

ECON 102, Section 01.

Homework M1

A	L
Cash and Reserves	Deposits 10.000
Loans	Capital 5.000

a. If $r = 0.25$ $0.25 = \frac{RR}{D} \rightarrow 0.25 = \frac{2500}{10.000}$

Reserves = 2500 since there is no excess reserves. The sums of assets and liabilities sides should be equal. Therefore,

$$2500 + L = 10.000 + 5.000 \Rightarrow L = 12.500$$

b. $k_0 = 1/r \rightarrow k_0 = 1/0.25 = 4$

$$k_L = k_0 - 1 \rightarrow 3$$

c.

A	L
C and R 2500	D 10.000
L 12.500	C 5.000

Initial:

A	L
C and R -1000	D -1.000
C and R 1500	D 9.000
L 12.500	C 5.000

Since the bank cannot support 9.000 TL deposits with available reserves, it should call back the loans. As loans are decreased, so does deposits. This process will

continue until the amount of reserves in the bank vaults can support deposits.

Final

A	L
C and R 1500	D 6000
RR 1500 ER 0	
L 9500	C 5000

$$0.25 = \frac{1500}{D} \rightarrow D = 6000$$

$$\text{so } \Sigma L = 6000 + 5000 = 11.000$$

$$\Sigma L = \Sigma A \quad 11.000 - 1500 \rightarrow L = 9500$$

OR $k_D = \frac{\Delta L}{\Delta R} \quad 4 = \frac{\Delta D}{1000} \rightarrow \Delta D = 4000$

Since reserves decreases by 1000, deposits will decrease by 4000 from 10.000 to 6.000. Similarly,

$k_L = \frac{\Delta L}{\Delta R} \quad 3 = \frac{\Delta L}{1000} \rightarrow \Delta L = 3000$

Since reserves decreases by 1000, Loans will decrease by 3000 from 12.500 to 9.500

d. $k_D = \frac{1}{r+e} = \frac{1}{0.25+0.05} = 3.3$

$k_L = k_D - 1 = 2.3$

e. Initial:

A		L	
C and R	2500	D	10.000
L	12.500	C	5.000

A		L	
C and R	+1000	D	+1.000
C and R	3.500	D	11.000
RR	2.750		
ER	750		
L	12.500	C	5.000

$r = 0.25 \rightarrow \frac{RR}{DD} = \frac{RR}{11.000} \Rightarrow RR = 2750$ so the rest is excess reserves.

$e = 0.05 \rightarrow \frac{ER}{DD} = \frac{ER}{11.000} \rightarrow ER = 550$ (3500-2750)

Of this excess reserves (3500-2750=750), 550 will be kept in the bank and will not be given as loans. The rest (750-550) will be given as loans. This process will continue until the reserves in the bank is all required and excess reserves.

$k_D = 3.3 = \frac{\Delta D}{\Delta R} \quad 3.3 = \frac{\Delta D}{1000} \rightarrow \Delta D = 3300$

$k_L = 2.3 = \frac{\Delta L}{\Delta R} \quad 2.3 = \frac{\Delta L}{1000} \rightarrow \Delta L = 2300$

Final:

A		L	
Card R	3500	D	13.500
RR			
ER			
L	14.800	C	5.000

$$0.25 = \frac{RR}{D} \rightarrow 0.25 = \frac{RR}{13.300}$$

$$\rightarrow RR = 3325 \text{ so } ER = 3500 - 3325 = 175$$

This contradiction in numbers is due to rounding in k_0 and k_L .

$$\text{or } 0.05 = \frac{ER}{D} \quad 0.05 = \frac{ER}{13.300}$$

$$ER = 665 \text{ so } RR = 3500 - 665 = 2835$$

$$f. k_0 = \frac{1}{r + e + c'} = \frac{1}{0.25 + 0.05 + 0.01} = 3.2$$

$$k_L = k_0 - 1 \quad 3.2 - 1 = 2.2$$

9. Initial:

A		L	
Card R	+1000	D	+1000
Card R	3500	D	31.000
RR	2750		
ER	750		
L	12.500	C	5.000

Of this excess reserves 550 will be kept in the bank and the rest will be given as loans. The person who gets this loan will withdraw this amount so, the reserves and deposits

of the bank will fall. Then the person will keep 10% of this amount in his pocket and deposit the rest with the bank, so that the reserves and deposits of the bank increase. This process will continue until the the reserves in the bank is all required and excess reserves.

$$k_0 = 3.2 = \frac{\Delta D}{\Delta R} \quad 3.2 = \frac{\Delta D}{1000} \rightarrow \Delta D = 3.200$$

$$k_L = 2.2 = \frac{\Delta L}{\Delta R} \quad 2.2 = \frac{\Delta L}{1000} \rightarrow \Delta L = 2.200$$

(4)

h. If r is increased to 30% then to satisfy the required reserves, bank should call back loans. As the amount of loans decreases, so the amount of deposits.

Final:

A		L	
C and R	2500	D	8,333
RR 2500 ER 0			
L	10,833	C	5,000

$$0.3 = \frac{RR}{D} \quad 0.3 = \frac{2,500}{D}$$

$$D = 8333.3$$

i. Even though the individual bank's contribution to deposit and loan creation is only a fraction of the total, when each bank's individual contributions are summed the total change is no different than that of the monopoly bank.

j. The same as (b)