

First challenge: Solutions
Eco 403, Spring 2009

Question 1 (15 points)

- a. A decrease in consumption means that less money must be held each day for purchases. Thus, the opportunity cost of holding money or forgone interest falls. Since the withdraw cost is independent of the size of the withdraw, less withdraws are made.
- b. Since less money must be held each day for purchases, money demand falls. The decrease in money demand is partially, but not completely, mitigated by the decrease in withdraws.
- c. Since less withdraws are being made, money stays in wallets and checking accounts for a longer period of time before being spent. Thus velocity falls.

Question 2 (8 points)

Borrowing from the FED means the bank has to pay interest equal to the discount rate and perhaps incur increased scrutiny from the FED. However, the bank gets the interest on the loan. By securitizing the loan, the bank gets no interest, and needs no capital. Instead the bank gets a fee for creating the loan.

Question 3 (10 points)

- a. Borrowing moves money from one person to another, but does not create money. So the money supply is unchanged.
- b. Moving money from deposits to cash causes banks to have less money to loan, which results in less deposits and a fall in the money supply.
- c. The bank is borrowing printed money, but all of the money ends up in excess reserves, which is not part of the money supply. Hence the money supply is unchanged.
- d. Banks may only loan excess reserves. Therefore, the bank borrowed excess reserves and made a loan, causing reserves to enter the economy. The money supply rises.
- e. Credit cards are not money, but the right to spend someone else's money. No new money is created and the money supply is unchanged.

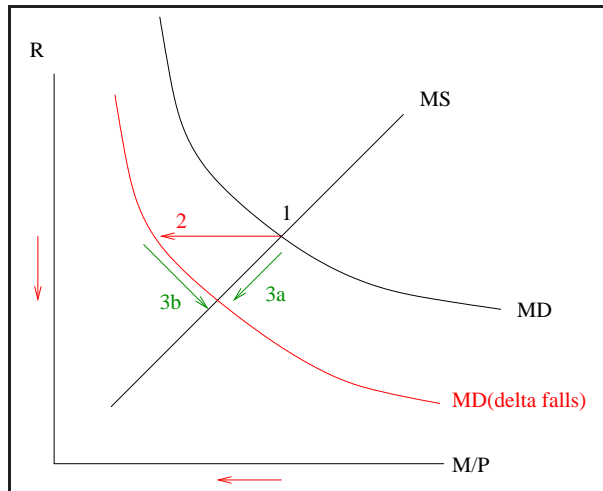
Question 4 (8 points).

M1 is more liquid, it can be spent quickly with a lower penalty. M2 items like savings deposits typically pay interest. A third difference is that M1 items have higher reserve requirements.

Longer Questions

Question 5 (25 points).

We have:



A decrease in the cost of withdraws means it is more attractive to keep money in the interest bearing account longer and make many withdraws as the money is needed. So the number of withdraws rises. In turn, less cash is held on average since we need only withdraw a small amount of cash to last until the next withdraw, which is now occuring sooner. Less cash held on average means money demand falls, which is shown as (2) on the graph, a shift to left of the money demand curve.

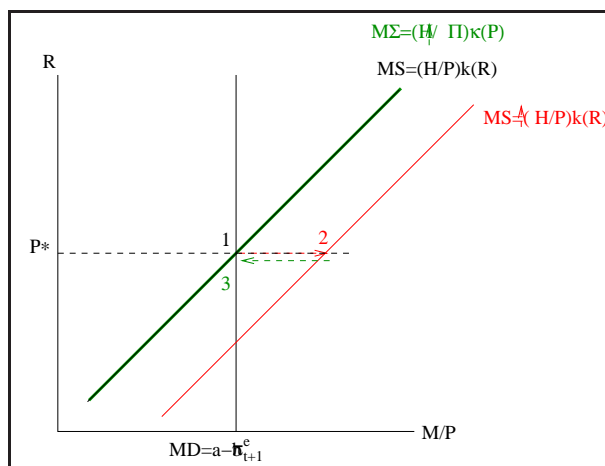
Now at (2), money demand has fallen below money supply. Thus the interest rate must fall to return the market to equilibrium.

Next (3a) shows the effect of the fall in interest rates on money supply. The opportunity cost of holding excess reserves falls, and so excess reserves rise, decreasing the money supply. Similarly, in (3b) the fall in interest rates reduces the opportunity cost of holding money for the household, so households make less withdraws, causing money demand to rise.

- As noted above, R falls.
- As seen above money supply falls.
- As seen above n rises and then falls. Overall, n must have risen because money demand is lower.
- As seen above, excess reserves rise.
- Velocity rises when δ falls, because more withdraws are being made and therefore money is held for a shorter period.

Question 6 (18 points).

a. We have:



The FED is lending printed money (high powered money), and so the money supply increases.

- b. As seen on the graph, money supply initially rises due to the increase in H . Money supply is greater than money demand, so we increase prices to move the Cagan money market back to equilibrium. After prices increase, real money supply and demand are unchanged, inflation is higher due to the increase in prices, and interest rates are unchanged by assumption.
- c. FED watchers expect low inflation, and yet the FED is nearly doubling the high powered money through TAF lending. How is this possible? Several answers make sense. First, the FED can always withdraw the money later by selling tbills. Indeed, TAF funds are loans of printed money, so when the loans are paid back, the money supply will decrease unless the FED re-lends the money. Inflation may only increase temporarily, then. Another possible answer is that the officials believe the banks will use the TAF funds to increase reserves, and so the H will not enter the economy. Another possibility is that the officials believe doubling of H will only result in an increase in inflation from 0 to 2% (this seems unlikely though). Finally, officials could just be irrational (this also seems less likely).

Question 7 (16 points).

- a. For each dollar of checking deposits, the bank can loan 90 cents, earning a real return of 6% less the 1% inflation. The remaining 10 cents must be put in reserve and lose value due to inflation. Thus the average real return is:

$$\text{ave } r = 0.9 \cdot (6 - 1) + 0.1 \cdot (0 - 1) = 4.4\% \tag{1}$$

- b. Savings deposits are similar, except the bank loans out 100% of savings deposits (and keeps no reserves), and must pay the depositor 3.5% interest. So the average real return is:

$$6 - 1 - 3.5 = 1.5\% \quad (2)$$

- c. Checking deposits are preferred because the bank makes a higher return.
- d. If the bank receives interest on reserves, the return on loans where the source of funds is savings is unchanged, but the average return on loans funded through checking is now:

$$\text{ave } r = 0.9 \cdot (6 - 1) + 0.1 \cdot (1 - 1) = 4.5\% \quad (3)$$

So checking accounts become more attractive as a source of funds. Checking accounts are still a more attractive source of funds than savings.