FINA 3070 Notes 4A

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1 True value of a bond

E.g. par = \$100,000; maturity = 10 years; annual coupon 3% (i.e. \$3,000).

- True value = PAR(coupons) + PAH(par value)
- We use YTM of bonds of same rating as our r. Suppose it's 10%.
- $V = \sum_t \frac{3000}{(1.10)^t} + \frac{100{,}000}{(1.10)^{10}} \approx \$57\text{K}$.
- This is a "discount bond" because its true value $<$ par.
- Suppose we have a higher annual coupon rate s.t. the true value $>$ par, then we have a "premium bond".

2 Valuation of common stock

- Harder than valuation of bonds.
- Uncertain dividends.
- Hard to estimate "suitable discount rate".

3 Three Different types of traders

- **Smart traders**: make use of public info (financial statements) to estimate true value of shares. E.g. mutual fund managers.
- **Noise traders**: only guessing. E.g. speculators.
- **Insiders**: information asymmetry. E.g. CEO, managers of the firm.

4 Efficient-Market Hypothesis

- Observed market price of a common stock reflects the relevant information.
- Smart traders matter; noise traders don't matter; insiders trade infrequently.
- Don't have to estimate true value by ourselves: the market prices can already be trusted.

4.1 Three forms of market efficiency

4.1.1 Semi-strong form

- Prices reflect all publicly available info.
- (Will be our focus of study.)

4.1.2 Weak form

- Prices reflect only a subset of public info. E.g. past trading information.

4.1.3 Strong form

- Prices reflect all info, including insider information.

4.2 School of Efficient Market v.s. School of Behavioural Finance

- SEM believes that all bond (including investment-grade bonds and junk bonds) and stock are efficient; SBF thinks that junk bonds and common stocks are not efficient.
- Most people regard investment-grade bonds are efficient – very easy to estimate true value. Almost strong-form efficient.
- Junk bonds (risk of default) and common stocks have more severe info asymmetry.
- Strong form doesn't hold for common stocks: empirical evidence shows that insiders can indeed make abnormal profit, meaning that insider info is not publicly available.

4.3 Information asymmetry: HK v.s. US

- Definition: a manager knows the company better than smart traders do.
- More severe in HK than US:
  - Semi-annual financial report (HK) v.s. quarterly report (US).
  - Less detailed/reliable financial statements (HK) v.s. more detailed/reliable (US).

4.4 When noise traders cause mispricing

- SEM: smart traders will use risky arbitrage to drive stock price back to true value per share immediately, eliminating any further profit opportunities.
- Risky arbitrage: buy under-priced stock by using capital from (short-)selling a "similar" fairly-priced stock; or buy fairly-priced stock by using capital from (short-)selling a "similar" over-priced stock.
- SBF: risky arbitrage might be costly and slow-working – noise traders can cause mispricing/deviation of stock price from true value (in the short run).

4.5 When new information comes in

- Suppose the arrival of new information that positively affects true value per share: smart analysts will compete and quickly buy the stock they believe is under-priced due to the new info. This active risky arbitrage will push price up till equilibrium.
- Market shall reach equilibrium before daily close (sometimes even just 1 hr after news arrival).

4.5.1 Event study: a tool to test semi-strong EMH

- Assess the impact of a specific event on a firm's stock price.
- Abnormal return due to the event is estimated as the difference between the stock's actual return and a proxy for the stock's return in the absence of the event.
  - The proxy is estimated by an index (e.g. Hang Seng Index).

- Abnormal return = actual return − normal return
  - Normal return can be estimated as $\alpha + \beta r_m$, where α and β are estimated from the data of day -120 up to day -20.
  - r_m is calculated as daily return, i.e. $\frac{\text{price today}-\text{price yesterday}}{\text{price yesterday}}$.
  - Hence, abnormal return = actual return $-(\alpha + \beta r_m)$

1. Pattern of abnormal returns in "inefficient market"
   - See graph in Notes4A pp.18
   - It takes several days to go back to equilibrium – market is slow to react.

4.5.2 ACAR (Average Cumulative Abnormal Return)

- Plot on Notes4A pp.20 has a high horizontal line after day 0, because it's cumulative.

1. Possible patterns of ACAR
   - Normal: significant jump on day 0 (when the info arrives), and random prices changes (which is normal) afterwards:
     - Semi-strong efficient.
   - Insider: if there's a jump before day 0 – possible information leakage:
     - Evidence "against" strong form EMH.
   - If price adjust slowly (slow reaction until horizontal line) or overreacts (overshoots) then corrects itself (drop back to high horizontal line):
     - Inefficient market.

5 Seen One Bond, Seen Them All

- SEM and SBF both agree: no controversy.
- Horizontal demand curve: a commodity (e.g. newspaper) with close substitutes.
- Bonds with same rating are regarded by investors as close substitutes for one another.

- If a bond's true value is constant (no coupon rate change, same bond rating etc.), there will be horizontal demand curve even if the supply Q increases (shown in Notes4A pp.30)
- If Q's increase triggers P's decrease (s.t. P < V), then risky arbitrage will correct it almost immediately.

6 Seen One Stock, Seen Them All (controversial)

- This is an assumption by SEM only.
- The expected return of an individual stock can be "replicated" by a portfolio of stocks (i.e. no stock is unique: different stocks are close substitutes).
- SEM: horizontal demand curve.
- SBF: downward-sloping demand curve in the short run.

7 Semi-strong efficiency: HK vs. US

- US stock market is more efficient than HK. China stock market is even less efficient.
- HK has more severe info asymmetry: harder to value a HK stock's true value.
- Risky arbitrage less active in HK than in US.

7.1 Short-sales in "less allowed" in HK than in US

- Short-selling is legal only for approx. half of the main-board stocks in HK.
- Even for stocks that can be short-sold, "free float" is small (for a typical HK firm).
  - Free float: number of shares outstanding that are "not" held by controlling stockholders. Because those major stockholders don't hold to trade/sell.
  - Controlling stockers would obviously "not" lend shares for you to short-sell.