

FIN 40500
Solutions to Group Assignment #5

- 1) Suppose that the Fed decreases the supply of money by 10%.
 - a) In the long run, once all prices have had a chance to adjust, the only impact will be a 10% drop in the US price level (the long run price level is essentially equal to the ratio of money to output in the US). Using PPP, we get a 10% appreciation of the dollar (in nominal terms – the real exchange rate remains constant).
 - b) In the short run while prices are fixed, the decrease in money creates a shortage of liquidity in the banking system which forces interest rates up. Higher interest rates create decreased demand (household consumption, corporate investment and import spending). Production decreases and the trade balance improves. Note that higher interest rates also improve our ability to attract foreign capital, so our capital account improves as well. The overall effect is a balance of payments surplus. This should create an immediate appreciation of the dollar.
 - c) We know that the dollar needs to appreciate immediately, as well as the long term, but with interest rates higher in the US than abroad, there has to be a dollar *depreciation* at some point (interest parity). Therefore, the dollar appreciates immediately by more than its eventual long run level (10%) and then drops back to its long run level.

- 2) Suppose that productivity improvements raise US production by 5%.
 - a) In the long run, once all prices have had a chance to adjust, the only impact will be a 5% drop in the US price level (the long run price level is essentially equal to the ratio of money to output in the US). Using PPP, we get a 5% appreciation of the dollar (in nominal terms – the real exchange rate remains constant).
 - b) In the short run while prices are fixed, the increase in productivity raises investment spending (more profitable investment opportunities) as well as consumption (expectations of higher income). Production increases and the trade balance worsens (higher spending on imports). Note that higher interest rates improve our ability to attract foreign capital, so our capital account improves. The overall effect on the balance of payments is ambiguous.
 - c) If capital is sufficiently mobile, then we will end up with a balance of payments surplus and an immediate appreciation of the dollar. However, if capital is not easily attracted by higher interest rates, then we will have a balance of payments deficit and an immediate depreciation.

- 3) The US is following a gold standard with a price of gold equal to \$100/oz.
 - a) The gold content of a dollar is .01 ounces.

- b) 125 tons = 250,000 lbs = 4,000,000 oz = \$400M. With \$925M dollars in circulation, we have a reserve ratio of $400/925 = .43$ (43%).
 - c) The fed can increase the supply of money in one of two ways: buying gold or buying other securities. If the Fed buys gold, it bids up the free market price of gold. Given higher free market prices, individuals will buy gold from the Fed and sell it in private markets – this reverses the initial Fed purchase. The Fed could buy TBills, however, this will lower the reserve ratio – if the reserve ration gets low enough, individuals will fear a lack of convertibility and buy gold from the fed.
 - d) If the Fed raised the price of gold to \$125, its reserves immediately increase by 25% (same amount of reserve gold, but its has a higher value). Also, the discrepancy between the official price and the market price will cause individuals to sell gold to the Fed –thus increasing cash in circulation.
 - e) Note that if the Fed sells treasuries, the reserve ratio increases. Individuals wouldn't fear this as they would a drop in the reserve ratio as in (c).
- 4) Again, the Fed is pegging the price of gold at, say. \$100.
- a) A rise in supply pushes down private gold prices. Individuals buy gold in the market and sell to the fed – money supply increases.
 - b) A rise in demand pushes up private gold prices. Individuals sell gold in the market and buy from the fed – money supply decreases.
 - c) In principle, nothing happens unless people fear that the convertibility of the dollar is in question. In that case, they would buy gold from the fed and the money supply contracts.