Some Answers

1) Suppose that real money demand is represented by the equation \((M/P)^d = 0.25*Y\). Use the quantity equation to calculate the income velocity of money.

\[ V = 4. \]

2) Assume that the demand for real money is \((M/P)^d = 0.6*Y - 100i\), where \(Y\) is national income and \(i\) is the nominal interest rate. The real interest rate \(r\) is fixed at 3 percent by the investment and saving functions. The expected inflation rate equals the rate of nominal money growth.

a) If \(Y\) is 1000, \(M\) is 100, and the growth rate of nominal money is 1%, what must \(i\) and \(P\) be?

*Given the quantity theory of money, we know that inflation will simply equal the growth rate of money (provided that output is constant). Given the Fisher equation, this means that \(i = 4\) percent. Thus, plugging into our money demand equation above, we get \(P = 0.5\).*

b) If \(Y\) is 1000, \(M\) is 100, and the growth rate of nominal money is 2%, what must \(i\) and \(P\) be?

*Here \(i\) would be 5%, and \(P\) would be 1.*

3) Econoland finances government expenditures with an inflation tax.

a) Explain who pays the tax and how it is paid.

*Everyone in the economy ends up paying in some way, but the costs come in the more subtle forms of social costs.*

b) What are the costs from this tax?

*Just be able to tick off the costs described in the text, both anticipated and unanticipated.*
4) A macroeconomist threatens to call the Secret Service to have Mr. Biggy Rich arrested for counterfeiting because Mr. Rich claims he “makes a lot of money.”

a) Explain why the macroeconomist is making this threat based on the macroeconomic definition of money. Be sure to explain the macroeconomic functions of money.

*Money consists of the assets used to make transactions. Money serves as a store of value, unit of account, and medium of exchange. In most fiat money economies, the government maintains a monopoly over the supply of money. If Mr. Rich is “making money,” i.e., increasing the supply of money, this counterfeiting, which is totally illegal.*

b) Suggest an alternative phrase that Mr. Rich can use that will not result in a charge of counterfeiting.

*Mr. Rich could say he “earns a lot of income,” “has a lot of wealth/money,” “makes big profits,” etc.*

5) Imagine that you are the chairman of the Federal Reserve. Assume, further, that the money supply has been growing at 3% per year. You have been called before Congress to testify about the long-run effects of increasing the growth of the money supply to 10% per year. State and then explain the long-run effects of this change on each of the following (give numerical estimates when possible):

a) the annual rate of inflation

*According to the quantity equation: $MV = PY$

Taking percentage changes of both sides yield:

$\%\Delta M + \%\Delta V = \%\Delta P + \%\Delta Y$

$3\% + 0\% = 3\%$

*IF WE ASSUME that in the long run, $\%\Delta Y = 3\%$, $\pi = 0\%$

*If $M^s$ grows at 10%, $\pi = 10\% - 3\% = 7\%$. **Inflation rises by 7%**.

b) the real interest rate

*Real interest rate remains unchanged.*
c) the nominal interest rate

\[ i = r + \pi. \text{ Nominal rates rise by 7\%.} \]

d) the real exchange rate

By classical dichotomy or PPP, real exchange rate remains unchanged.

e) the nominal exchange rate

\[ \%\Delta e = \%\Delta e + \%\Delta P - \%\Delta P^* \]

Since foreign inflation remains unchanged, U.S. nominal exchange rate drops by 7\%.

f) investment (ignore both taxes and uncertainty)

Investment is a function of \( r \), so investment is unchanged.

g) real GDP

\[ Y = C + I + G. \text{ Output will not be affected.} \]