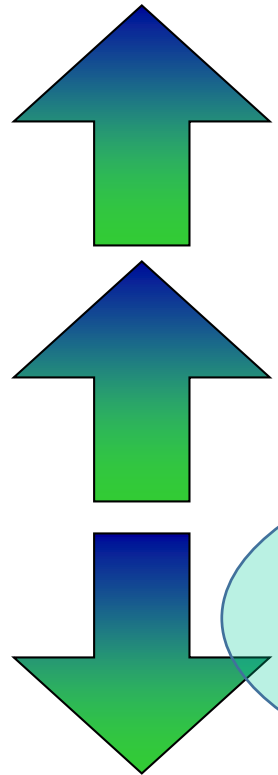# The Other Side of the The Coin
... the OMO impact upon interest rates

Net Effect of Open Market Operations
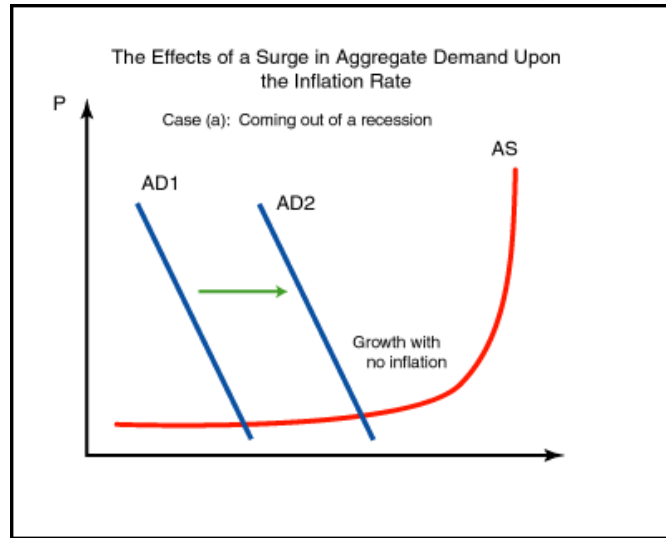
1. **Increases Reserves**

2. **Increases Lending (Money and Credit)**

3. **Decreases Interest Rates**
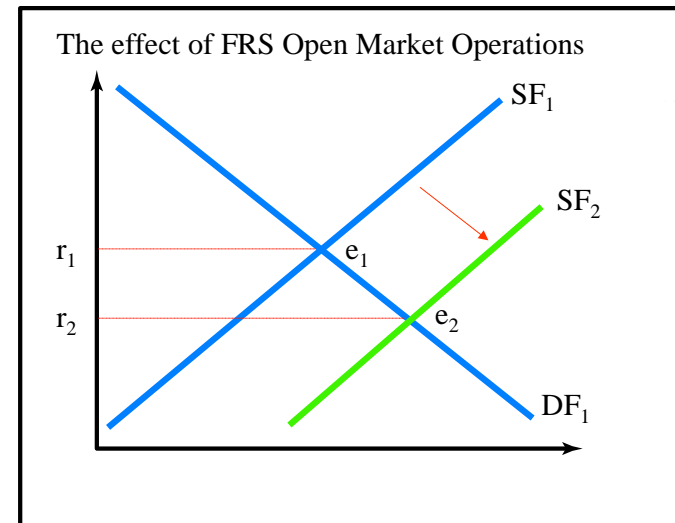
Where we have seen this before ...

The Effects of a Surge in Aggregate Demand Upon the Inflation Rate

P

Case (a): Coming out of a recession

AS

AD1

AD2

Growth with no inflation

... in the aggregate supply/ aggregate demand model (and Macrosim)

Loanable Funds – Case 2

The effect of FRS Open Market Operations

SF$_1$

SF$_2$

r_1

e_1

r_2

e_2

DF$_1$

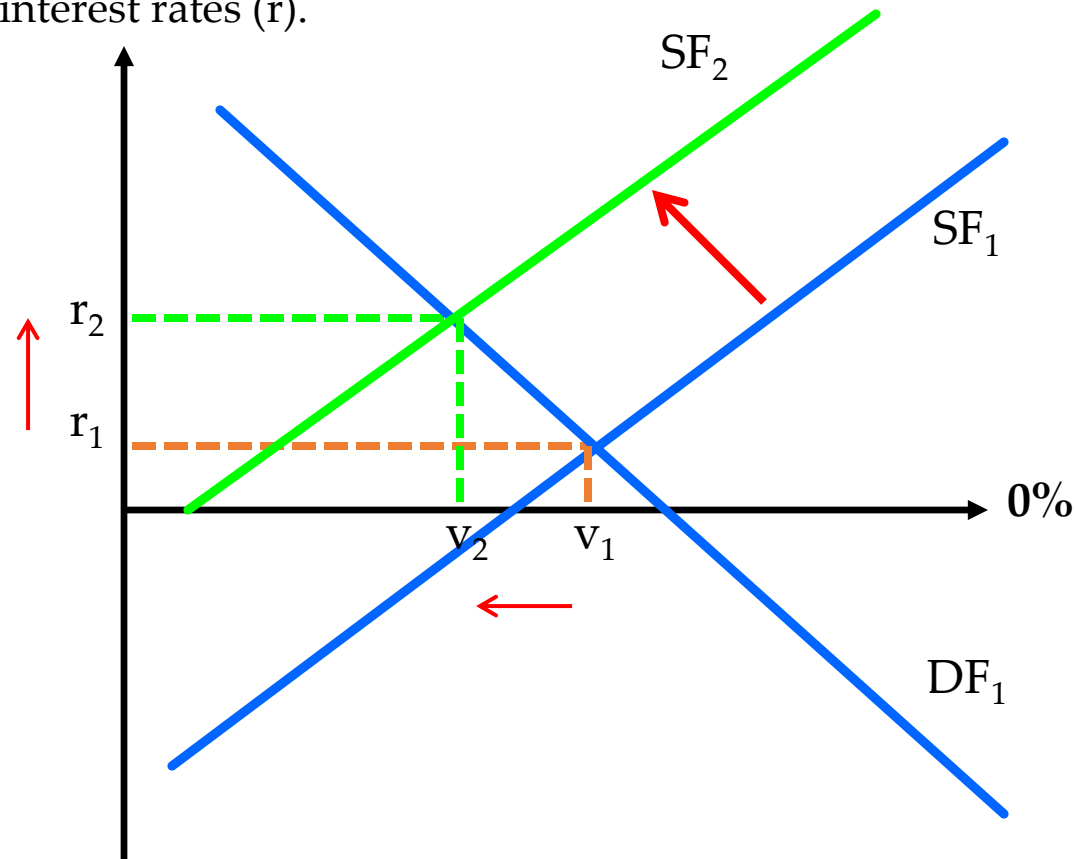... and in the loanable funds model (and Macrosim)

Scenario 1: Curbing inflation by raising interest rates

In this scenario, the FRS slows down or stops the pace of open market operations, reducing the supply of credit (v) and raising interest rates (r).

[This argument has to be qualified – this is a bit of a simplification].

Scenario 2: Stimulating the economy by reducing interest rates

In this scenario, the FRS increases the scale or pace of open market operations, increasing the supply of credit (v) and lowering interest rates (r).
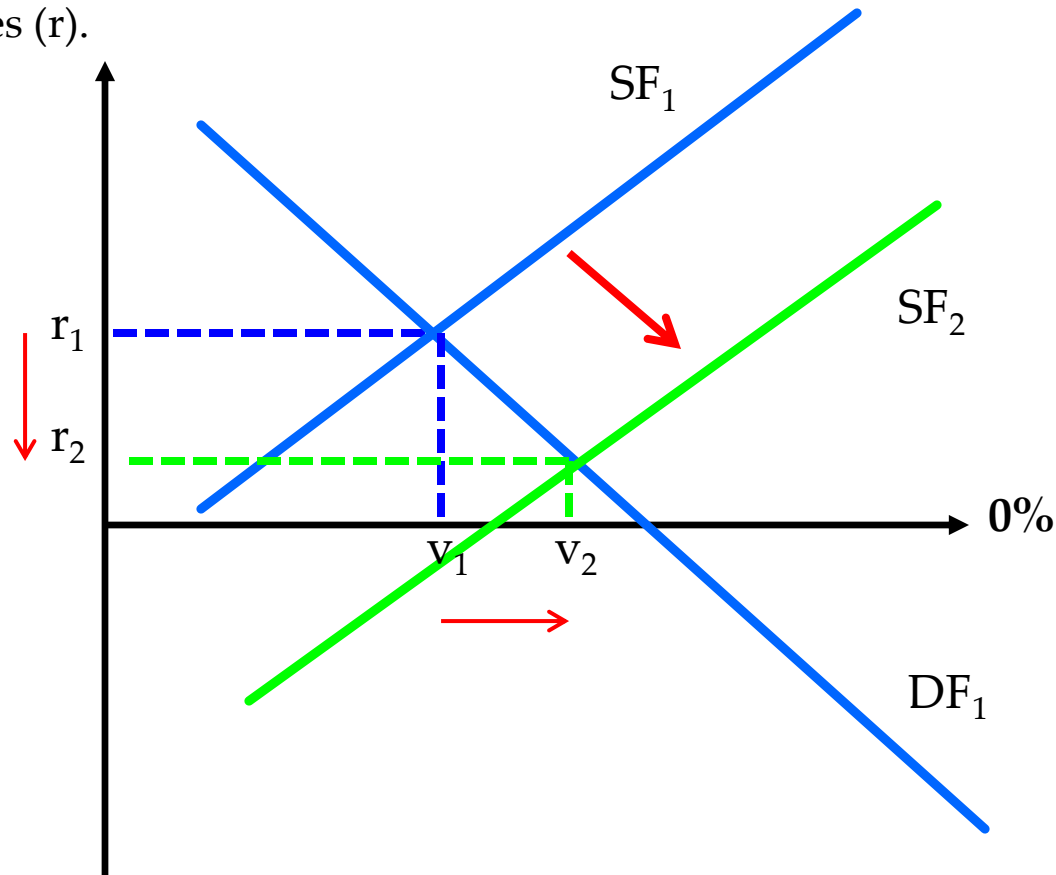
This is now ...

But **which interest rate**?? This will start with the federal funds rate and select short-term U.S. Treasury rates, with the hope that it expands and drops all interest rates to some degree.

Scenario 2 in MacroSim2:

Default

```
ASSUMPTIONS:
Autonomous consumption(a) = 100.000
Consumption coefficient(b) = 0.750
Investment intercept (h) = 600.0
Investment slope (d) = -4500.00
Savings intercept(e) = 160.0
Savings slope (f) = 6000.00
Money supply (ms) = 1200.0

POLICY VARIABLES:
Money Supply [Credit] Growth Rate (msgr) = 0.0500
Government spending (G) =  600.00
Tax rate (t) = 0.200

SIMULATION RESULTS:
GDP (Y) =  2800.00
Disposable Personal Income (YD) =  2240.00
Consumption (C) =  1780.00
Interest Rate (r) = 0.0400
Investment (I) = 420.0
Taxes collected (taxes) =  560.00
Budget Deficit (D) = 40.00
Demand for Funds (DF) = 460.0
Savings (S) = 400.00
Supply of Funds (S) = 460.0
Y test =  2800.00
```

Increase the Money [Credit] Supply

```
ASSUMPTIONS:
Autonomous consumption(a) = 100.000
Consumption coefficient(b) = 0.750
Investment intercept (h) = 600.0
Investment slope (d) = -4500.00
Savings intercept(e) = 160.0
Savings slope (f) = 6000.00
Money supply (ms) = 1200.0

POLICY VARIABLES:
Money Supply [Credit] Growth Rate (msgr) = 0.0650
Government spending (G) =  600.00
Tax rate (t) = 0.200

SIMULATION RESULTS:
GDP (Y) =  2824.55
Disposable Personal Income (YD) =  2259.64
Consumption (C) =  1794.73
Interest Rate (r) = 0.0378
Investment (I) = 429.8
Taxes collected (taxes) =  564.91
Budget Deficit (D) = 35.09
Demand for Funds (DF) = 464.9
Savings (S) = 386.91
Supply of Funds (S) = 464.9
Y test =  2824.55
```

Some logical questions ...

Because Open Market Operations generally buy U.S. Treasury Securities (bills, notes, and bonds), it is easy to see how those purchases can affect the yields on those assets ... the heavier the purchases, the lower the yields.

Also, because banks are able to lend more, then it is also easy to see why bank lending rates might decline in the face of aggressive open market operations.

But how can Open Market Operations affect other interest rates, like corporate bond rates, or mortgage rates, or auto lease and loan rates?

The Federal Funds Market

- At the end of the day
  - some banks have excess reserves
  - some banks with heavy lending have shortages
- In the Federal Funds Market
  - reserves are lent "overnight" (short maturity)
  - the interest charged is the **Federal Funds Rate** (always expressed as an annual rate)

The important effect? This keeps the system running tight.
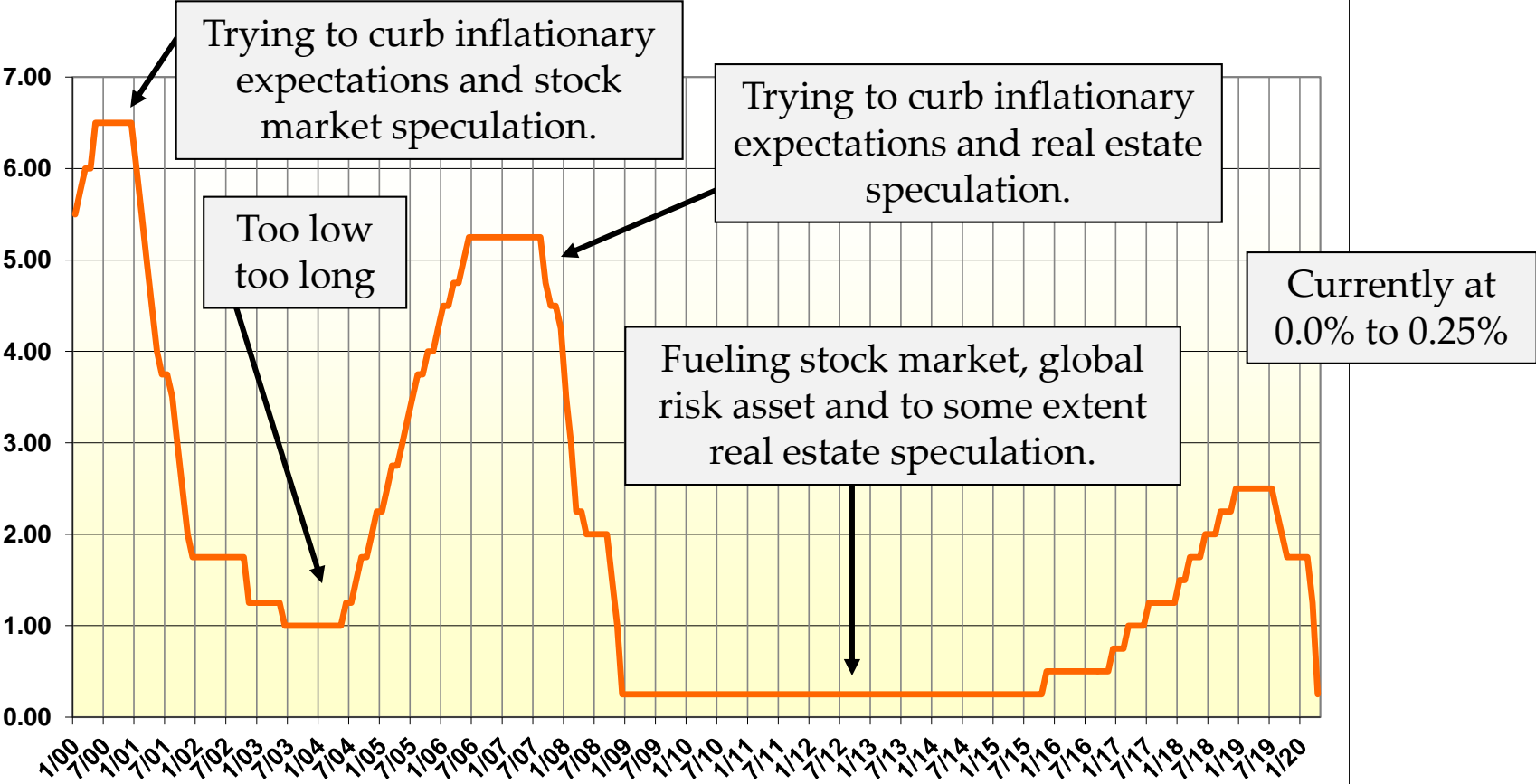
The National Federal Funds Market

Generally, funds are transferred from smaller retail banks to the nationals and from the interior to major money centers.
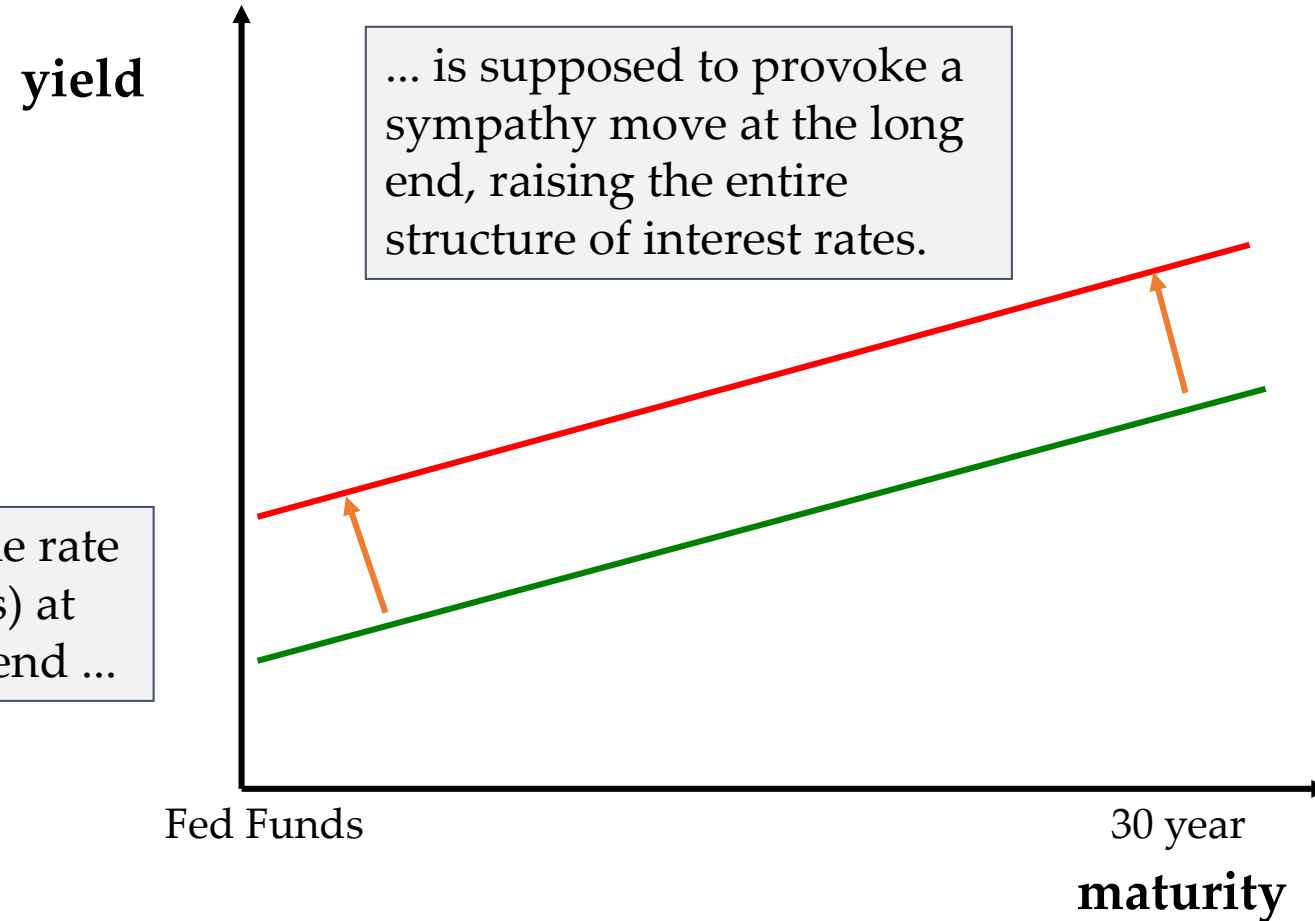
$$
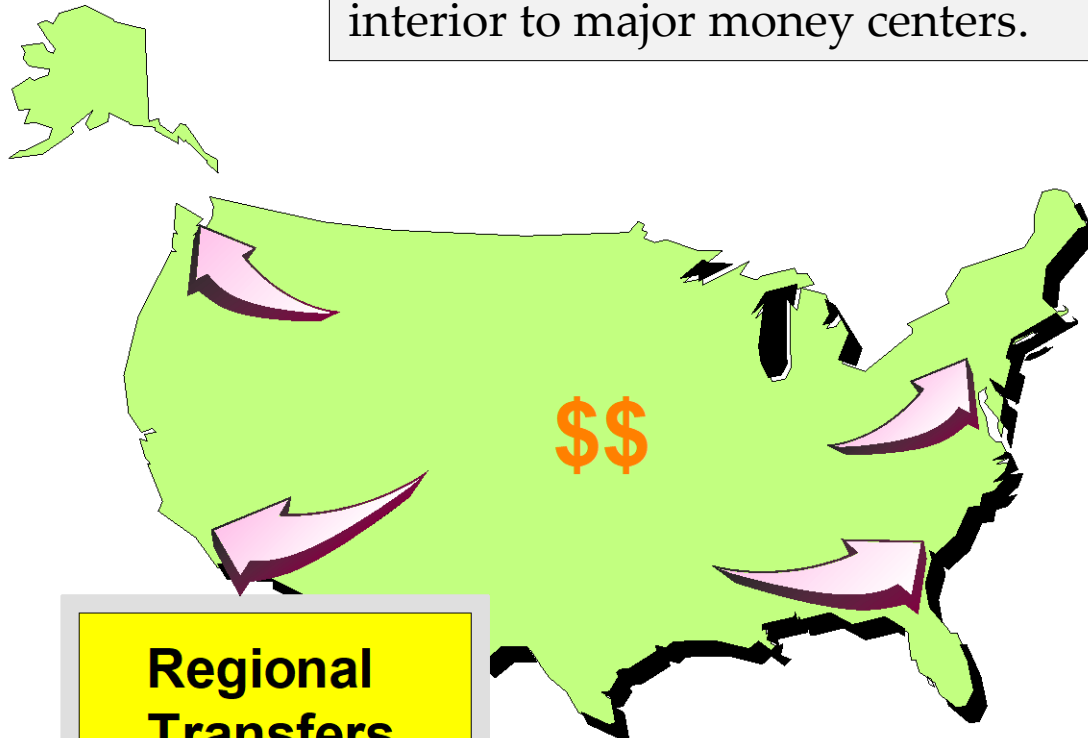
Regional Transfers

... this is why larger, aggressive banks don't have to entirely rely upon deposits.
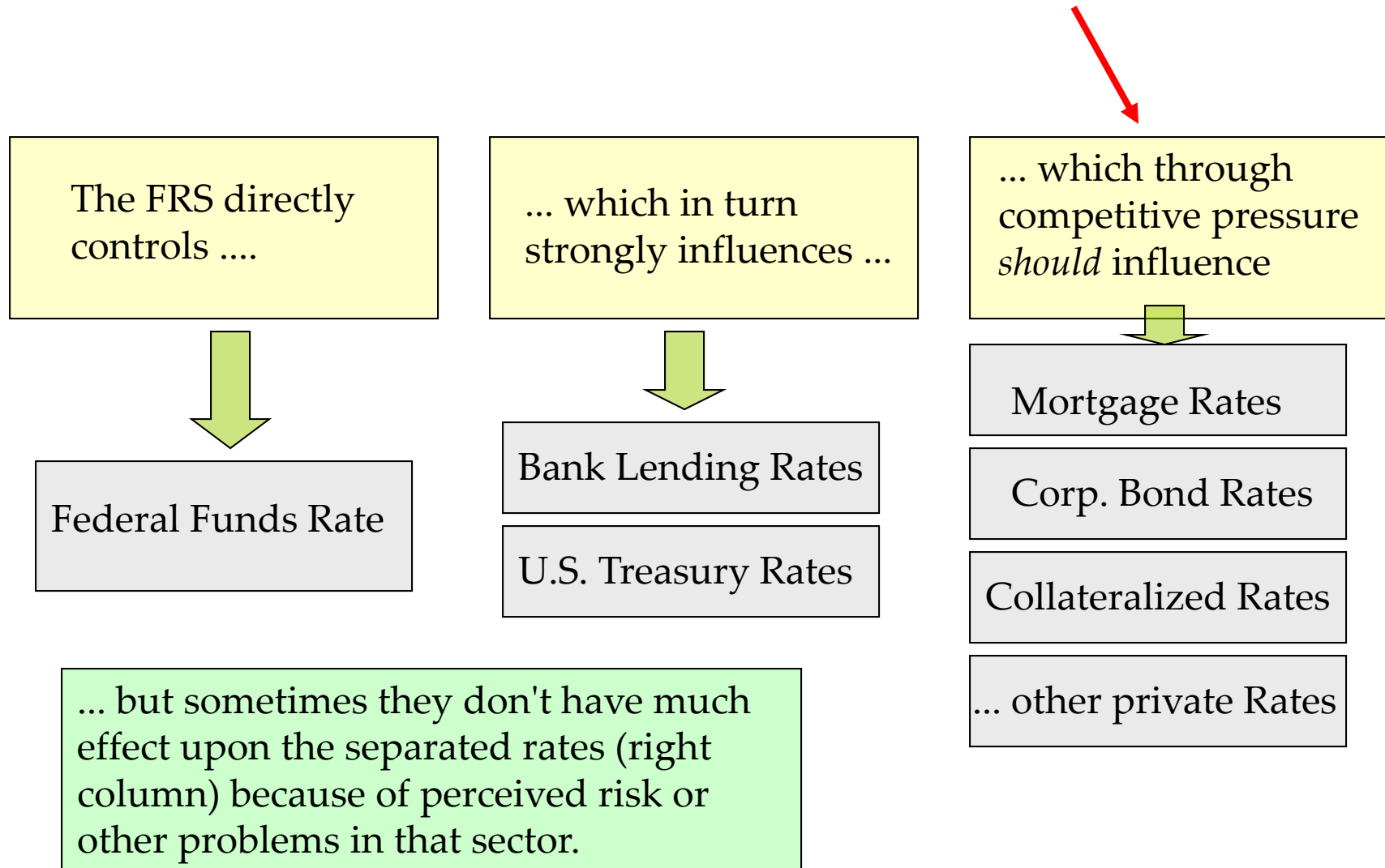
How OMOs *should* affect all rates ...

yield

... is supposed to provoke a sympathy move at the long end, raising the entire structure of interest rates.

Raising the rate (fed funds) at the short end ...

Fed Funds

30 year

maturity

... but the influence may not be felt here.

The FRS directly controls ....

... which in turn strongly influences ...

... which through competitive pressure *should* influence

Federal Funds Rate

Bank Lending Rates

U.S. Treasury Rates

Mortgage Rates

Corp. Bond Rates

Collateralized Rates

... other private Rates

... but sometimes they don't have much effect upon the separated rates (right column) because of perceived risk or other problems in that sector.

Treasury Yield Spreads (example)
(term structure of interest rates)

The "term structure of interest rates" normally rises with longer maturities because of the higher risk associated with them.

This is a "normal" term structure, reflecting higher risk with higher yields.

For U.S. Treasury securities at least, OMOs working at the front end on short rates should be able to raise or lower the entire spread, although it is possible to also flatten or steepen the curve, sometimes unintentionally.

Y-axis: 0.00, 1.00, 2.00, 3.00, 4.00, 5.00, 6.00, 7.00

X-axis: 3 Mon, 6 Mon, 2 Yr, 3 Yr, 5 Yr, 10 Yr, 20 Yr, 30 Yr

The U.S. Treasury yield curve now and a year ago ...

Legend: 29-Apr-19, 22-Apr-20

	21-Apr-20	29-Apr-19
1 Mo	0.08	2.45
2 Mo.	0.08	2.45
3 Mo	0.11	2.44
6 Mo	0.14	2.47
1 Yr	0.17	2.42
2 Yr	0.20	2.30
3 Yr	0.24	2.27
5 Yr	0.34	2.32
7 Yr	0.48	2.42
10 Yr	0.58	2.54
20 Yr	0.98	2.78
30 Yr	1.17	3.00
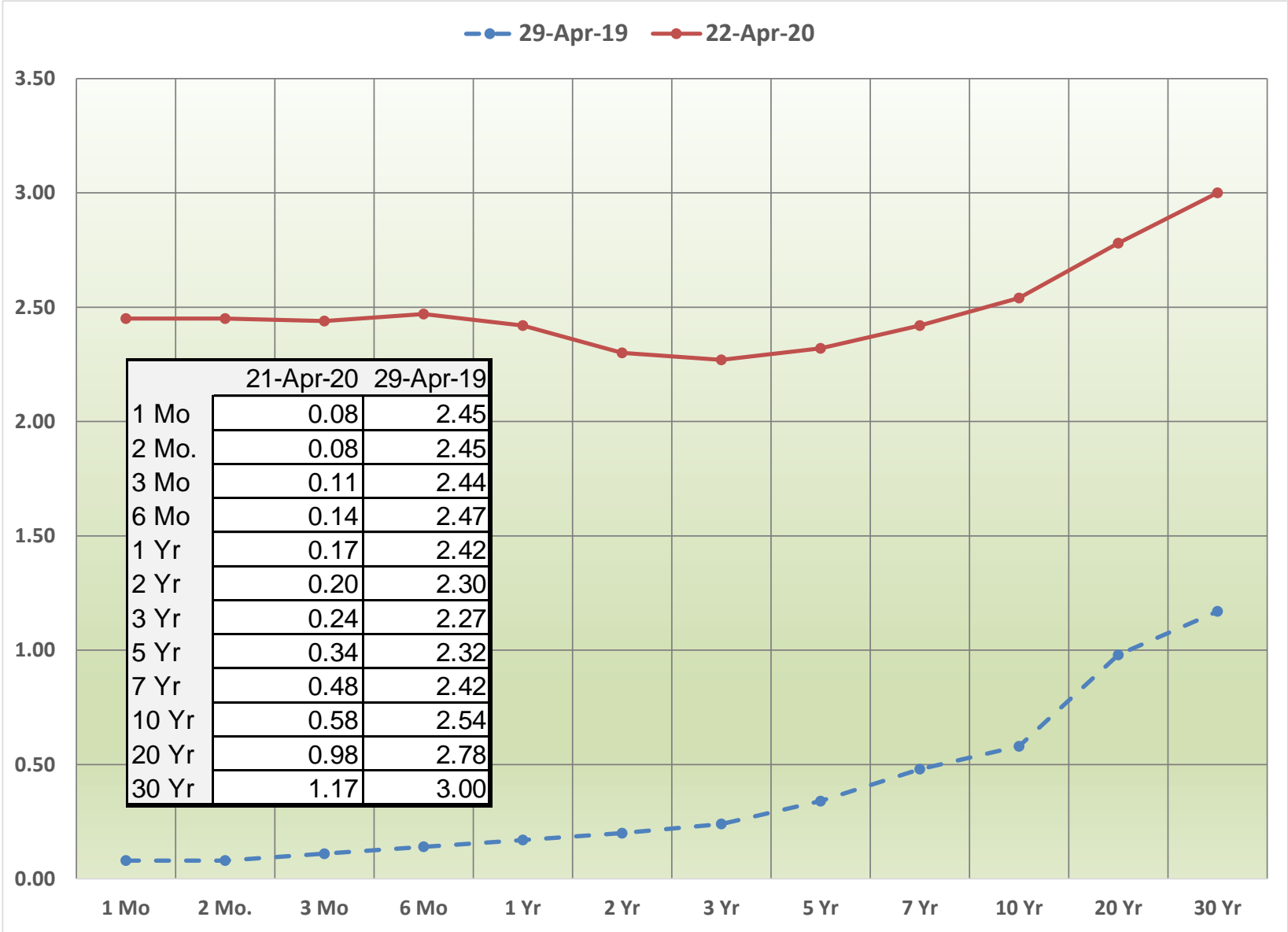
Monetizing the budget deficit ...
(how to pay unemployment benefits when you don't have the cash to do it)

1. Fund your budget deficit by selling U.S. Treasury bills, notes, and bonds.

2. If the private markets will not buy them, be willing to compete with ever-rising interest rates or

3. Have the Federal Reserve System conduct aggressive open market operations, sometimes indirectly, by having banks buy them first and then buying from banks.

4. The Federal Reserve System pays for the U.S. Treasury securities by making deposits in a dedicated "tax and loan account" on the Treasury's behalf at a private bank.

5. The Treasury is now free to spend that money on unemployment compensation or whatever else. This is the modern equivalent of "printing money."

```
ASSUMPTIONS:
Autonomous consumption(a) = 100.000
Consumption coefficient(b) = 0.750
Investment intercept (h) = 600.0
Investment slope (d) = -4500.00
Savings intercept(e) = 160.0
Savings slope (f) = 6000.00
Money supply (ms) = 1200.0

POLICY VARIABLES:
MS [Credit] Growth Rate = 0.0500
Government spending (G) =   600.00
Tax rate (t) = 0.200

SIMULATION RESULTS:
GDP (Y) =   2800.00
Disposable Personal Income (YD) =   2240.00
Consumption (C) =  1780.00
Interest Rate (r) = 0.0400
Investment (I) = 420.0
Taxes collected (taxes) =   560.00
Budget Deficit (D) = 40.00
Demand for Funds (DF) = 460.0
Savings (S) = 400.00
Supply of Funds (S) = 460.0
Y test =   2800.00
```

```
ASSUMPTIONS:
Autonomous consumption(a) = 100.000
Consumption coefficient(b) = 0.750
Investment intercept (h) = 600.0
Investment slope (d) = -4500.00
Savings intercept(e) = 160.0
Savings slope (f) = 6000.00
Money supply (ms) = 1200.0

POLICY VARIABLES:
MS [Credit] Growth Rate = 0.0500
Government spending (G) =   660.00
Tax rate (t) = 0.170

SIMULATION RESULTS:
GDP (Y) =   3001.17
Disposable Personal Income (YD) =   2490.97
Consumption (C) =  1968.23
Interest Rate (r) = 0.0505
Investment (I) = 372.9
Taxes collected (taxes) =   510.20
Budget Deficit (D) = 149.80
Demand for Funds (DF) = 522.7
Savings (S) = 462.74
Supply of Funds (S) = 522.7
Y test =   3001.17
```

```
ASSUMPTIONS:
Autonomous consumption(a) = 100.000
Consumption coefficient(b) = 0.750
Investment intercept (h) = 600.0
Investment slope (d) = -4500.00
Savings intercept(e) = 160.0
Savings slope (f) = 6000.00
Money supply (ms) = 1200.0

POLICY VARIABLES:
MS [Credit] Growth Rate = 0.1400
Government spending (G) =   660.00
Tax rate (t) = 0.170

SIMULATION RESULTS:
GDP (Y) =   3153.11
Disposable Personal Income (YD) =   2617.08
Consumption (C) =  2062.81
Interest Rate (r) = 0.0377
Investment (I) = 436.3
Taxes collected (taxes) =   536.03
Budget Deficit (D) = 123.97
Demand for Funds (DF) = 554.3
Savings (S) = 386.27
Supply of Funds (S) = 554.3
Y test =   3153.11
```

… again, using MacroSim2 to demonstrate

Key take-aways that you *should* understand ...

1. OMOs clearly increase the supply of credit and money in the economy ...
    *   ... but they also decrease interest rates, which may be more powerful

2. Our models, including MacroSim2, have clearly shown this all along, but now we no **how** the FRS is increasing the money and credit supply while lowering rates ...
    *   ... through Open Market Operations

3. The key **control variable** used by the FRS is the Federal Funds Rate ...
    *   ... so make sure you know what that is.

4. Interest rates on U.S. Treasury bills, notes, and bonds are directly influenced in OMOs because they are purchased **by** OMOs.

5. Other interest rates, though, are only influenced through competitive pressure, which is very indirect and doesn't always work.

6. When huge-scale OMOs are taking place at a time that the U.S. Treasury is running huge budget deficits, then the FRS is partially **monetizing** the deficit.

That's it ...

Note: None of the slides past this point are included in the video or on the quiz. This material and modern policy will be covered in May after grades.

Some very important qualifications

1. The example shown was exaggerated in size. The FRS makes a large number of small transactions throughout the year, turning this activity into a continuum.

2. For this to work, the FRS does not have to buy from a bank. They can buy from anyone.

3. For purposes of short-term interest rate stabilization, the FRS often conducts *reverse OMOs*, where they do the opposite of what was shown, and *sell* U.S. Treasury Securities or they use what are called Repurchase Agreements (not discussed here).

4. On net, though, they buy securities throughout the year, such that their target is a money supply or credit *growth rate* rather than a money supply or credit level, and that growth rate is *always positive!*

5. All of this will clearly have an impact upon interest rates, and maybe that matters more than any of this!

Translate from discrete to fluid …

not …
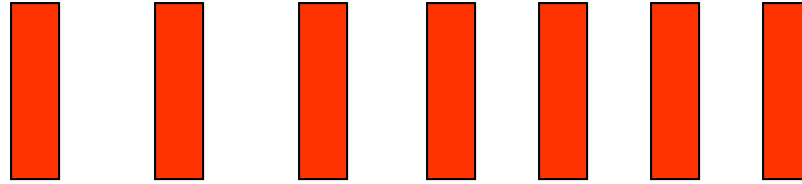
but …
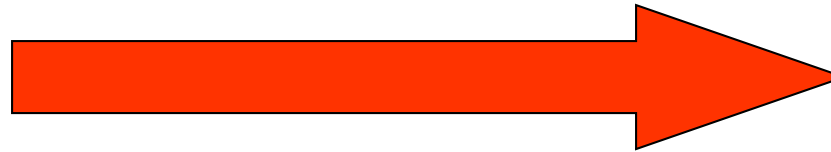
i.e. a large number of small amounts throughout the year that should be thought of as a positive continuum.

… what matters are positive ranges, not amounts

8%

2%

Credit or M2
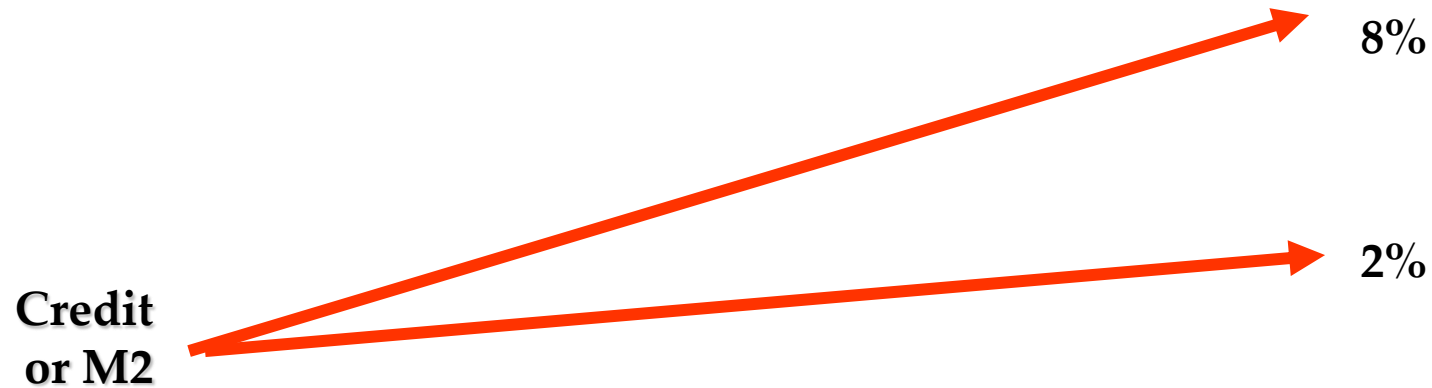
An 8% target might be seen as "expansionary" whereas a 2% target might be seen as "contractionary," and a reduction of 8% to, say, 6%, would be seen as a "tightening."

Regardless, the growth is always positive. There is seldom a true contraction.

Meeting the targets

Remember, the FOMC will always desire net expansion of reserves and net expansion of any monetary or credit target. An expansionary policy might involve raising the reserve growth rate from 3% to 6%. A contractionary policy might involve lowering the reserve growth rate from 6% to 3%, but not reducing it below zero.

How does the FOMC run a contractactionary policy, which will reduce the reserve growth rate and raise interest rates? By reducing the frequency and size of individual OMOs.

... think of this as regulating a flow through a faucet; tighten up a little and the flow slows down, ease up a little and the flow increases. But there is always a flow.

Qualified OMO: The starting point, with mortgages added .....

Federal Reserve System

A	L&E
$25 Govt Bills	$10 Reserves
$5 Mortgages	$20 Equity

All private banks ($billions)

A	L&E
$10 Reserves	$100 Checkable deposits
$60 Loans (ex mort)	$10 Equity
$20 Mortgages	(checkable deposits are money)
$20 Govt Bills	

Qual 2: The result of two open market operations …

Federal Reserve System

All private banks ($billions)

A	L&E	A	L&E
~~$25~~ Govt Bills	~~$10~~ Reserves	~~$10~~ Reserves	$100 Ch. Deposits
$28	$15	$15	
~~$5~~ Mortgages	$20 Equity	$60 Loans	$10 Equity
$7			
		~~$20~~ Mortgages	
		$18	
		~~$20~~ Govt Bills	
		$17	
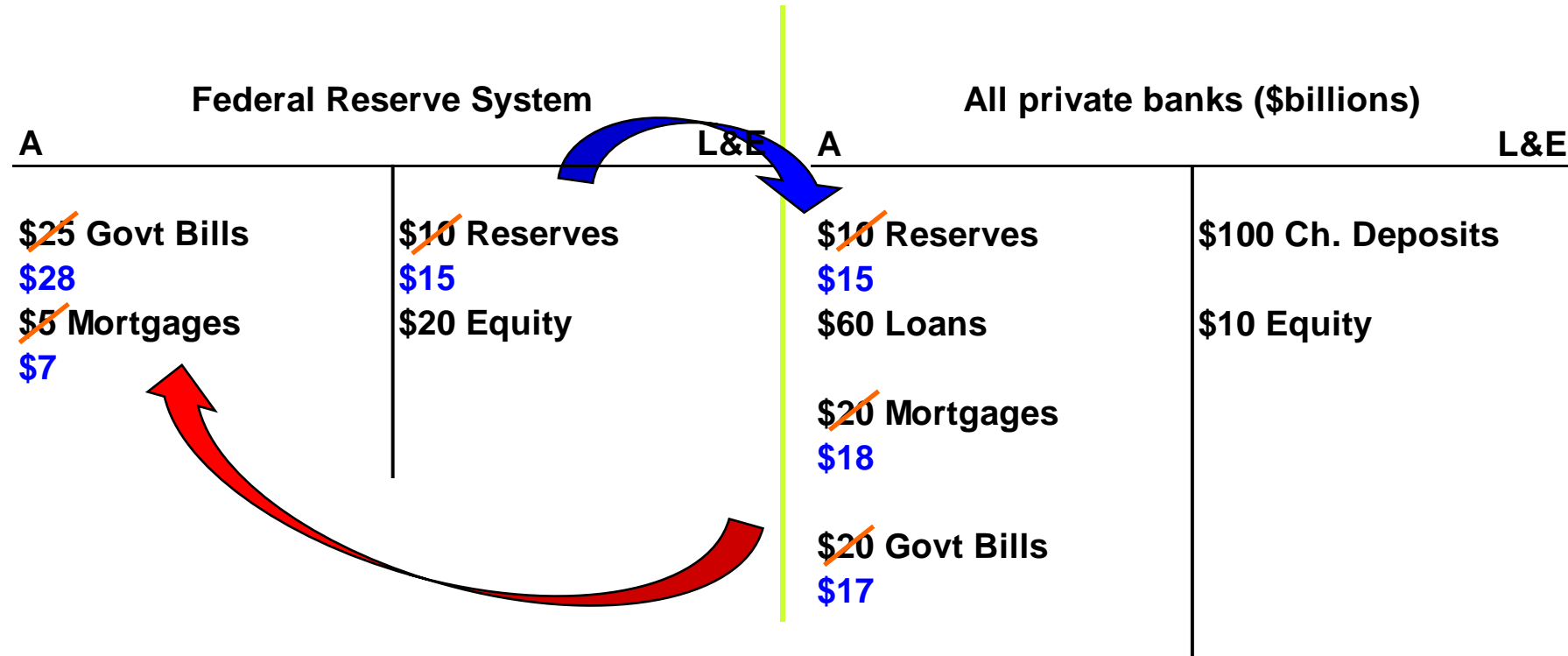
… the FRS bought $3 in Bills and $2 in Mortgages and paid for them with $5 in reserves. This created $5 in **free reserves.**

LIST OF PRIMARY DEALERS

🔵 CURRENT LIST, ADDITIONS, REMOVALS & NAME CHANGES

PRIMARY DEALERS | ADDITIONS AND REMOVALS | NAME CHANGES

Primary Dealers

Amherst Pierpont Securities LLC

Bank of Nova Scotia, New York Agency

BMO Capital Markets Corp.

BNP Paribas Securities Corp.

Barclays Capital Inc.

BofA Securities, Inc.

Cantor Fitzgerald & Co.

Citigroup Global Markets Inc.

Credit Suisse AG, New York Branch

Daiwa Capital Markets America Inc.

Deutsche Bank Securities Inc.

Goldman Sachs & Co. LLC

HSBC Securities (USA) Inc.

Jefferies LLC

J.P. Morgan Securities LLC

Mizuho Securities USA LLC

Morgan Stanley & Co. LLC

NatWest Markets Securities Inc.

Nomura Securities International, Inc.

RBC Capital Markets, LLC

Societe Generale, New York Branch

TD Securities (USA) LLC

UBS Securities LLC.

Wells Fargo Securities, LLC

New primary dealers will begin reporting and transacting with the New York Fed upon completion of legal, operational and technical setup.