Problem Set II

Chapter 4 #4

a) In equilibrium, $Y_t = Y_{t+1}$, so we can ignore time subscripts:

$$Y = C + I + G = 100 + 0.5(Y - 100) + 200 + 0,25Y + 100 = 350 + 0.75Y = 1,400$$

b) This model has a particular dynamic pattern

	ΔC_t	ΔI_t	ΔZ_t	ΔY_t
Period 2	0	0	100	0
Period 3	0	0	0	100
Period 4	50	25	75	0
Period 5	0	0	0	75

Output rises every other period.

c) The geometric series will be
$100+75+56{,}25+\ldots\ldots=100(1+0.75+0.75^2+\ldots)=100(1/(1-0.75))=400$

d) The multiplier (from part c) is 4. If investment were exogenous, we would have a multiplier of 1/(1-0.5)=2.Thus, making investment endogenous has made the multiplier larger.

Chapter 4 #5

a) Marginal propensity to consume in model A is 0.25+0.15=0.40
Marginal propensity to consume in model B is 0.20+0.15+0.05=0.40

b) In both models, the multiplier is 1/(1-0.40)=1.66

c) A policy maker would still need to know which of these models is the better description, since the period-to- period changes in GDP will be different under these two different lag structures. In particular, after a change in autonomous spending, GDP will reach its equilibrium more slowly in model B than in model A

Chapter 5 #2

a) At 5 percent, $M^d = \$50,000(0.5 - 0.05) = \$22,500$
At 10 percent, $M^d = \$50,000(0.5 - 0.1) = \$20,000$

b) $B^d = \$Wealth - M^d$ In this example wealth is \$25,000
At 5 percent, $B^d = \$25,000 - \$22,500 = \$2,500$

At 10 percent, $B^d = \$25,000 - \$20,000 = \$5,000$

c) A rise in the interest rate (from 5 percent to 10 percent in our example) causes the demand for money to decrease, and the demand for bonds to increase.

Chapter 5 #3

Velocity is the ratio of nominal income to money. With money market equilibrium, $M^d = M$, so we can substitute for M the money demand equation from problem 2, to obtain : $Velocity = \$Y/[\$Y(0.5 - i)] = 1/(0.5 - i)$. A rise in the interest rate from 5 percent to 10 percent causes the denominator to fall, which causes the whole fraction-velocity- to rise from 2.22 to 2.5

Chapter 5 #5

a) With c=0, the money supply is $(1/\theta)H = (1.02)\$100 billion = \$500 billion$

d) $(\$5000 billion)(0.2 - 0.8i) = \$500 billion \rightarrow i = 0.125 or 12.5 percent$

e) The money supply is now $(1/\theta)H = (1/0.2)\$150 billion = \$750 billion$
Equilibrium in money market now requires:
$(\$5,000 billion)(0.2 - 0.8i) = \$750 billion \rightarrow i = 0.0625 or 6.25 percent$

f) Equilibrium in the money market now requires:
$(\$6,250 billion)(0.2 - 0.8i) = \$500 billion \rightarrow i = 0.15 or 15 percent$