M. Finkler
Macro Theory

Answers to Problem Set #2

1.a. To determine the value for L, jointly solve (1) - (3).
200 - 5*(W/P) = 100 + 10*(W/P) which implies
that 100 = 15*(W/P) so W/P = 6 2/3

Now plug W/P into (1) (or (2)) to yield
L = LS = 166 2/3

Now plug L into (4) to yield Y = 4639
from (5) and (6), we can solve for P. P = .43

Now return to the equilibrium solution for W/P and solve for W.
W = 6 2/3 multiplied by .43 = 2.87

b. A doubling of the stock of money (M) yields a doubling of W and P, but no other changes.

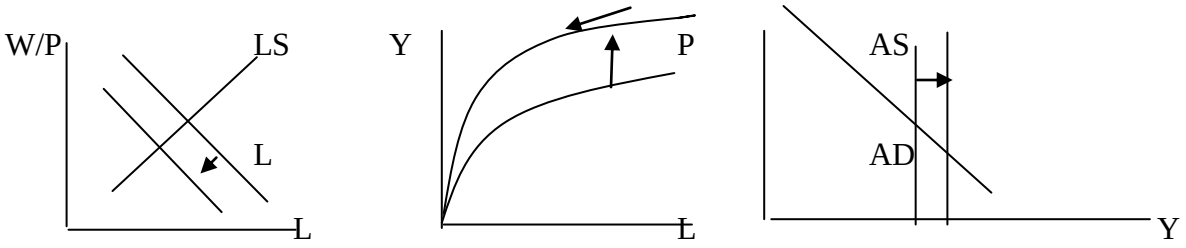
2. Instability in output and employment result from one of three exogenous forces: volatility in the growth rate of money, changes in factor availability (or relative prices) or changes in public policy and law which affect contracts in the labor market (*e.g.*, changes in minimum wage laws, effective union power to influence wages and employment, unemployment compensation policies, and the tax rate structure). Classicists suggest steady growth in monetary policy and limited government intervention in all markets. Some economists have suggested that government's role in markets should not extend beyond providing a clear set of property rights and contracting laws.

3.a. Flexible wages provide the equilibrating force in classical labor markets. There are a variety of factors, however, that might influence the character of the stopping point. For example, some public policies make labor attractive to hire, while others generate a set of converse implications. Similar arguments apply to labor supply. [Note the examples in the answer to question 2 and in lecture.] Output effects are positively related to labor market equilibria. Forces that encourage expanded employment lead to expanded output; the converse also holds.

b. Each money market equilibrium is driven by the supply of and the demand for money. The former responds to central bank (or monetary authority) policies; while the latter results directly from the demand for goods. As prices rise, households must hold more money to purchase a given amount of goods in a particular period. Credit decisions and savings decisions are also related to one another. Households decide how much to save versus how much to consume. In Model 1, savings take place in loanable funds markets; thus, savings are provided by households, firms, and the government in exchange for an agreed upon rate of return. Though not explicit in Model 1, cash flow into and out of loanable funds markets in response to equilibrating real interest rates are necessary to stabilize an economy.

4.a. An increase in raw materials reduces the demand for labor, since labor and raw materials are assumed to be substitutes. Shift the labor demand curve downward (1) ↓L and ↓W/P. Output changes depend upon the two counteracting forces - decreased employment (2) and increased raw materials (3). Since producers can produce at least as much as previously, assume the result is a net output increase which leads to a rightward shift in the AS curve (4). Given the AD curve, the result is reduced prices.

Summary L↓, W/P↓, Y↑, P↓.



b. Decreases in investment expenditure have no effect on aggregate demand in Model 1. They do affect the composition of AD. Since C + I + G = AD = Y with C endogenous, C must rise to counter the drop in I. No changes appear in the reduced form statements or in the graphics of Model 1.

5.a. To complete the model, we need to add a labor market equilibrium equation (i), a money market equilibrium equation (ii), an aggregate demand identity (iii), and a goods market equilibrium equation (iv).

i. L = LS
ii. M = Md
iii. AD = C + I + G
iv. Y = AD

From ii, iv, and E (Money Demand), we can derive an AD equation
M = 20*P*Y implies that AD can be represented by
AD = M/20*P. (AD)

b. Using the procedure given in problem 1, we solve first for W/P, then for L and finally for Y (the AS curve). These steps yield:
W/P = 10, L= 950, and $Y = 500*(950)^{.5}K^{.5} = 15{,}411K^{.5}$ (AS)
- P does not enter the equation.

c. For K = 100 and M = 20000 and the AD and AS curves noted above, Y = 154,110 and P = M/20*Y= 20,000/3,082,200= .0065. I's equilibrium value can be found by solving I = Y - C - G. We know Y; C = 200+ .8*Y = 123,488; however, the value of G is not provided so the value of I cannot be determined.

6 Problem 3 (Mankiw, page 100)

a. Since there are no deposits and just currency holding M1 (money supply) = M0, the monetary base = $1,000.
b. Since all money is held as demand deposits, but none of it is lent out (given 100% reserve holding), again M1 = M0 = $1,000
c. With a 20% reserve to deposit ratio, banks lend out 80% of their deposit. The currency deposit ratio is zero, but the reserve deposit ratio is .2 so the multiplier of M0 into M1 equals 1/ reserve ratio, which is 5. Thus M1 = $5,000.
d. Here the currency ratio is 1 as people the same amount of deposits as currency. The reserve deposit ratio is .2, so (1+1)/(1+.2) = 1.66667; so M1 = $1,666.67
e. Since the money supply is proportionate to the monetary base, an increase in M0 yields a proportionate increase in M1. The proportion, of course, differs for each part above. m(part a) = 1; m (part b) = 1; m (part c) = 5; m(part d) =1.67.

Problem 6

As noted in the problem, the leverage ratio for a bank = 10; thus, each $1,000 worth of assets is funded by $100 of equity, and $900 of liabilities. If the assets increase by 5% and deposits and debt don't change, then equities must increase by the full amount. In this case, the additional $50 in assets would yield a $50 increase in equities, a 50% increase. If the value of the assets decline by $100 (10%), then bank equity would be wiped out.