Debt Instruments and Markets

Reading: Sundaresan, Chapters 1, 2, and 3.

We call securities such as bonds, bills, and annuities “fixed income” instruments because they pay fixed cash flows at known points in time. In addition, floating rate notes, swaps, bond options and interest rate derivatives have come to be called fixed income securities because, like bonds, their value depends on interest rates, although their cash flows are no more “fixed” than those of a stock.
US Treasury Bills, Notes, and Bonds

- Bills are issued with maturities of 3, 6, and 12 months and make a single payment at maturity equal to par value.
  - A new year bill is issued every month.
  - The shorter bills are issued every week.
- Notes are issued with maturities of 2, 5, and 10 years to maturity, bonds with 30 years to maturity.
  - 2-year notes are issued on a monthly cycle as needed,
  - 5-year and 10-year notes and 30-year bonds are issued on a quarterly cycle as needed,
  - New issues are said to be "current" or "on the run."

US Treasury Bills, Notes, and Bonds, cont'd

- Notes and bonds are coupon-bearing instruments. At maturity they pay par value, N. In addition, every 6 months up to and including the maturity date, they pay a fixed coupon. If the coupon rate is c, the coupon payment is N x c/2.
  - For example, $100,000 par amount of the 6 7/8's of August 25 would pay $100,000 \times 0.06875/2 = $3437.50 every February and August 15th through August 15, 2025. Then the bond would pay $100,000 at maturity, August 15, 2025.
- Some old bonds are "callable" at par 5 years before maturity. A callable bond may, at the option of the issuer, be repurchased from the bond holder at prespecified times and call prices.
US Treasury Bills, Notes, and Bonds, cont'd

- Treasury auctions
  - The Federal Reserve Bank of New York collects bids.
  - Non-competitive bids consist of a par amount only (limited to $5,000,000).
  - Competitive bids consist of a par amount and a yield.
  - The Treasury first fills all the non-competitive bids and then allocates the remaining securities to competitive bids from lowest to highest (or "stop") yield.
  - "American" auction: competitive bids receive the yield specified; non-competitive bids receive the average yield.
  - "Dutch" auction: all bids receive the stop yield.

Agency Bonds

- Ordinary bonds issued by government agencies such as the Federal National Mortgage Association, the Federal Farm Credit Bank, and the Federal Home Loan Bank, pay fixed semi-annual coupons and par value at maturity.
  - They may be callable.
  - The risk of default is low.
Corporate Debt

- Ordinary bonds issued by US corporations pay fixed semi-annual coupons and par value at maturity.
  - They often contain call and sinking fund provisions and may also be convertible into stock.
  - Default risk varies widely.
- Commercial paper is like a Treasury bill, a short term security making a single payment at maturity.

Municipal Bonds

- Ordinary bonds issued by local governments pay fixed semi-annual coupons and par value at maturity. They are typically callable.
- The coupon income from a municipal bond is exempt from federal taxes and exempt from state and local taxes in the state in which the bond is issued.
- Default risk varies widely.
**Stripped Treasury Securities**

- Stripped Treasuries or zero-coupon bonds just make a single payment of par at maturity. Maturities range up to 30 years.
- The market began in 1982 when dealers such as Merrill Lynch and Salomon Brothers held Treasury notes and bonds in trust and sold off the individual coupons and principal pieces as zeroes (TIGRs, CATs, BEARs, TRs, etc.).
- In 1985, the Treasury created the STRIPS Program which allows dealers to strip and reconstitute Treasury notes and bonds with a wire transaction.

**Mortgage-Backed Securities**

- A typical mortgage, from the viewpoint of the lender, is like an annuity. It is scheduled to make monthly payments until maturity that represents a combination of interest and principal that fully amortizes the original loan.
- However, the borrower has the option to pay the loan down faster than scheduled.
- Agencies such as the Government National Mortgage Association and the Federal Home Loan Mortgage Corporation purchase mortgages from banks and thrifts and organize them into pools.
- The cash flows from the pools may be sold off in various packages, such as pass-throughs, CMOs, IOs, POs, PAC-bonds, etc.
Floating Rate Notes

- A plain vanilla note is a bond with a coupon equal to a current short term rate of interest such as LIBOR multiplied by the par amount of the bond.
- Typical issuers are federal agencies and corporations.
- Agencies may also issue so-called structured notes. The coupon on a structured note may be determined by various different formulas, for example, the difference between LIBOR and a short-term German interest rate.

Interest Rate Swaps

- A plain vanilla swap pays the difference between a prespecified fixed rate of interest and a floating short term interest rate multiplied by a notional par amount every period for a given length of time. There is no exchange of par amounts at maturity.
- Swaps are issued and traded in a large, liquid over-the-counter market dominated by large banks.
- The credit risk in a swap is much less than in an ordinary bond with the same par amount because of the netting of cash flows. Dealers may require counterparties to post collateral or maintain a minimum credit rating.
Futures

- An investor with a long position in a futures contract on the expiration date must buy a given par value of the underlying asset, say Treasury bonds, at the prevailing futures price.
- Prior to expiration, this position is marked to market. For example, the long position receives any increases in the futures price and pays any decreases in the futures price.
- The futures price on any given day is not the price of the contract, but rather, the price that makes the contract worth zero that day.
- Futures are traded on organized exchanges and are highly liquid. The exchange guarantees the contract and requires investors to post margin.

Options

- There are options embedded in a variety of fixed income securities, such as callable and putable bonds.
- Swaptions are options on interest rate swaps.
- Caps and floors are options on yields.
  - A cap is a guarantee to the issuer of a floating rate note that the coupon will be no higher than a specified cap rate.
  - A floor is a guarantee to the owner of a floater that the coupon will be no lower than the floor rate.
  - These features may be embedded in floating rate notes, or may be purchased over-the-counter from dealer banks.
- Options on futures are traded on organized exchanges.
Importance of Fixed Income Markets

Market Value 2000

$Trillions

Importance of Fixed Income Markets

Daily Trading Volume 2000

$Billions