

Problem Solving / Essay Questions. (75 points)

#11. (30 pts) In the U.S., currency in circulation (C) is \$1.2 trillion and the monetary base (B) is \$3.7 trillion. Assume the reserve-deposit ratio (rr) and the currency-deposit ratio (cr) are both 0.25.

(a) (10 pts) What is the size of bank reserves (R)? What is the money multiplier? What is the money supply? What is the velocity of money if nominal GDP is \$17 trillion?

(b) (10 pts) If the FOMC increases bank reserves (R) by \$0.5 trillion and banks choose to hold all the additional reserves rather than loan them out, what is the new money supply? [5 PT BONUS: What is the new money supply if instead banks loan out 50% of the additional new reserves and households deposit all the additional loans?]

(c) (10 pts) Assume that the velocity of money is constant and real GDP is growing at 1%. Use the numbers in part (a) to answer the next question. If the Fed wishes to keep the price level constant, how much (in dollars) do they need to increase the money supply?

#12. (30 pts) Consider the following Neoclassical model of the economy, where the domestic interest rate r and the world interest rate r_* are in percentage terms. Show all your work.

Supply	Demand
$Y = 500$	$C = 100 + 0.9(Y - T)$
$NX = 50 - 10\epsilon$	$I = 100 - 5r$
$r_* = 10\%$	$G = 0, T = 100$

- (a) (10 pts) Find the equilibrium real interest rate, national saving, and investment in a closed economy. Show the equilibrium real interest rate on a saving-investment diagram with r measured on the vertical axis. Carefully label both axes.
- (b) (10 pts) Now assume the small economy opens up to trade. Calculate the real exchange rate, trade balance and net capital outflow. Show the trade balance on a saving-investment diagram with ϵ measured on the vertical axis. If $P = 2$ and $P_* = 1$, what is the nominal exchange rate?
- (c) (10 pts) Consumers in the small open economy suddenly desire fewer foreign goods, shifting the net exports schedule to $NX = 100 - 10\epsilon$. Find the new real exchange rate, nominal exchange rate, trade balance and net capital outflows. Redraw the diagram from part (b) to show the changes.

Problem Solving / Essay Questions. (75 points)

#11. (30 pts) Assume the monetary base (B) is \$100 billion, the reserve-deposit ratio (rr) is 0.1, and the currency-deposit ratio (cr) is 0.1. Show your work.

(a) (10 pts) What is the money supply?

(b) (10 pts) If cr changes to 0.2, but rr is 0.1 and B is unchanged, what is the money supply?

(c) (10 pts) Using your answer from part (b), what is the velocity of money if nominal GDP is \$800 billion? What is the resulting level of inflation if velocity is constant, real GDP increases by 2%, and the money supply increases by 4%?

#12. (30 pts) Consider the following Neoclassical model of the economy, where the domestic interest rate r and the world interest rate r_* are in percentage terms. Show all your work.

Supply	Demand
$Y = F(K, L) = \sqrt{KL}$	$C = 10 + 0.8(Y - T)$
$K = 100; L = 64$	$I = 20 - 2r$
$r_* = 5\%$	$G = 30, T = 50$

- (a) (10 pts) What is the level of GDP in the economy? In a closed economy, find the equilibrium real interest rate, national saving, and investment.
- (b) (10 pts) Calculate the trade balance and net capital outflow for the small open economy. Show the trade balance on a saving-investment diagram with r measured on the vertical axis.
- (c) (10 pts) Calculate the new level of the trade balance if fiscal policymakers lower taxes to balance the federal budget. Redraw the diagram from part (b) to show the change in the trade balance.