- The costs of financial distress are the costs arising from bankruptcy or distorted business decision before bankruptcy.
- Value of the firm = Value if all equity financed + PV of tax shield - PV of financial distress

Example 6

H International Ltd is a shipping firm.
Current Share price: £5.50
Shares outstanding: 10 million

There are plans to lower corporate taxes by borrowing £20 million and repurchasing shares.

$V_u = V_L$
V_u = £5.50 x 10m = £55m
V_L = D + E
£55m = £20m + E
E = £35m

E = £35m
Number of shares repurchased:
£20m debt/£5.50 = 3.636m shares
E / remaining shares
£35m / (10m - 3.636m) = £5.50

However, is you suppose that H International Ltd pays 30% in corporate tax.

$V_L = V_u + Dt$
V_u = £5.50 x 10m = £55m
Dt = £20m x 0.30 = £6m
V_L = £55m + £6m
£61m = £20m + E
E = £41m

E = £41m
Number of shares repurchased:
£20m debt/5.50 = 3.636m
E / remaining shares
£41m / (10m - 3.636m) = £6.44

The only imperfections are corporate taxes and financial distress costs. The share price rises to £5.75 after the announcement. What is the PV of financial distress costs?

£6.44 (calculated share price) - £5.75 (actual share price) = £0.69 x 6.363m (remaining shares) = £4.39m
£4.39m is the cost of financial distress.

Therefore, the value of the firm is = £55m (all equity financed) + £6m (PV tax shield) - £4.39m (PV financial distress) = £56.61m

$V_L = D + E$
E = £5.75 x 6.363m shares = £36.59m
D = £20m
V_L = £36.59m + £20m = £56.69m

Trade-Off Theory

- The theory that capital structure is based on the trade-off between tax savings and distress costs of debt.
- The Target debt ratios vary from firm to firm, with High tech industries favouring lower tangibles so lower debt, whilst Tangible heavy industries favour higher debt.
- Proposed originally by Kraus and Litzenberger (1973)

Investment Decision: Ignore gearing! Take a geared beta for a company in the same industry as the project, de-gear it. Insert the un-geared beta into CAPM to find un-geared cost of equity. Use the un-geared K_{eu} to discount project cash flows.

Financing Decision: Find the PV of financing costs and benefits, discounted at Pre-tax cost of debt.
Typical financing costs: Issue costs on debt and/or equity,
Typical financing benefits: Tax relief on debt interest, Value of a subsidised loan for saving of interest and loss of tax shield on interest saved.

Example 7

Initial Investment: £400,000 (No residual value) Annual net cash flows AT over 3 years: £175,000
20% of the initial investment will be equity (£400,000 * 20%) = £80,000
40% will be financed by subsidised loan at 5% (£400,000 * 40%) = £160,000
Interest rate payments (5% of £160,000) = £8,000
40% financed by loan at rate of 9% (£400,000 * 40%) = £160,000
Interest rate payments (9% of £160,000) = £14,400
Issue costs for equity expected to be 3%, debt issue costs is zero. (3% of £80,000) = £2,400

Equity beta: 1.7 Avg debt:equity ratio: 1:3 RFR: 5% (AT) MR: 13% (AT)
Corporate tax: 30%

Step 1: Calculate base case NPV @ K_{eu}

$\beta_{e,u} = \beta_{e,g} (V/(V_E + V_D (1 - T)))$ $\beta_{e,u} = 1.70(\ /(1 - 1(1 - 0.30))) = 1.38$

$K_{eu} = r_f + \beta_u(r_m - r_f)$ $K_{eu} = 0.05 + 1.38(0.13 - 0.05) = 0.1604$

Year	Cash flow (£'000)	DF @ 16%	PV (£'000)
0	(400)	1	(400)
1	175	0.862	150.85
2	175	0.743	130.025
3	175	0.641	112.175
			(6.95)

Step 2: Financing costs of Equity and Debt, including Tax relief gained @ Pre-tax cost of debt (3 year annuity)

PV of Issue costs and Interest rate payments above.

PV of tax shield on normal loan interest, Tax relief gained: £14,400 * 0.30 = £4,320

£4,320 * 2.531 (3 year annuity at 9%) = £10,934

PV of tax shield on subsidised loan interest, Tax relief gained: £8,000 * 0.30 = £2,400

£2,400 * 2.531 (3 year annuity **at 9%**) = £6,074

Step 3: Interest saved on Subsidised loan and tax relief lost on the interest saved.

Interest saved: £14,400 - £8,000 = £6,400
£6,400 * 2.531 (3 year annuity at 9%) = £16,198
Tax relief lost: £16,198 * 0.30 = £4,680

Stock Market anomalies and Competing theoretical views

The January effect

- Stocks that underperform in the 4th quarter, over compensate and outperform the market in January of the following year.
- Usually because the company may sell poorly performing stock to offset losses for tax purposes in the 4th quarter.
- The selling may drive down prices to such an extent that it becomes attract in the following month.

Day of the week effect

- Research suggests that stocks move more on Fridays than Mondays, and that movements tend to be more positive on Friday than Monday.
- Closing prices on Monday tend to be lower than on Friday.
- Although movement is small, it does exist. There appears to be no reason other than behavioural.

Turn of the month effect

- Stock prices rise on the last day of the month and first three days of the following month.

Rolls-Royce May to Sept 2014	May	June	July	August	September
Turn of the month	2.61%	-0.84%	-0.29%	-0.[illegible]%	-1.60%
Rest of the month	0.78%	0.3[illegible]%	-0.94%	-0.[illegible]%	-5.61%

Calendar or seasonal anomalies

- Represent one of the most important existing anomalies in the markets.
- These excess-returns cannot be captured by equilibrium asset pricing models such as CAPM.
- Can be exploited by rational investors to gain above-average returns.
- These anomalies violate weak-form efficiency and random walk hypothesis.

Small size and Value effect

- Smaller size equals smaller capitalisation. Studies found that smaller firm's shares outperformed, due to the fact that a large company needs to find billions extra to grow 10%, whilst a small company may only need a few million to grow at the same rate.
- Low price-earnings ratio shares generally generate abnormal returns, there is a dispute whether it is the small size-effect that is really being observed.
- Investors place emphasis on short term earnings data, because unusually cheap stocks attract investors and then encounter mean reversion.