

Economics 470/570

Fall 2012

Midterm

## Part I - Definitions

1. Liquidity is the ease and speed with which an asset can be converted to cash

2. Taylor Rule: The Taylor Rule links the federal funds rate to output and inflation through the equation

$$ff = a + b(y - y^*) + c(\pi - \pi^*) \quad (* = \text{target value})$$

When either  $y$  or  $\pi$  is above target,  $ff$  goes up.

The Fed does not literally use this rule to set policy, but it provides a good explanation (empirical fit) of their behavior

3. The discount rate is the rate that banks must pay to borrow from the Fed (banks borrow from their district bank, the district banks set the discount rate with the approval of the Board of Governors).

4. The monetary base is defined as  $MB = C + R$ , where  $C = \text{currency}$  and  $R = \text{reserves}$ .

5. With direct finance (e.g. stocks, bonds), borrower and lender known to each other, the relationship is direct. With indirect finance, and intermediaries (e.g. Bank, credit union, hedge fund, ins. co.) is involved. They collect deposits, make loans/investments, in this case borrower does not know who provided money (pooled deposits).

## Part II: Essay

1. (a) money serves as a

medium of exchange: money used to purchase goods/services. This overcomes the "double coincidence of wants" problem under barter (i.e. there are large search costs associated with finding someone who has what you want and wants what you have for every transaction. Money solves this).

unit of account: money gives us a convenient way to express prices. Without money, each good must be priced in terms of every other good (eggs to pencils, eggs to soup, etc., etc.) => proliferation of prices. With money, each good only has one price.

store of value: gives people a perfectly liquid way of storing their wealth (w/o money, less liquid).

- (b) easily standardized (so its easy to verify value)
- widely accepted (e.g. no offensive pictures)
- Divisible (hard to make change if money = cows)
- Easy to carry (not too heavy, too big, etc.)
- Storable/durable (so savings don't deteriorate)
- Supply can be controlled (or M will expand until valueless and useless)

(c) There is more than one definition of the money supply because we are not sure where to draw the line between assets liquid enough to count as money, and those that are not (Should savings count? Probably. What about Bonds? Maybe, maybe not. What about a stamp collection? Probably not, too illiquid to count). Since we aren't sure, we develop an array of definitions ( $M_1$ ,  $M_2$ , etc.) and let researchers and other users pick the def. best suited to their question.

② (a) The Federal Open Market Committee (Fomc)  
consists of

7 members of Board of Gov.

1 NY Fed Representative

4 Representatives of other 11  
district banks, rotates  
annually

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12 members

(Reps are  
usually  
Fed Presidents.)

(b) The Fomc

- meets 8 times per year
- decides monetary policy until the next meeting
- helps to determine disc rate and reserve requirements (but not formally set here).

(c) Each district Bank has a 9-member Board  
of directors

3 Type A (elected by member banks,  
Professional bankers)

3 Type B (elected by member banks,  
Industry-leaders)

3 Type C (appointed by Board of  
Gov, some public interest, cannot  
be bankers)

In past, president chosen by all 9 directors.  
But Dodd-Frank changed it to B, C only  
(to reduce influence of Banking Industry)

③ (a)

A	L
-1,000 T-Bill	-1,000 Res

Fed

A	L
+1,000 T-Bill	-1,000 Res

Bank

The bank pays for the T-Bill it purchases with reserves (so its reserves decline).

(b) The Bank has lost reserves, but not deposits, so it is now \$1,000 short in required reserves. So it needs to reduce its loans by \$1,000:

A	L
-1,000 Loans	
+1,000 Res	

Same bank as above

The way loans are reduced is by people paying them off, so someone (or several people) paid off loans totaling \$1,000. To make it easy, assume it's a single person.

[cont.]

When this individual pays off the loan, they mail a check to the bank. If the bank at Bank B

A	L
-1,000 Res	-1,000 Dem. Dep.

Step 1

This bank was holding \$100 against the \$1,000 deposit (since  $rr = 10\%$ ), so bank is short \$900 in reserves. To make up the shortfall, it reduces loans by \$900 (each day a bank receives payments, makes new loans, think of this as payments the same -- checks are mailed to the bank -- but new loans  $\downarrow$  by \$900)

Step 2

A	L
+900 Res	-900 Loans

Bank C

But the \$900 came from another Bank(s)  $\rightarrow$  mult. dep creation (contraction) in this case).

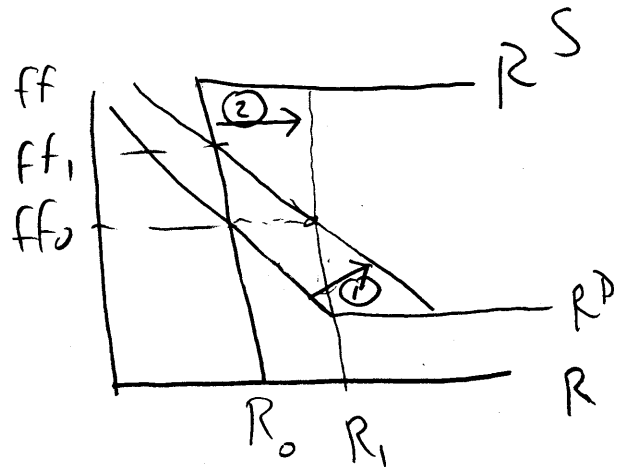
c) The multiple deposit creation process is the source of the multiplier. For a given injection of Reserves from the Fed, the more deposits that are created, the larger the multiplier.

The basic intuition is that checkable deposits  $\rightarrow$  mult deposit creation, while holding currency does not (it's a leakage from the mult. deposit creation process,  $m$  held as currency rather than checkable deposits).

So, when  $C \uparrow$ , we have less deposit expansion  $\rightarrow$  smaller multiplier. [Let Fed buy a Bond from an indiv. for \$1,000. If \$1,000 held as cash, no mult dep expansion, but if \$1,000 put into bank as checking deposit, then multiple deposit creation occurs. So, less  $C \rightarrow$  more deposit creation  $\rightarrow$  larger multiplier.]

④ (a) The ff rate cannot fall below the interest on reserves because no bank would loan other banks reserves at a lower rate than it could earn by holding on to the money. Similarly, no bank would borrow from another bank at a rate higher than the disc rate, the rate it must pay to borrow from the Fed. So the ior establishes a minimum, the disc rate a maximum.

(b) An increase in the risk of fin. assets increases the demand for reserves (banks shift out of assets, hold R instead). Shown as ① on diagram.



(c) Shown on the same diagram as ②, the Fed would use open market operations to ↑ R. from  $R_0$  to  $R_1$



(5) (a) The quantity theory of money begins with the definition of velocity,  $v \equiv PY/M$ . This can also be written  $PY \equiv mv$ . This is an identity. It is not falsifiable so it isn't a theoretical statement. If we assume  $v = \bar{v}$ , which is falsifiable (it might not be true), then  $m\bar{v} = PY$ . This is the Q-theory of money. If we rewrite this as  $M^d = kPY$ , where  $k \equiv 1/\bar{v}$ , then we have the classical money demand function. It says that  $m^d$  is a constant fraction of nominal GDP (a transactions based definition).

(b) For the classical economists,  $m^d$  was for transactions so the total volume of transactions in final-goods + services,  $PY$ , was the important quantity. The interest rate plays no role.

For Cambridge economists, both the trans demand for money and the

[Continued]

See  
Prob 1  
in the  
solution  
for  
HW4

Store of value function were important. They believed that as the  $i$ -rate  $\uparrow$ , less wealth would be stored as money (and more as financial assets to capture higher returns). In essence they believed that  $m^d = k_1(i) \text{ Wealth}$ , with  $k_1 \downarrow$  as  $i \uparrow$ , and that  $m^d_{\text{Trans}} = k_2 PY$  just like classical's.

In addition, they believed Wealth was proportional to  $PY$  (nom. Income), i.e. that  $\text{Wealth} = k_3 PY$ .

$$\begin{aligned}
 \text{Then } m^d_{\text{Store of value}} &= k_1(i) k_3 PY \\
 m^d_{\text{Trans}} &= k_2 PY
 \end{aligned}$$

$$m^d_{\text{Total}} = m^d_{\text{Store of value}} + m^d_{\text{Trans}} = [k_1(i)k_3 + k_2] PY$$

$m^d = k(i) PY$ , where  $k(i) \downarrow$  as  $i \uparrow$ . So, the diff from classicals is store of wealth function, dependence of  $k$  on  $i$ .

(c) Some money is held for speculative purposes. For example, when the  $i$ -rate is lower than normal, most people, though not all, will believe that the  $i$ -rate will increase in the future. This means they also expect  $P_{\text{fin. assets}} \downarrow$  in future, so they move into money to avoid capital losses (as  $i \downarrow$  lower and lower, more people believe  $i \uparrow$  in future  $\rightarrow$  more believe  $P_{\text{assets}} \downarrow \rightarrow$  hold more and more  $M$ ). Similarly, when  $i >$  normal, most believe  $i \downarrow$  in future and  $P_{\text{fin. assets}} \uparrow \rightarrow$  hold more assets, less money.

So, spec. demand is inversely related to the interest rate

