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Module 25
Multiple Deposit Expansion

Mr. Hess

AP Macroeconomics

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Reserve Requirement

- The Fed requires banks to always have some money readily available to meet consumers' demand for cash.
- The amount, set by the Fed, is the Required Reserve Ratio.
- The Required Reserve Ratio is the % of demand deposits (checking account balances) that must not be loaned out.
- Typically the Required Reserve Ratio = 10%

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AP Tips & Tricks

- The AP test only uses four numbers for the required reserve ratio. These numbers are:
  - 5%
  - 10%
  - 20%
  - 25%

*Remember, you don't get a calculator on the AP test so the numbers are kept easy to solve without needing one.

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The Money Multiplier

- Similar to the spending multiplier, the money multiplier shows us the impact of a change in demand deposits on loans and eventually the money supply.
- To calculate the money multiplier, divide 1 by the required reserve ratio.
  - Money multiplier = $1/_{\text{reserve ratio}}$ (AKA) $1/_{rr\%}$
  - Ex. If the reserve ratio is 25%, then the multiplier = 4.
  - Why? $1/_{.25} = 4$

AP Tips & Tricks

- The AP test only uses four numbers for the money multipliers. These numbers are the same as the ones used for the required reserve ratios:
  - For 5%, the mm = $^1/_{rr\%}$ = $^1/_{.05}$ = <u>20</u>
  - For 10%, the mm = $^1/_{rr\%}$ = $^1/_{.10}$ = <u>10</u>
  - For 20%, the mm = $^1/_{rr\%}$ = $^1/_{.20}$ = <u>5</u>
  - For 25%, the mm = $^1/_{rr\%}$ = $^1/_{.25}$ = <u>4</u>

*Try thinking in terms of money when solving these problems.
(i.e. How many nickels, dimes, quarters are in a dollar?)

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AP Tips & Tricks

- Any time you get a question over Multiple Deposit Expansion you will be given two things: the deposit and the required reserve ratio. With these things you can figure out your Required Reserves (RR), Excess Reserves (ER), and Money Multiplier (mm).
- Set up your problem like this below before beginning:
  - Deposit:
  - rr%:
  - RR:
  - ER:
  - mm:

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The 3 types of questions the AP test will ask you dealing with consumers:

- Type 1: Calculate the amount the bank can initially lend
  - i.e. the amount of Excess Reserves after fulfilling their reserve requirements
- Type 2: Calculate the max change in Demand Deposits
- Type 3: Calculate the change in the money supply

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Example 1

- Assume that Mr. Hess Deposits $1,000 worth of cash into his checking account and that the reserve requirement is 10%. ***Determine the maximum amount that the commercial bank can initially lend***.

The amount of new demand deposits – required reserve = The initial change in excess reserves

$1,000 – (10% * $1,000) =

$1,000 - (.10 * $1,000) =

$1,000 – $100 = <u>$900 in ER</u>

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Example 2

- Assume that Mr. Hess Deposits $1,000 worth of cash into his checking account and that the reserve requirement is 10%. ***Determine the maximum total change in Demand Deposits from this transaction***.

The initial change in excess reserves * The money multiplier = max change in Demand Deposits

$1,000 * (1/10%) =

$1,000 * (1/.10) =

$1,000 * (10) = <u>$10,000 max change in DD</u>

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Example 3

- Assume that Mr. Hess Deposits $100 worth of cash into his checking account and that the reserve requirement is 10%. ***Determine the maximum total change in the money supply from this deposit***.

The maximum change in Demand Deposits - Initial Deposit

$10,000 - $1,000 = <u>$9,000 max change in the MS</u>

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The 3 types of questions the AP test will ask you dealing with the Fed:

- Type 1: Calculate the initial change in excess reserves
  - i.e. the amount a single bank can immediately loan from the initial deposit
- Type 2: Calculate the change in loans in the banking system
- Type 3: Calculate the change in the money supply
  - Sometimes type 2 and type 3 will have the same result (i.e. no Fed involvement)

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Example 1

- Given a required reserve ratio of 25%, assume the Federal Reserve purchases $100 million worth of US Treasury Securities on the open market from a primary security dealer. ***Determine the amount that a single bank can lend from this Federal Reserve purchase of bonds***.

The amount of new demand deposits – required reserve = The initial change in excess reserves

$100 million – (25% * $100 million) =

$100 million – (.25 * $100 million) =

$100 million – $25 million = <u>$75 million in ER</u>

Example 2

- Given a required reserve ratio of 25%, assume the Federal Reserve purchases $100 million worth of US Treasury Securities on the open market from a primary security dealer. ***Determine the maximum total change in loans in the banking system from this Federal Reserve purchase of bonds***.

The initial change in excess reserves * The money multiplier = max change in loans

$75 million * (1/25%) =

$75 million * (1/.25) =

$75 million * (4) = <u>$300 million max in new loans</u>

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Example 3

- Given a required reserve ratio of 25%, assume the Federal Reserve purchases $100 million worth of US Treasury Securities on the open market from a primary security dealer. ***Determine the maximum total change in the money supply from this Federal Reserve purchase of bonds***.

The maximum change in loans + $ amount of Federal Reserve action

$300 million + $100 million = <u>$400 million max change in the money supply</u>

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Summary

- Every time you put money into the bank, the bank is able to create new money by loaning out your deposit. There are several measures in place, including the FDIC, to protect your money should a bank become insolvent.
- The most common rr% on the AP Macro test is 10%, however, 5%, 20%, and 25% can appear frequently as well.
- The money multipliers used in AP Macro are 20 (5% rr), 10 (10% rr), 5 (20% rr), and 4 (25% rr).
- <u>Always include your units, whether it be Dollars, Euros, Yen, etc.</u>

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Still confused?

- Check out these FRQs listed below on the College Board website for more help. We will go over them in class as well.
  - 2009 #3
  - 2009B #3
  - 2007 #2
  - 2006B #2
  - 2004 #3
  - 2001 #3

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