

Debt Overview

The debt markets are far more complicated and filled with jargon than the equity markets.

It's important to be aware of all of the different ways debt can be classified. For example:

- Retail or wholesale
- Long or short term original maturity
- Floating or fixed coupons
- Secured or unsecured
- Premium, par or discount
- Call-able, put-able or vanilla
- Seniority: Senior, mezzanine, subordinated.

- **Securities** such as bonds and notes which are fungible and saleable (negotiable). **Instruments**, a broad category that encompasses securities and also loans and bills which are not fungible.
- Rated and un-rated.

Some strange things about debt markets:

- Risk is not usually quoted as a standard deviation or variance or beta, but as a 'rating'.
- Rating agencies S&P and Fitch use ratings:
 - AAA, AA+, AA, AA-, A+, A, A-, BBB+, BBB, BBB-, BB+, ...
- Moodys uses ratings:
 - Aaa, Aa1, Aa2, Aa3, A1, A2, A3, Baa1, Baa2, Baa3, Ba1, ...

- Interest rates are quoted differently depending on the market and might be given as Annualised Percentage Rates (APR's, especially in the bond market) or simple interest rates (money market).
- Debt markets trade on yields and prices based a number of days per year that could be 360 days a year, 365 days a year, or the actual days in the year, depending on the country and market.

Wholesale Debt Securities

Wholesale debt securities are traded by big financial institutions. They can be classified as being 'money market' or 'bond' securities depending on their original maturity. The Reserve Bank defines bond market debt as having an original maturity of more than one year.

Short term wholesale debt securities

Bills, commonly Bank Accepted Bills (BAB's)

Certificates of Deposit (CD's)

Promissory Notes (PN's)

Long term wholesale debt securities

Bonds, Debentures.

Short Term Wholesale Debt Securities

Short term wholesale debt securities usually have a maturity of less than 1 year when issued, such as:

- Bills, commonly Bank Accepted Bills (BAB's);
- Certificates of Deposit (CD's);
- Promissory Notes (PN's); and
- Treasury Bills (TB's).

Yields are quoted as **simple** annual rates, which are mathematically different to compound rates such as effective rates and annualized percentage rates (APR's).

These short term debt securities do not pay coupons and are therefore 'discount securities', which means that their price is less than their face value, assuming positive yields ($r_{simple} > 0$).

$$Price_{bill} = V_0 = \frac{F_d}{\left(1 + r_{simple} \times \frac{d}{365}\right)}$$

Where F_d is the face value, r_{simple} is the simple annual interest rate and d is days until maturity.

Calculation Example: Bank Accepted Bills (BAB's)

Question: A company issues a bill which is accepted (guaranteed) by a bank. The BAB will mature in 90 days, has a face value of \$1 million and an interest rate of 7% pa. What is the price of the bill?

Answer:

$$\begin{aligned} P_0 &= \frac{F_d}{\left(1 + r_{\text{simple}} \times \frac{d}{365}\right)} \\ &= \frac{1,000,000}{\left(1 + 0.07 \times \frac{90}{365}\right)} = 983,032.5882 \end{aligned}$$

Long-term Wholesale Debt Securities

Usually have an original maturity of more than 1 year. They're commonly known as bonds.

Yields to maturity (YTM's, often just called interest rates) are conventionally quoted as annualized percentage rates (APR's), compounding at the same frequency as the coupons are paid.

If an 8% APR compounds semi-annually, then the effective 6 month rate will be 4% per six months. You must convert APR's into effective rates before using them in the bond pricing formula:

$$P_{0,bond} = PV(\text{annuity of coupons}) + PV(\text{principal})$$
$$= \frac{C_1}{r_{eff}} \left(1 - \frac{1}{(1 + r_{eff})^T} \right) + \frac{Face_T}{(1 + r_{eff})^T}$$

Most bonds pay coupons. Coupon payments are calculated as the face value multiplied by the coupon rate.

$$C_{1annual} = \text{AnnualCoupon} = \text{CouponRatePerAnnum} \times \text{Face}_T$$

If the coupons are paid semi-annually, then half of the total coupon is paid every 6 months.

$$C_{1\text{ semi annual}} = \text{SemiAnnualCoupon} = \frac{\text{CouponRatePerAnnum} \times \text{Face}_T}{2}$$

Coupon rates are commonly confused with YTM's, but they are different. Coupon rates are just a convenient way to specify coupon payments.