How Banks Create Money.

Let's see an example of how banks create money.

One-Bank Economy

Creating Deposits by Making Loans in a Checking Account.
Key assumptions

- bank behavior

- all excess reserves are lent out

therefore

for the system as a whole excess reserves equal zero
Reserves of depository institutions, adjusted for changes in reserve requirements.

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Excess Reserves = Total - Required

Assumption For Deposit Expansion:

Excess Reserves → 0
Example

One bank
the Goldsmith Bank

Three customers
- Allen
- Bob
- Desdre

What do these customers do?
- They either lend or borrow money from the bank
- Lending -> making a deposit
- Borrowing -> getting a loan
- Cancelling a loan -> cashing a cheque
writing a cheque - transforming a deposit
Read the text for the full story:

Alan's initial deposit:

- What forms can it take?
  - "Gold"
  - A tax refund cheque drawn on U.S. Treasury
  - A cheque from the Federal Reserve Board for having sold to the Fed. U.S. Goub. Securities
  - Etc.
By definition

\[ \Delta M_1 = D_1 + D_2 + D_3 + \ldots + D_n \]

Note:  
\[ D_2 = 0.8 \cdot D_1 \]
\[ D_3 = 0.8 \cdot D_2 \]
\[ D_n = 0.8 \cdot D_{n-1} \quad \text{declining geometric series} \]

Therefore: \( \Delta M_1 \): sum of a declining geometric series

\[ \Delta M_1 = \frac{D_1}{1 - \frac{D_2}{D_1}} = \frac{1000}{0.2} = 5000 \]
- **Monopoly Bank** [Gold Smith]
- **Fractional Reserves**
  - \( rr = 0.20 \)

### Round 1

<table>
<thead>
<tr>
<th>Δ Assets</th>
<th>Δ Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserves +1000</td>
<td>Deposit (Allen) +1000</td>
</tr>
<tr>
<td>req. (.2)(1000)</td>
<td></td>
</tr>
<tr>
<td>excess 200</td>
<td></td>
</tr>
<tr>
<td>excess 800</td>
<td></td>
</tr>
<tr>
<td><strong>Net Worth = 0</strong></td>
<td>( \Delta Net Worth = 0 )</td>
</tr>
</tbody>
</table>

### Round 2

<table>
<thead>
<tr>
<th>Δ Assets</th>
<th>Δ Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserves 1000</td>
<td>Deposits (Bob) +800</td>
</tr>
<tr>
<td>req. (.2)(1800)</td>
<td></td>
</tr>
<tr>
<td>excess 360</td>
<td></td>
</tr>
<tr>
<td>excess 640</td>
<td></td>
</tr>
<tr>
<td>Loans (Bob) +800</td>
<td></td>
</tr>
<tr>
<td><strong>Net Worth = 0</strong></td>
<td>( \Delta Net Worth = 0 )</td>
</tr>
</tbody>
</table>

### Round 3

<table>
<thead>
<tr>
<th>Δ Assets</th>
<th>Δ Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserves 1000</td>
<td>Deposit (Deirdre) +640</td>
</tr>
<tr>
<td>req. (.2)(2440)</td>
<td></td>
</tr>
<tr>
<td>excess 488</td>
<td></td>
</tr>
<tr>
<td>excess 512</td>
<td></td>
</tr>
<tr>
<td>Loans (Deirdre) +640</td>
<td></td>
</tr>
<tr>
<td><strong>Net Worth = 0</strong></td>
<td>( \Delta Net Worth = 0 )</td>
</tr>
</tbody>
</table>

### Tally

<table>
<thead>
<tr>
<th>Round</th>
<th>ON, ORR</th>
<th>Loans</th>
<th>Δ Excess Reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Round 1</td>
<td>1800</td>
<td>200</td>
<td>800</td>
</tr>
<tr>
<td>Round 2</td>
<td>800</td>
<td>160</td>
<td>640</td>
</tr>
<tr>
<td>Round 3</td>
<td>640</td>
<td>128</td>
<td>572</td>
</tr>
</tbody>
</table>
Note:

- an initial gold deposit of $1000

- an initial increase in reserves of $1000

- has given rise to an expansion of $5000 in the supply of money

\[ \Delta M_1^{eq}/\Delta R = \frac{5000}{1000} = 5 = \frac{1}{r \cdot r} = \frac{1}{.20} \]

Potential Money Multiplier = Deposit Multiplier

txt. p. 271

\[ m_p = \frac{1}{r \cdot r} = \text{deposit multiplier} = \frac{\partial D}{\partial R} \]

the total demand deposits that can be generated from a new deposit of 1$

Actual Money Multiplier = Money Multiplier

\[ m_a = \frac{MS}{MB} = \frac{\text{money supply}}{\text{monetary base}} = \text{money multiplier} \]

MB = current + reserves

\[ m_a < m_p \]
How Banks Create Money

"Money"

• The Deposit Multiplier in the United States
  • The actual deposit multiplier in the U.S. works the same as the one presented.
  • However, it does differ in some aspects.
The deposit multiplier in the United States differs from our model economy's for three main reasons:

1) The actual required reserve ratio is smaller than the 25 percent used here.
2) Banks sometimes choose to hold excess reserves.
3) Not all loans made by banks return to reserves in the form of deposits.