

1. **(6 points: 2 points for each part – a correct expression but an error in arithmetic gets 1 point.)** Using the growth accounting framework, how much does the growth rate of total output change if

The capital stock growth rate increases from 3% per year to 6% per year.  $(1/3)(6 - 3) = 1\%$

The growth rate of TFP increases from 2% to 5% per year. 3%

The growth rate of the labor force increases from 1% to 4% per year.  $(2/3)(4 - 1) = 2\%$

2. **(4 points: 2 for getting “C” and 2 for the calculation.)** If the population growth rate and the labor force growth rate are always equal, which of the three cases in question 1 leads to the *smallest* increase in the growth rate of per capita output, a, b, or c? C. In the case you have chosen, what is the change in the growth rate of per capita output?

change in growth rate of output minus change in growth rate of pop. = 2% - 3% = -1%

Because of the ambiguity of the question, A and +1% are also acceptable.

**For questions (3)-(5), fill in the blanks: 1 point for each blank correctly filled in – exact works used fo not have to be identical to the ones I have used.**

3. **(1 points)** Growth accounting attributes overall economic growth to growth in labor, in capital and in **total factor productivity**.

4. **(3 points)** Suppose Americans decide to save more at each level of the real interest rate. Since the U.S. is large relative to the world economy, this increase in saving would **lower** world real interest rates, **increase** investment in small open economies like Sweden, and **reduce** the U.S.’s trade deficit.

5. **(2 points)** If U.S. imports rise, this will **increase** the supply of dollars in the foreign exchange market and lead to a **fall** in the value of the dollar.

6. **(6 points)** Under a floating exchange rate system, the exchange rate adjusts to ensure supply and demand are equal in the foreign exchange market. **Explain** how this also ensures the basic trade identity holds.

**The supply of dollars in the foreign exchange market is the result of US imports (purchases of foreign goods) plus capital outflows, or purchases of foreign assets by Americans.**

**The demand for dollars in the foreign exchange market is the result of foreigners purchasing US goods and services (US exports) plus capital inflows, or purchases of US assets by foreigners.**

**When the exchange adjusts to clear the foreign exchange market, the quantity of dollars demanded and supplied are equal, or Imports + Capital outflow = Exports + Capital inflow.**

**Rearranging, we get Exports – Imports + Capital inflow – Capital outflow = 0. But this is just the basic trade identity: Net exports + Net capital inflow = 0.**

7. (3 points: 1 point for getting “B”, 2 points for getting “10”) Consider two economies. In one (economy A), the money supply is growing at 5% per year. In the other (economy B), the money supply is growing at 15% per year. The two economies are otherwise identical. Will the inflation rate be higher in economy A or economy B? By how much will it be higher?

The inflation rate will be higher in economy B. It will be 10 percentage points higher.

8. (4 points: 2 points for each blank correctly filled in.) Suppose the required reserve ratio is 10%. If there are no leakages, what is the money multiplier? If the Federal Reserve increases bank reserves by \$100b, by how much will the money supply increase?

The multiplier is 10. The increase in the money supply is \$1,000b or \$1T.

9. (4 points) If the Federal Reserve wants to increase the money supply, should it engage in an open market purchase or sale? Explain how this open market operation leads to a rise in the money supply.

**To increase the money supply, the Federal Reserve needs to *increase* reserves. It can increase reserves by buying government bonds – i.e., through an open market purchase. When the Fed buys bonds, it creates reserves to pay for them. Since deposits in the banking system have not (initially) changed, the banking sector is holding more reserves than it needs to meet its reserve requirement. So it will increase lending, and the money multiplier process goes to work. The ultimate increase in deposits and the money supply will be a multiple of the increase in reserves.**

10. (8 points: for part (a), 1 point for each blank correctly filled in; 5 points for part (b) – since there are 3 parts to (b), award 2 points for getting one part correct, 4 points for getting two parts correct, and 5 points for getting all three parts correct. ) Suppose the U.S. federal government increases expenditures (assume taxes remain unchanged).

(a) Fill in the blanks: According to the full-employment model, this policy change will **decrease** national saving, **raise** interest rates, and **decrease** U.S. private investment.

(b) Explain how this change will affect (i) the U.S. trade deficit, (ii) net capital flows, and (iii) the value of the dollar.

**The decrease in national saving leads to a rise in US interest rates, and this makes the US a more attractive place for international savers to lend. So the US attracts more saving from abroad. Net capital inflows increase. This increases the demand for dollars in the foreign exchange market and causes the value of the dollar to rise. By making US goods more expensive for foreigners and foreign goods less expensive for Americans to buy, the rise in the value of the dollar reduces US net exports.**

**To summarize, the US trade deficit worsens (the deficit increases, net exports fall), net capital flows increase (inflows increase relative to outflows), and the value of the dollar rises.**