This problem set covers the material in section IV of the course.

1. This question addresses the issue of short-run exchange rate determination and its implications on the exchange rate mechanism of Europe during the early 1990s.

   a. Write down the mathematical expression for how the current exchange rate \( \epsilon_t \) is determined according to the interest rate parity (IRP) condition. Make sure you define all your terms.

   b. If the foreign central bank decides to tighten monetary policy (\( r_t^{\text{foreign}} \) rises), explain, in words, why the current exchange rate \( \epsilon_t \) would increase.

   c. If exchange rate market participants expect that the exchange rate will rise in the future (\( \epsilon_{t+n}^{\text{exp}} \) rises), explain, in words, why the current exchange rate \( \epsilon_t \) would increase.

   d. Using the interest rate parity (IRP) condition, explain what initially caused the European exchange rate crisis of 1992-93.

   e. Using the interest rate parity (IRP) condition, explain how exchange rate speculation compounded the crisis of 1992-93. What was the response of European central banks to the crisis?

   f. Explain how a common currency like the Euro can avoid the crisis of 1992-93.
2. Suppose that the economy is described by the expectations-augmented Phillips curve:
\[ u = u^n - \alpha (\pi - \pi^{\text{exp}}) \]
where \( u \) is the unemployment rate, \( u^n \) is the natural rate of unemployment, \( \pi \) is the rate of inflation and \( \pi^{\text{exp}} \) is the expected rate of inflation. Now, suppose that the Federal Reserve likes low unemployment and inflation at a specific rate so that the loss function is \( L(u, \pi) = u + \gamma (\pi - \pi^{\text{arg et}})^2 \) where \( \pi^{\text{arg et}} \) is the targeted rate of inflation. Note that \( u^n \) and \( \pi^{\text{arg et}} \) and the two coefficients \( \alpha \) and \( \gamma \) are exogenous.

a. Consider a policy under a fixed rule. With private agents understanding the rule, the expected rate of inflation \( \pi^{\text{exp}} \) will equal the actual rate of inflation \( \pi \). What would be the unemployment rate \( u \) under a fixed rule? What policy rule for inflation \( \pi \) would minimize the loss function?

b. Consider a discretionary policy. Under discretion, private agents form their expectations of inflation \( \pi^{\text{exp}} \) and then the Fed chooses the actual rate of inflation \( \pi \). Solve for the rate of inflation \( \pi \) that would prevail under discretion. See class notes and the appendix for chapter 14 for the correct procedure.

c. Explain, in words, why a higher rate of inflation \( \pi \) is obtained if the Federal Reserve follows a discretionary policy as opposed to a rule. In other words, why can’t the Federal Reserve follow a discretionary policy and simply announce a low rate of inflation?

3. This question addresses the issues of government debt and Ricardian equivalence.

a. Using the traditional view of government debt, explain the effect of a debt-financed tax cut on (i) government saving (ii) private saving (iii) national saving and (iv) real GDP in the short-run. You may use the IS-LM model to aid in your discussion.

b. Using the Ricardian view of government debt, explain the effect of a debt-financed tax cut on (i) government saving (ii) private saving (iii) national saving and (iv) real GDP in the short-run. You may use the IS-LM model to aid in your discussion.

c. Explain how each of the following -- (i) myopic or short-sighted households (ii) borrowing constraints and (iii) zero-bequest families -- would support the traditional view over the Ricardian view of government debt.