Corporate Financial Decision Making Notes

- The Three Key Decisions of Corporate Finance
  - Investment (or capital budgeting) policy
  - Financing Policy
  - Payout Policy

Options – give the holder the right, but not the obligation, to buy or sell an asset at a predetermined exercise price at some time in the future. **Call Option** – right to buy. **Put Option** – right to sell.

	Bought	Sold
Right to buy	Long call	Short call
Right to sell	Long put	Short Put

Standard call option payoff for an exercise price of $9 is shown.

- So for a call option we have:
$$Payoff = Max(P_{Expiry} - X, 0)$$
and
$$Intrinsic\ Value = Max(P_{Now} - X, 0)$$
- For a put option:
$$Payoff = Max(X - P_{Expiry}, 0)$$
and
$$Intrinsic\ Value = Max(X - P_{Now}, 0)$$

Recall that options cost money and so Profit is equal to Payoff less the premium paid.

Intrinsic/Total Option Value

— Intrinsic value   — Option value

Time value

Value of underlying asset
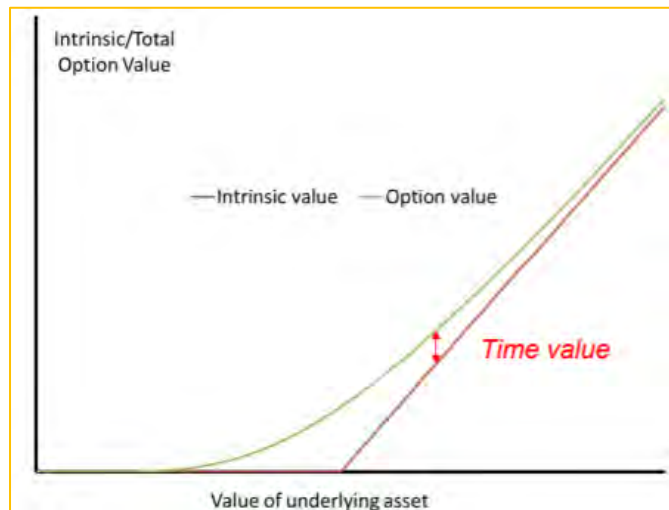
Dividends are discretionary payments to shareholders made by a company. Special dividends are once-offs (often after the sale of a large asset) while regular dividends are expected to be maintained in the future. Dividends in general are maintained as fairly constant to keep shareholders content. In Australia, companies can pay tax in **franking credits**. The **dividend drop-off ratio** $Drop-off\ Ratio = (P_{CUM} - P_{EX})/Dividend$,

Company	Recent Investment Decisions	Recent Financing/Payout Decisions
Boeing (U.S.)	Delivers first Dreamliner after investing a reported $30 billion in development costs.	Reinvests $1.7 billion of profits.
ExxonMobil (U.S.)	Spends $7 billion to develop oil sands at Fort McMurray in Alberta.	Spends $12 billion buying back shares.
GlaxoSmith-Kline (UK)	Spends $4 billion on research and development for new drugs.	Pays $3.2 billion as dividends.
LVMH (France)	LVMH acquires the Italian Jeweler, Bulgari, for $5 billion.	Pays for the acquisition with a mixture of cash and shares.
Procter & Gamble (U.S.)	Spends $8 billion on advertising.	Raises 100 billion Japanese yen by an issue of 5-year bonds.
Tata Motors (India)	Opens a plant in India to produce the world's cheapest car, the Nano. The facility costs $400 million.	Raises $400 million by the sale of new shares.
Union Pacific (U.S.)	Invests $330 million in 100 new locomotives and 10,000 freight cars and chassis.	Repays $1.4 billion of debt.
Walmart (U.S.)	Invests 12.7 billion, primarily to open 458 new stores around the world.	Issues $5 billion of long-term bonds in order to repay short-term commercial paper borrowings.

Source: Principles of Corporate Finance (11th edition) by Brealey, Myers, and Allen

- Now consider the price that Judy will pay for corn....

--- Unhedged price paid   ······ Call Payoff   — Final price paid
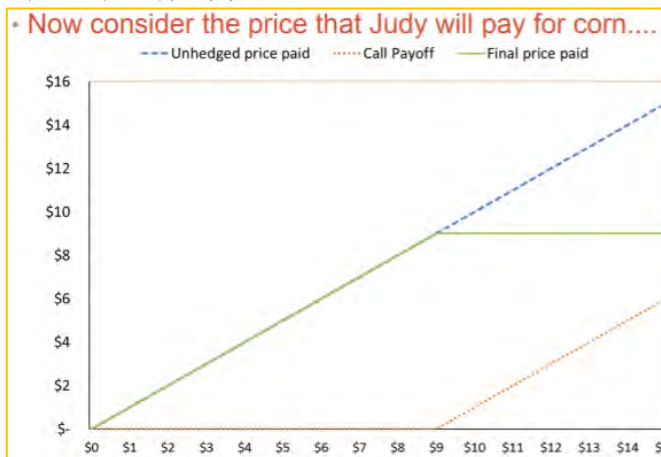
Factors Affecting Option Prices

❖ $C = f(S, X, T, \sigma, r_f, D)$ and $P = f(S, X, T, \sigma, r_f, D)$

	Results in the value of a...	
An increase in...	Call option	Put option
1. Current price (S)	+	−
2. Exercise price (X)	−	+
3. Time to expiration (T)	+	+
4. Price volatility (σ)	+	+
5. Riskfree interest rate (r_f)	+	−
6. Expected dividends (D)	−	+

❖ *Interest rate:* The buyer of a call option can defer paying for the shares. The higher the interest rate the more valuable is this right to defer
❖ *Dividends:* What happens on ex-dividend dates?

Payout Policy
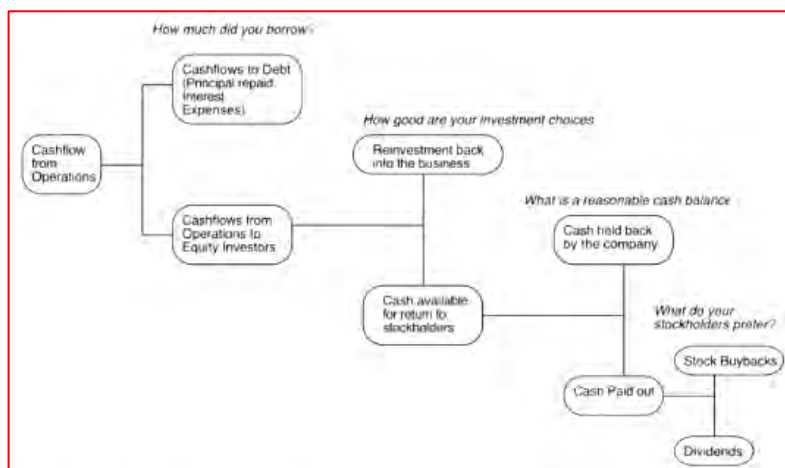
in perfect capital markets, this is equal to 1. The actual price drop might be the value of the after-tax dividend to the investor. Therefore, the price drop-off is related to an individual's personal tax rates. →

Let's denote personal tax rates on dividends and on capital gains by t_d and t_{cg}; you bought the stock a "while" back at the price of P

The cash flows from selling on cum-dividend date are:
$$P_{CUM} - (P_{CUM} - P)t_{cg}$$
The cash flows from selling on ex-dividend date are:
$$P_{EX} - (P_{EX} - P)t_{cg} + Div.(1 - t_d)$$
For this market to be stable, the average investor should be indifferent between selling before and after the ex-dividend date, so we have
$$\frac{P_{CUM} - P_{EX}}{Div.} = \frac{1 - t_d}{1 - t_{cg}}$$

Modigliani and Miller's Dividend Irrelevance Policy – under several key assumptions (no tax, companies can issue unlimited stock at no cost). The key idea is that individuals can trade their dividends paid for more equity or trade their shares for cash and so they are not affected by the payout policy or a company. What is missing from this view? (through an idea known as 'homemade' dividends or stock issues.)

Resolution of Uncertainty – dividends and cash are in general less uncertain that capital gains.

Issue and Transaction Costs – high dividends may imply need for more frequent capital raisings. Large costs in raising capital: direct such as fees, brokerage or indirect such as dilution of claims.

Information Asymmetry & Signalling – dividends can be signals to the market that firms have good cash flow prospects in the future, this is why firms are very reluctant to decrease dividend payments. (like to be smoothened).

Agency Costs – excess cash can lead to agency problems if managers are empire-builders. Money may be wasted on poor projects or perks (chauffers, corporate jets etc.). Overall, incentivises efficient use of company funds.

Tax Implications – major distinctions between taxation of dividend income and capital gains is the issue. Under the imputation tax system (Australia), dividends are valued (due to franking) higher than under a classical system.

Problem 1: Can lead to fluctuating dividend
Solution - signal to market that portion of the dividend is of a "non-recurring" nature (a special dividend)

Problem 2: May result in the firm running short of cash
Solution - Dividend Reinvestment Plans (DRPs) allow high dividend without loss of cash (very small rights issues)

Some problems with high payout rates are shown on the right. In Australia, companies can only buyback 10% of shares in any 12 month period without shareholder approval. Buybacks can be **on-market** or **off-market**. On-market buybacks are subject only to capital gains tax provisions. For off-market buybacks, the difference between the buyback price and capital component is treated as a dividend (frankable). Here are the tax implications for someone in off-market buyback →

The regulations changed slight in 2004, to make the tax liability based on a deemed consideration. We used the **Volume Weighted Average Price (VWAP)** over the 5 days before the annoucement adjusted for the market index change from the announcement to the close of the buyback. The difference in this is shown on the right

Q) What is your total after-tax proceeds from the buyback?

1) After-tax proceeds from dividend component
   - Cash dividend = $2.70
   - Grossed-up dividend = $2.70/(1-0.3) = $3.857
   - Franking credit = 0.3*$3.857 = $1.157
   - Tax on grossed-up dividend = 0.185*$3.857 = $0.714
   - After-tax proceeds = $2.70 + $1.157 - $0.714 = $3.14

2) After-tax proceeds from capital component
   - Capital component = $4.20 - $2.70 = $1.50
   - Capital gain/loss for tax liability = $1.50-$3 = -$1.50
   - Discounted capital gain/loss = 0.5*(-$1.50) = -$0.75
   - After-tax proceeds = $1.50 - 0.185*(-$0.75) = $1.64

So, your total after-tax proceeds = $3.14 + $1.64 = $4.78

Over the past 30 years, there has been a preference shift towards buybacks from dividends. Why?

Improved Performance Measures – increase the EPS (can be easily manipulated, investors often ignore) and ROE.

Signalling and Undervaluation – creates demand for shares and can increase share price, also a positive signal to market. Signals also that the firm believes that the shares are currently underpriced.

Financial Flexibility – dividends are a long-term commitment (due to stickiness) whereas buybacks are always special and once-off. Also, buybacks can be adjusted even while they are being executed.

Employee Share Options – many managers hold call options in their firm so are incentivised to boost share price. Dividends lower share price while buybacks often raise it so options are more in the money.

Taxation Benefits – in off-market buybacks, companies can pay a portion of the buyback in franking credits and thus reduce the tax burden for shareholders.

Telstra buyback under TD 2004/22

Recall
   Buyback price: $4.20; Capital component: $4.20-$2.70=$1.50
   Capital loss $_{Before}$ = $3 - $1.50 = $1.50

Assumptions
   Telstra 5-day VWAP prior to the announcement = $4.90
   During period from announcement to close of buyback, market increased by 0.5%

Capital gain/loss
   The deemed consideration = $4.90(1.005)= $4.92
   Capital component for tax liability = $4.92 -$2.70 = $2.22
   Capital loss $_{After}$ = $3 - $2.22 = $0.78
   After-tax proceeds $_{After}$ = $1.50 (actual capital component) + 0.185*0.5*$0.78 = $1.57 (←50% CGT discount & personal tax rate 18.5%)

Dividends do however signal permanent and long-term stable cash flows since they are a proper commitment. Managers tend to favour off-market buybacks when the buyback is larger and generating more cash flows. On-market buybacks are more likely to be used when the firm is undervalued.

WACC and Capital Structure Policy

Any project has a cost of capital, projects have to earn at least a benchmark rate of return to be accepted. From the investors' viewpoint this is the **required rate of return** while the firm's see this as the **cost of capital.** These costs are critically determined by the market since investors can take their capital elsewhere if they aren't satisfied with returns. Now we examine how to calculate the different components of the WACC:

· WACC puts weights on cost of debt and cost of equity

$$WACC = k' = k_d(1-t_e)\left(\frac{D}{V}\right) + k_e\left(\frac{E}{V}\right)$$

k_d – risk-free rate plus the default spread (corressponding to the credit rating of the company).

t_e – effective corportate tax rate (adjusted for franking), $t_e = t_c \times (1-a)$ where a is the proporion of corporate tax claimed by shareholders (a=0 implies a classical tax system, while a=1 implies pure impuation system.)

k_e – use the CAPM to calculate the cost of equity of any given company, or can use the discounted cash flow method (Gordon Growth model).

$$k_e = R_f + \beta_e[E(R_M) - R_f]$$

Another key equation describes how Beta (**Levered Beta**)changes as the debt-equity ratio of a firm changes: Need to make sure your WACC or discount rate

$$\beta_L = \beta_U\left(1 + (1-t_e)\frac{D}{E}\right)$$

is applicable to the risk of the project being undertaken, take the example of Wesfarmers who has over 100 businesses and so must have many different WACCs for each of its subsidiaries. To calculate the firm value from here, we use the following formula:

$$Firm\ Value = \frac{Expected\ Cash\ Flow\ next\ year}{Cost\ of\ Capital - g} = \frac{200 \times 1.03}{Cost\ of\ Capital - 0.03}$$

D/(D+E)	Cost of Equity	After-tax Cost of Debt	Cost of Capital
0	10.50%	4.80%	10.50%
10%	11.00%	5.10%	10.41%
20%	11.60%	5.40%	10.36%
30%	12.30%	5.52%	10.27%
40%	13.10%	5.70%	10.14%
50%	14.50%	6.10%	10.30%
60%	15.00%	7.20%	10.32%
70%	16.10%	8.10%	10.50%
80%	17.20%	9.00%	10.64%
90%	18.40%	10.20%	11.02%
100%	19.70%	11.40%	11.40%

Optimal Capital Structure – the capital structure which minimises the WACC and therefore maximises the value of the firm. Increasing leverage wil increase k_d and k_e since risk of both increases, so therefore though debt is cheaper it is not optimal to have a capital structure of 100% debt. Since debt is cheaper though, some debt is always preferable to none as shown in the chart on the right.

MM's "Irrelevance" Theorem – that $V_L = V_U$, investing decisions matter and financing decisions are irrelevant.

Trade-Off Theory – that optimal capital structure is determined by balancing the benefits of the tax shield of debt against the risks of financial distress. Thus, besed on the benefits of the tax shield of debt, we come to $V_L = V_U + PV$(interest tax shields) $= V_U + t_e*D$.

The converse of this is the expected cost of financial distress, this is a combination of the probability of financial distress combined with costs if such situations arise. Large range of costs:

Direct Costs – legal expenses, advisory fees

**Indirect costs** – opportunity costs (management can't focus on running core business, damage to reputation and therefore erosion of sales.) Debtholders bear the realised bankruptcy cost but shareholders bear the expected bankruptcy cost in the form of more expensive debt. Eventually, companies can reach a point of optimal leverage, according to the trade-off theory as shown on the right.

The **implications** of this theory are that firms should in theory issue equity when leverage rises above the target level and buy back stock when leverage falls below the target capital structure. In reality, companies are reluctant to issue equity and stock prices tend to drop at the annoucement of equity issues.

Pecking Order Theory states that companies follow a pecking order in which they finance investments: First with internally generated funds, then with debt, then with hybrids and finally with equity as a last resort. Pecking order is based on three ideas of imperfect markets: asymmetric information (equity issues requires managers to be the most transparent in their plans), agency costs of equity and different floatation costs (issuing equity is more expensive than issuing debt).
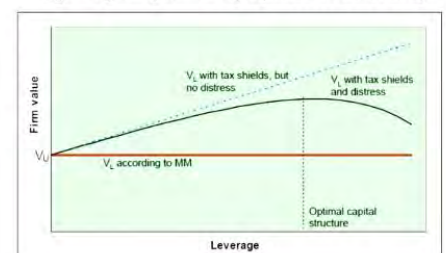
· Leverage and firm value: $V_L = V_U + t_e D$
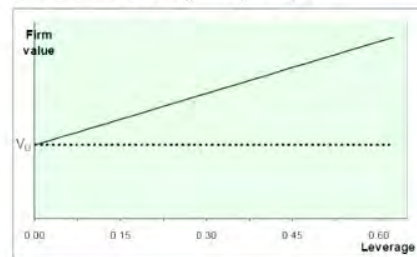
Trade-off Theory: Optimal Leverage

· The value of a levered firm is now
$$V_L = V_U + t_e D - PV(exp.\ distress\ costs)$$

Internal equity → Debt → Hybrids → External equity

Implies that capital structure comes straight from cash flow, low cash flow means more debt required and therefore leverage increases and vice-versa.

Some **non-tax impacts** on capital structure are:
Asset Type – general use vs firm specific, tangible vs intangible (the harder it is to realise an asset lower level of leverage that is optimal).
Cash Flow – debt reduces the free cash flow available to managers as it is a commitment to distribute cash in the future and thus can reduce some of the issues of "empire building" or consuming perks.
Agency Costs in Financial Distress – debt overhang (shareholders are incentivised to pay out a dividend and cut their losses), excessive risk-taking (shareholders are tempted to gamble at the expense of debtholders since they likely will be left with nothing without taking on a project).

In general young, R&D intensive firms have low leverage (risky cash flows, few tangible assets and high human capital) while low-growth mature capital intensive firms have high leverage for the opposite reasons. The theories of trade-off and pecking-order are subsitiutable and must be combined to find the balance between debt and equity in any firm.

Raising Equity Capital
Most firms in their early days seek to raise capital to fund expansion and capitalise on success. This is generally done through VC firms initially, who inject capital in exchange for part ownership of the business.

Private Equity
"Angel" Finance – finance provided by high net worth individuals.
Venture Capital – financial intermediary which provides finance to start-ups on behalf of investors. These funds have a limited life-span (often 5-7 years), typically have quite significant control over company decisions. VC then attempts to exit the company through either a trade sale or an IPO.

Public Equity
Initial Public Offerings – the process by which a firm sells equity to the public for the first time.
Seasoned Equity Offerings – sale of shares in an already publicly traded company (private placement, rights issues, dividend reinvestment plan etc.)
Primary Market desribes interactions between investors and firms while the **secondary market** is the stock exchange and interactions between investors.

- Some **advantages of going public** are:
  - Access to additional capital
  - Allow VC to cash out
  - Current stockholders can diversify
  - Establishes firm value
  - Increases Customer recognition
  - Can use stock as employee incentives

- Some **disadvantages of going public** are:
  - Substantial Fees for IPOs
    - Legal, accounting, investment banking (often more than 10%)
  - Greater degree of disclosure
  - Dilution of control of existing owners
  - Managing investor relations is time-consuming

IPO example: Alibaba Group
1. Engage an investment banker who prepares the **prospectus** and also **underwrites** the float (guarantees to buy any unsold shares, not always done, and sometimes is done In partnership with other banks).
2. The roadshow, bankers will hit the streets to both market the float and attempt to gague investor interest.
3. Determine the issue price, done through fixed pricing, book-building or open auction. Fixed Pricing has a high risk of under-subscription since its liable to market moves. Book-building ask institutional investors to indicate quantities they would purchase and at what price. An open auction (dutch auction) is where investors are invited to submit