

Spring 2000  
Answers

**Question 1.**

1. E all of the above.

An oil shock changes firms' markup. Minimum wage increases the workers' bargaining position so they will negotiate a higher wage for any amount of labor they are willing to supply. Weaker labor unions have the opposite effect. Immigration increases the supply of labor in the economy so more workers are willing to work at any given wage offered by the firms.

2. B – A would decrease it, B is fine since it increases  $\mu$ . C and D would not effect it (in the medium run – once we account for growth effects, C and D might influence investment and thus promote or demote growth)

3. C – A is incorrect, since the LCT prescribes borrowing for consumers with an upward-sloping wage profile. B is exactly the opposite of consumption smoothing: save when times are good so that you do not need to cut consumption when times are bad. C is right: again, from consumption smoothing. D is incorrect: it immediately changes your lifetime wealth, so LCT would instruct you to cut consumption immediately.

4. C – this is what we get from comparing nominal returns in dollars.

5. E – Exchange rates change when interest rates and expectations change, and they can also change with fiscal expansion (causes higher interest rates and thus an appreciation). Therefore, e is the correct choice.

**Question 2.**

1. False: the first fact is true, but the other not: consumption is related to  $Y$ , investment to  $dY$ , hence  $I$  is more volatile in relative terms, and equally volatile in absolute terms..

2. False: it would contract Canada's output, hence decrease their imports, also from the US. Moreover, the Canadian dollar would depreciate with respect to other currencies (e.g. the US dollar), which again cuts Canada's imports (which are partly coming from the US) and boosts Canadian exports (which go partly to the US).

3. True. With fiscal expansion, government budget deteriorates directly, while higher output and interest rate reduce net exports through spending and appreciation effects, leading to current account deficits. A monetary expansion may have no effect on government budget whatsoever, while the change in current account is ambiguous (in the effect of lower interest rates and subsequent depreciation dominates than trade balance will improve, but it may deteriorate if the effect of the output on import is stronger).

4. True. If  $Y$  increases by  $x\%$ , then  $\log Y$  increases by  $\log(x/100)$ ,  $\log C$  increases by  $\beta \log(x/100)$ , which means that  $C$  goes up by  $\beta \cdot x\%$ , which is the definition of elasticity.

5. GDP, national income, consumption, investment.

6. True. Under open markets, some of the increased spending falls on imports, which dampens the expansion. Also, interest rates go up, so the currency appreciates, which decreases  $NX$ , which again counteracts the fiscal expansion.

7. F The proper policy would be to decrease government spending and to have the central bank buy bonds in the open market (thus to increase the money supply) if the goal is to increase investment: that would cut interest rates, and the two opposing effects on output can be exactly balanced. The question was proposing a fiscal and a monetary contraction, which cannot increase output.

8. False. A fiscal expansion shifts the AD curve out. If the AS is steep, most of the effect is in the price level and only a bit on output; and vice versa.

**Question 3.**

Short term exports, quantities:  $0.3 \cdot 0.1 = 0.03$  (3%) increase

Short term exports, value: 3% increase (since expressed in local currency, the value change is the *same* as the quantity change.

Short term imports, quantities:  $-0.2 \cdot 0.1 = -0.02$  (minus 2%)

Short term imports, value: 10% increase in the relative price minus 2% of the quantities, that is appr. 8% ( $\epsilon Q$  becomes  $.11\epsilon Q/0.98$ )

Short term net exports:  $X - \varepsilon Q$  goes down: since initially in balance,  $X = \varepsilon Q$ , so the 8% hike in imports values dominates the 3% rise in exports.

Long term exports, quantities (and also values):  $1 \cdot 0.1 = 0.1$  (10%)

Long term imports, quantities:  $-0.8 \cdot 0.1 = 0.08$  (minus 8%)

Long term imports, value: 10% minus 8% is plus 2%

Long term net exports: increases, since here the plus 8% dominates the plus 2%.

Notice that this is exactly the J-curve in action: short-term quantities responding weakly, so the price effect ( $\varepsilon$  up) dominates, but the quantity response taking over in the long run.

#### Question 4.

a) Nominal income (the product of the price level and real income: it was okay not calling these two nominal income together, but leaving the income out as a key variable led to loss of points) and the interest rate: with higher income, people will make more transactions, thus the transaction need for money increases. With higher interest rates, the (opportunity) cost of money (holding money vs holding bonds) goes up, so people will want to carry smaller cash balances with them.

b) Money supply:  $M^S = \bar{M}$ ; money demand:  $M^D = YL(i)$ ; so in equilibrium,  $\bar{M} = YL(i)$ , which is the LM curve (one can solve for  $Y$  as a function of  $i$  or the other way).

c) An open market operation is the FED's action in the "open market" of bonds: a purchase or a sale. If it buys bonds, paying with cash newly entering circulation (not necessarily currently printed though), the money supply goes up. In terms of the bond rates equilibrium, with more demand for bonds, bond prices go up, which means that the rate of return (i.e., the interest rate) goes down. With a purchase of bonds, it is just the opposite.

#### Question 5.

a) The Phillips curve connects the current level of inflation to expected inflation and the deviation of the unemployment rate from the natural rate. Up to the late 60s, inflation was not persistent, so the best (or an acceptable) prediction of current inflation was zero. This means that the level of current inflation will be related to the unemployment rate gap. Around the 70s, inflation became more persistent, thus expectations were better captured/described by past inflation (instead of zero), and this gives the new Phillips curve.

b)  $\pi_t = \pi_t^e - \alpha(U_t - U_N) = \pi_{t-1} - \alpha(U_t - U_N)$