Money and Banking
Lecture 8: Role of Central Bank and Money Supply

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Outline

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- Is there any way to prevent *bank run*?
- *Deposit insurance*, to some extent, is designed to prevent bank run; however, it has no capacity to stop system wide banking crisis.
- The key reason is that it does not provide *money*.

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- Yet, the operation of banking only allows a fraction of gold reserves.

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- *Prisoner's Dilemma* is one reason that this setup might not work.

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- Another reason makes temporary leader as lender of last resort unlikely to happen every time is that such a leader should be charismatic. But charismatic leader to exert great influence on the whole economy usually is not favored politically.
- It ignites the creation of *Federal Reserve Banks* in U.S. and it was finally established in 1914 (the Federal Reserve Act was approved by the Congress in 1913 just before Christmas).

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- However, the Fed did really a poor job in fighting against Great Depression (Friedman and Schwartz, 1963).

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- Under *metallic money system*, money supply is not *flexible*, i.e, cannot be expanded when the whole economy demands for more money. It is constrained by the supply of precious metals.

Role of Central Bank

- In order to create *flexible* money supply, the economy should abandon metallic money and use *fiat money*.

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- Treasury securities are backed up by government credibility.

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Central Bank's Balance Sheet

Table 1: Hypothetical Balance Sheet of A Central Bank

Assets	Liabilities
Securities	Currency in circulation (C)
Loans to financial institutions	Bank reserves (R)

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- What the central bank *does* create is the monetary base.

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- All currency created by the central bank is included in the monetary base, but it is split between C and R.
- Monetary base is the *liabilities* of the central bank to the private sector of the economy.

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- Open market operations are defined as purchases or sales of securities by a central bank.
- An *expansionary open-market operation* or *open market sales* is when a central bank purchases any type of securities.
- A *contractionary open-market operation* or *open market purchase* is when a central bank sells any type of securities.

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- In general, we have

$$\text{100RMB purchase of bonds by the central bank} \rightarrow \text{MB} \uparrow \text{100RMB}\,,$$

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- BoC, after purchase, increased 100 RMB worth reserves on its asset side and decreased 100 RMB worth securities on its asset side.
- Given deposits on BoC liability side unchanged, increased reserves are considered as *excess reserves*.

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- BoC lends out 90 RMB to Microsoft, which use the proceeds to pay Lenovo for laptop purchase, too. So, the deposit in BoC increases by 90 RMB again.

Commercial Banks and the Money Supply

- If this process continues, we will have $\frac{100}{10\%} = 1,000$ RMB deposit in total[2].

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- It is clear that *central bank* and *commercial banks* together create *money supply*. In other words, the money supply is a public-private partnership.

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- The definition of $M_1 = C + D$, whereas the definition of $MB = C + R = C + ER + RR$. ER and RR are *excess reserve* and *required reserve*, respectively.

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- Divide both sides by D, and have

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- Rearrange it and have monetary multiplier m as follows.

$$m = \frac{c + er + rr}{1 + c}\,,$$

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- The money supply is negatively related to the amount of excess reserves.

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  1. central bank *monetary base*
  2. commercial banks *credit and money*
  3. the public *holding currency*
- Based on the aforementioned analysis, money supply is more complicated than *fixed money supply* in Keynes' money demand theory.
- In this case, monetary base is exogenous (i.e., controlled by central bank), while money created by commercial banks are endogenous with banks' balance sheets.

MONETARY MULTIPLIER

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