Great Depression

The monetary crisis in the Great Depression caused the money supply to drop significantly. Many economists argue that this drop converted what had been a recession into a severe depression.

Bank Crisis

The depressed economy caused many banks (especially small banks) to go bankrupt.

At that time there was no deposit insurance, so many people withdrew their deposits from banks and kept their money as currency.

Many bank runs occurred, as depositors were wary of bankruptcy. Most banks kept excess reserves to enable them to combat a run.

Notation

Monetary base	$B = C + R$
Money supply	$M = C + D$
Currency held by the public	C
Deposits	D
Bank reserves	R

Money Multiplier

We express the money multiplier M/B in terms of the currency ratio C/M, and the reserve ratio R/D:

$$\frac{M}{B} = \frac{1}{\frac{C}{M} + \frac{R}{D} - \frac{C}{M}\frac{R}{D}} \tag{1}$$

Specifying values for these two ratios sets the multiplier. Of course

$$0 \le \frac{C}{M} \le 1$$
$$0 \le \frac{R}{D} \le 1.$$

Below we show the formula (1).

$$\begin{aligned}\frac{M}{B} &= \frac{M}{C+R} \\ &= \frac{1}{\frac{C}{M} + \frac{R}{M}} \\ &= \frac{1}{\frac{C}{M} + \frac{R}{D}\frac{D}{M}} \\ &= \frac{1}{\frac{C}{M} + \frac{R}{D}\frac{M-C}{M}} \\ &= \frac{1}{\frac{C}{M} + \frac{R}{D} - \frac{C}{M}\frac{R}{D}}.\end{aligned}$$

Simplest Model of the Money Supply

The simplest model of the money supply is a special case.

If the public holds no currency

$$C = 0,$$

and the reserve ratio equals the required reserve ratio

$$\frac{R}{D} = f,$$

then

$$\frac{M}{B} = \frac{1}{f}.$$

Higher Currency Ratio

Holding the reserve ratio constant, a higher currency ratio reduces the money multiplier.

By the formula (1), the money multiplier is

$$\frac{1}{\frac{C}{M}\left(1-\frac{R}{D}\right)+\frac{R}{D}}.$$

Since $1-R/D>0$, increasing C/M lifts the denominator and reduces the multiplier.

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The Money Supply in the Great Depression

In the bank crisis, both the currency ratio and the reserve ratio rose. The money multiplier fell by $1/2$.

The Federal Reserve expanded the money base, which grew by $1/6$.

Together these effects caused the money supply to fall by $1/3$. This large drop aggravated the depression and slowed recovery.

Averting the Great Depression?

That the Federal Reserve failed to restrict convertibility was a mistake. In previous bank crises, depositors could write checks but could not withdraw cash. This policy prevented the currency ratio from rising and kept the money multiplier up.

In addition, the Federal Reserve should have been more aggressive in expanding the monetary base.