varepsilon_t$$
$$\pi_t = \beta\, E_t\{\pi_{t+1}\} + \kappa\, x_t + u_t,$$

[1] This problem is adapted from Gali (2008).

where $\{\varepsilon_t\}$ and $\{u_t\}$ are i.i.d., mutually uncorrelated, demand and supply disturbances with variances given by σ_ε^2 and σ_u^2 respectively. Assume that the monetary authority adopts a simple Taylor rule of the form

$$i_t = \rho + \phi_\pi \, \pi_t, \tag{1}$$

a) Solve for the equilibrium processes for the output gap and inflation, as a function of the exogenous supply and demand shocks.

b) Determine the value of the inflation coefficient ϕ_π that minimizes the central bank's loss function

$$\alpha_x \, Var(x_t) + Var(\pi_t)$$

c) Discuss and provide intuition for the dependence of the optimal inflation coefficient on the weight α_x and the variance ratio $\frac{\sigma_\varepsilon^2}{\sigma_u^2}$. What assumptions on parameter values would warrant an aggressive response to inflation implemented through a large ϕ_π? Explain.

d) Comment on the possibility of multiplicity under the simple (1), and how to guarantee uniqueness when implementing the equilibrium outcome using the optimal value of ϕ_π solved in part b).