Money market

Money market

- Debt instruments with original maturity of one year or less
- Issued by economic agents requiring short-term funds
- Purchased by economic agents with excess short-term funds
- Once issued, trade in active secondary markets

Money market

- Excessive cash holdings involve opportunity cost
- Cash gets zero interest
- Money market instrument provides an investment opportunity that generates a higher rate of interest than holding cash.

Money market instruments

- Sold in large denominations
- Prohibitive for individual investors
- Individuals invest indirectly through money market mutual funds

Money market instruments

- Issued by high quality borrowers
- Low default risk
- Default risk is late or non-payment of principal or interest

Money market instruments

- Original maturity of one year or less

Yields on money market securities

Bond equivalent yields

- Quoted nominal or stated rate earned on an investment over a one-year period.
- Does not consider the effects of compounding of interest during a less than one year investment horizon.
- Is the rate used to calculate the present value of an investment

Bond equivalent yields

- Compare discount securities to U.S. Treasury bonds with bond equivalent yields (i_{bey})

$$i_{bey} = \frac{(P_f - P_0)}{P_0} \times \frac{365}{h}$$

P_f = Face value
P_0 = Purchase price of the security
h = Number of days until maturity

Effective annual return

- Bond equivalent rate does not consider the effects of compounding

- If interest is paid more than once year, true annual rate earned is effective annual return on an investment

- Bond equivalent yield on money market securities with a maturity of less than one year can be converted to an EAR

Effective annual return

$$EAR = \left(1 + \frac{i_{bey}}{365/h}\right)^{365/h} - 1$$

Discount yields

- Some money market instruments are bought and sold on a discount basis (e.g., Treasury bills and commercial paper)

- P_0 is the purchase price at a discount from its face value at time 0

- P_f is the face value received at maturity

Money market yields

For discount yields, use 360 days

$$i_{dy} = \frac{(P_f - P_0)}{P_f} \times \frac{360}{h}$$

P_f = Face value

P_0 = Purchase price of the security

h = Number of days until maturity

Comparison of discount yields and bond equivalent yields

- $I_{bey} = i_{dy} (P_f / P_0) (365/360)$

Single payment yields

- Some money market securities, e.g. jumbo CDs and fed funds) pay interest only once during their lives , at maturity

- At maturity investor gets interest + maturity

- Single payment yield assumes 360 days

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Single payment yields

- $i_{bey} = i_{spy}\,(365/360)$

$$EAR = \left(1 + \frac{i_{spy}(365/360)}{365/h}\right)^{365/h} - 1$$

$$EAR = \left(1 + i_{bey}\,/(365/h)\right)^{365/h} - 1$$

Money market securities

Treasury bills

- Short-term obligation issued by government
- To cover current government budget deficit and to refinance maturing government debt
- Original maturities are 13 weeks or 26 weeks
- Denominations of multiples of $1,000
- Default risk-free often referred to as risk-free asset

Treasury bills

- Discount security
- Zero-coupon security
- Return is the difference between the purchase price and the face value received at maturity

Federal funds

- Short-term funds transferred between financial institutions, usually for a period of one day

- Federal funds rate is the interest rate for borrowing federal funds

Repurchase agreements

- An agreement involving sale of securities by one party to another with a promise to repurchase the securities at a specified price and on a specified date

Reverse repurchase agreement

- An agreement involving the purchase of securities by one party from another with the promise to sell them back

- Haircut: Collateral is valued at slightly less than the market value
- Reflects the risk of the underlying
- Specific to security

Commercial paper

- An unsecured short-term promissory note issued by a company to raise short-term cash, often to finance working capital
- Generally not actively traded as unsecured
- Credit ratings are obtained

Negotiable certificates of deposit

- A bank-issued
- Fixed maturity
- Interest-bearing time deposit
- That specifies
- An interest rate and maturity date
- Is negotiable
- Denominations range from $100,000 to $10 million.

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Negotiable certificates of deposit

- Bearer instrument:
- An instrument in which the holder at maturity receives the principal and interest.

Banker's acceptances

- A time draft payable to a seller of goods, with payment guaranteed by a bank

Comparison of money market securities

- ***Common features:***
- Large denominations
- Low default risk
- Short maturities
- ***Differences***:
- Liquidity

Money market participants

- Government
- Central bank
- Commercial banks
- Money market mutual funds
- Brokers and dealers
- Corporations
- Other financial institutions like insurance companies
- Individuals

Class problems

- 1, 3, 2, 10

Home work

- 4, 5, 8, 11, 12