ECON 110, Prof. Hogendorn

Problem Set 7

1. *SW25.3* While gardening in his backyard, Bob finds a jar containing $100,000 in cash. He deposits the money in his bank, where the reserve requirement is 5%. Show the relevant changes on the bank's balance sheet. How much will the money supply eventually increase due to Bob's deposit? How would your answer be different if Bob only deposited $95,000, keeping $5,000 in cash to himself?

2. *LittleT.* A bank has deposits of $50 million, loans of $52 million, and complies with a 10% reserve requirement. Assuming this bank is properly run, write its T-account.

3. *OldGermansMoney.* Suppose that Germany output is $Y = 4374$ beers now, and will fall to $Y = 3713$ beers in the future due to population decline. If the European Central Bank (which acts as Germany's central bank plus the other countries that use the Euro) does not change the money supply over the years and velocity does not change, will there be deflation or inflation in Germany? Show what happens on a graph of P as a function of M and also mathematically.

Review Problems only, not to turn in:

4. *AIG.* AIG is the world's largest insurance company, and it is also in financial trouble. As of September 30, 2008, AIG's simplified balance sheet looks approximately like this (all figures in billions):

   (a) Since September, things have gotten worse. It turns out that $50 of the other assets are distressed, and can no longer be

Assets	Liabilities
$400 financial securities	$913 general liabilites
	$38 government loan
$622 other assets	$71 net worth
$1022	$1022

counted as assets. Rewrite the balance sheet, and find the new net worth.

(b) Things get worse. There has been a decline of 10% in the financial securities. Also, AIG now has a new liability of $35 in credit default swaps it must pay insurance on. Again rewrite the balance sheet and show the net worth.

(c) Yesterday, the government announced a new bailout plan. One thing the government will do is buy the $50 in distressed assets at their full face value by giving AIG $50 in cash. Show how this changes the balance sheet.

(d) The other terms of the government plan are to lend AIG $60 (a new liability). AIG will take this cash and pay off the credit default swap liability. Also, the government will buy $40 in shares in the company (again, giving AIG cash). How does this change the balance sheet.

5. *SW25.2* Down Home Savings Bank has the following assets and liabilities: $6 million in government bonds and reserves, $40 million in deposits, $36 million in outstanding loans. Draw up the balance sheet for the bank. What is its net worth?

6. *UchitelleMoney.* Consider the change from part (a) to (c) of the Uchitelle problem, but now suppose there is money in the economy. Specifically, the money supply is 10 dollars and velocity is 10. Price is initially 1.

(a) If the money supply and velocity do not change, what is the change in the *nominal* price of hamburgers and the *nominal* wage?

(b) If the central bank wanted to maintain the price of 1, how would it have to change the money supply? Illustrate your answer with a graph of money supply and money demand.

Answer to Review Problems:

4. *AIG_a.*

(a) Subtracting $50 from assets also requires subtracting $50 from net worth:

Assets	Liabilities
$400 financial securities	$913 general liabilites
	$38 government loan
~~$622~~ $572 other assets	~~$71~~ $21 net worth
~~$1022~~ $972	~~$1022~~ $972

(b) Now the financial securites fall in value to $360 and the liability side is bigger. As a result, net worth has to fall to −$54 to balance the balance sheet.

Assets	Liabilities
~~$400~~ $360 financial securities	$913 general liabilites
	$38 government loan
	$35 credit default swaps
$572 other assets	~~$21~~ −$54 net worth
~~$972~~ $932	~~$972~~ $932

(c) This part of the government bailout adds $50 in cash to the asset side. The corresponding change in the liability side is a $50 increase in net worth.

Assets	Liabilities
$360 financial securities	$913 general liabilites
$50 cash	$38 government loan
	$35 credit default swaps
$572 other assets	~~−$54~~ −$4 net worth
~~$932~~ $982	~~$932~~ $982

(d) On the asset side, AIG got new cash from both parts of the government plan, $60 and $40, but they used up $35 of it paying off the credit default swaps. On the liability side, they have a new government loan, new net worth, and they got rid of the liability. On the whole, net worth is now positive again.

Assets	Liabilities
$360 financial securities	$913 general liabilites
$50 cash	$38 government loan
+$60+$40−$35 cash	~~$35 credit default swaps~~
	$60 government loan
$572 other assets	~~−$4~~ $36 net worth
~~$982~~ $1047	~~$932~~ $982

5. *SW25.2_a* The balance sheet is:

6. *UchitelleMoney_a.* After the change, we still need $MV = PY$. Since $MV = 100$ is unchanged, and the new Y is 108.6, then the only way to maintain the quantity equation is for the price of hamburgers to fall to $P = 0.92$. We know that the real wage rises from 0.78

Assets	Liabilities
$6 million bonds and reserves	$40 million deposits
$36 million loans	$2 million net worth
$42 million	$42 million

hamburgers to 0.95 hamburgers, but the nominal wage only rises from $0.78 \cdot 1$ to $0.95 \cdot 0.92{=}0.87$. Thus, if Uchitelle is thinking in nominal terms, he would not see a very large increase in nominal wages. This might make him think that things are worse than they really are.

If the central bank wants to maintain $P = 1$, then $PY = 108.6$. With $V = 10$, a money supply of $M = 10.86$ would maintain the quantity equation. Thus, the central bank would have to create 86 cents.