L8: Revision

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Essentials of Financial Economics 2021
Financial Decision-Making (1st Quarter)

Quarter overview

- Split into two parts.

1. Information $=>$ financial decisions. What are the tools required?

2. Applications of these tools.

Revision — Decision rules

- The best decision rule to use is NPV/discounted cash flow analysis.

- Measures the cash flows paid to all stakeholders in the company, (both debt and equity).

- Accounts for the time value of money in addition to risk.

- All about **marginal/incremental benefit** (MB) versus **marginal/incremental cost** (MC).

  - If NPV is positive — indicates that $MB > MC$.

  - If NPV is negative — indicates that $MB < MC$.

- Remember to always look at the cash flows arising from the new potential project **separately** from the rest of the firm.

Revision — Discount rates

- An input into the use of the NPV method of valuation.

- Always match the **risk** and **maturity** of the project's cash flows.

- Can be determined using the CAPM theory.

$$r_i = \underbrace{r_f}_{\text{Time value of money}} + \underbrace{\beta_i(\mathbb{E}[r_m] - r_f)}_{\text{Risk adjustment}}$$

- Risk adjustment can be broken into two parts

  - $(\mathbb{E}[r_m] - r_f)$ is the **compensation per unit** of systematic risk.

  - β_i is the **number of units** of systematic risk, to which the project is exposed.

- The riskless rate and market risk premium are aggregate variables we can easily observe.

- The β_i is something specific to the project.

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Revision — Finding β_i

- The β_i coefficient for the determination of r_i measures the correlation of the project's risk with that of the market.

- When evaluating a new project, we need to find the units of risk of the underlying project, independent of capital structure.

- This is captured by the beta of assets — β_A.

- Beta of equity — β_E — captures business and financial risks.

- Unless your comparable firm has the same capital structure as you will use for the new project, β_Es are not comparable.

- We find β_A by removing the effects of capital structure — through **unlevering**.

Revision — effect of taxes on leverage (1)

- Taxes can potentially create an advantage for debt.

- One method for valuing the firm is **adjusted present value** (APV).

    - APV involves adjusting the firm's **cash flows** by adding-in those associated with the tax shields.

$$V_L = V_U + PV(DTS)$$

- Form of the $PV(DTS)$ term will depend on what tax rates are present.

Revision — effect of taxes on leverage (2)

- More commonly-used method in practice is to use the **weighted average cost of capital** (WACC).

    - Method involves instead adjusting the firm's **discount rate** to account for the tax shields.

$$WACC = r_A - r_D \frac{D}{V} \tau^c$$

- Generally $WACC$ is less than r_A to inflate the value of the levered firm relative to unlevered.

- WACC assumes that the **leverage ratio** is held constant.

- If the leverage ratio is constant and we discount the DTS with r_A, then the WACC and APV methods deliver the same answer.

Revision — mergers and acquisitions

- Many reasons for companies to merge: our main focus is synergies.

- Deals can take place through cash payments or through a stock deal. Should be treated like any other project.

  - Valuation should be done using DCF analysis.

  - Although the use of multiples is a popular technique in practice.

Revision — multinational corporate finance

- Multinational firms face risk of movements in exchange rates.

- These firms can hedge these movements with the use of forward contracts, which lock-in their future exchange rates.

- When valuing overseas projects, use either the Home or Foreign currency approach.

- Approaches rely on estimates of future rates based on the forward rate and interest rate parity.

Conclusion

- That's all from me.

- This class was all about the *application* of corporate finance.

- Spiros Bougheas' *Economics of Corporate Finance* will dig much deeper into what's behind the theory.