# Chapter 16

Determinants
of the Money Supply

## The Money Multiplier

- the money multiplier $m$ gives the (more realistic) extent of multiple deposit creation:
  $M = m \times MB$
  where $M$ is the money supply and $MB$ is the monetary base
- to calculate the money multiplier, remember that
  $R = RR + ER = (r \times D) + ER$
  and that
  $MB = R + C$
  $= (r \times D) + ER + C$



## The Money Multiplier (cont.)

- two implications follow:
  - the amount of monetary base required to support the existing deposits and currency in circulation
  - an increase in monetary base from an additional \$1 in currency does not support any additional deposits
- *currency ratio* ($c$) = the ratio of currency to deposits:
  $C = c \times D$
- *excess reserves ratio* ($e$) = the ratio of excess reserves to deposits:
  $ER = e \times D$

# The Money Multiplier (cont.)

- then:
  MB = ($r$ × $D$) + ($e$ × $D$) + ($c$ × $D$)
  = ($r$ + $e$ + $c$) × $D$
- hence, deposits are equal to

$$D = \frac{1}{r + c + e} \times MB$$

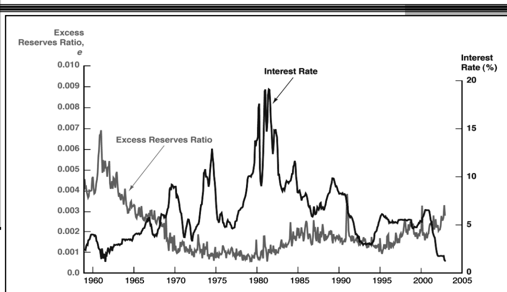
- by definition, money supply (M1) is
  $M$ = $C$ + $D$ = ($c$ × $D$) + $D$ = (1 + $c$) × $D$

$$m \times MB = \frac{1 + c}{r + c + e} \times MB$$

- hence, $m = \dfrac{1 + c}{r + c + e} < \dfrac{1}{r}$



# Excess Reserves Ratio




**Determinants of *e***
**1. *i* ↑, relative $R^e$ on *ER* ↓ (opportunity cost ↑), *e* ↓**
**2. Expected deposit outflows, *ER* insurance worth more, *e* ↑**

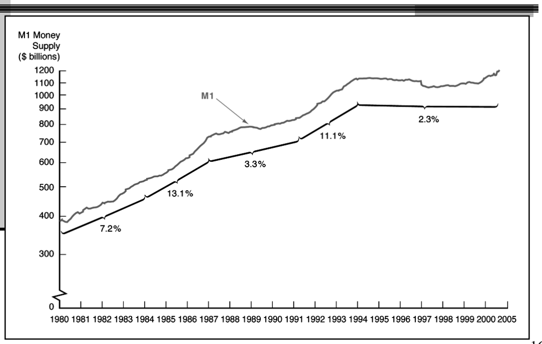


# Factors Determining Money Supply

SUMMARY **Table 1 Money Supply (M1) Response**

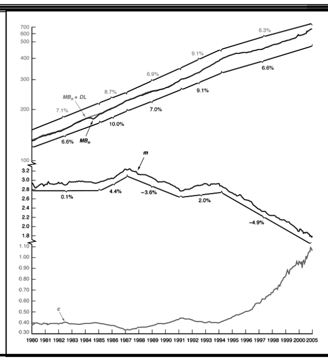
| Player | Variable | Change in Variable | Money Supply Response | Reason |
|---|---|---|---|---|
| Federal Reserve System | $r$ | ↑ | ↓ | Less multiple deposit expansion |
| | $MB_n$ | ↑ | ↑ | More *MB* to support *D* and *C* |
| | *DL* | ↑ | ↑ | More *MB* to support *D* and *C* |
| Depositors | $c$ | ↑ | ↓ | Less multiple deposit expansion |
| Depositors and banks | Expected deposit outflows | ↑ | ↓ | *e* ↑ so fewer reserves to support *D* |
| Borrowers from banks and the other three players | $i$ | ↑ | ↑ | *e* ↓ so more reserves to support *D* |

## Money Supply



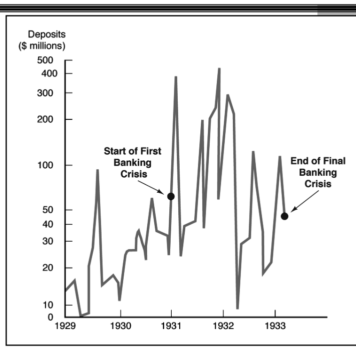



## Determinants of the Money Supply

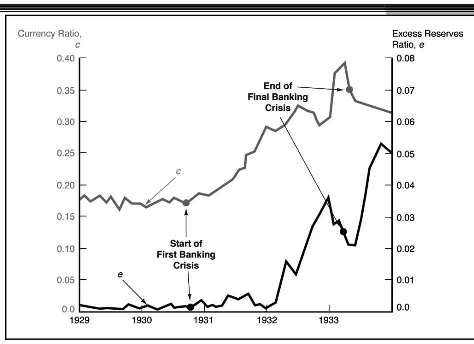




## Deposits at Failed Banks: 1929–33



# e, c: 1929–33

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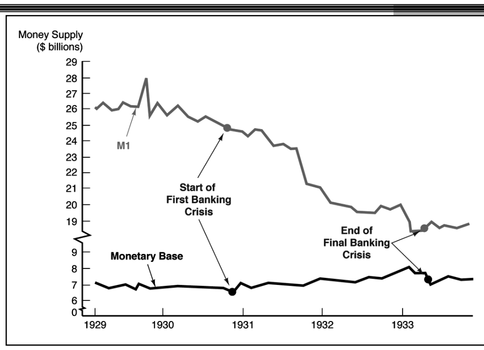
# Money Supply and Monetary Base: 1929–33

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