

FIN 325 Corporate Finance

L18 (Revision): Final Exam Revision

Instructor: Adam Hal Spencer¹

Summer 2016

¹Departments of Economics and Finance, UW–Madison.

Final exam details

- Exam will be **in-class** tomorrow.
- Cumulative — covers all topics from lecture 1 onwards.
- Follows a similar structure to the midterm exam.
- Multiple choice and true/false problems will comprise a larger fraction of the exam.

Revision — information asymmetry

- There may exist a difference in information held by insiders and outsiders of the company.
- Under this situation, actions of the firm's insiders can send signals to the outsiders that affect the firm's value.
- Some security types are more sensitive to signalling than others.
 - Leads to the pecking order theory of capital structure.
- Violation of M&M propositions — e.g. a firm with lots of retained earnings will find it easier to take positive NPV projects than a firm without. Can lead to a difference in firm values.

Revision — raising capital

- There is usually a mismatch between sources and uses of capital.
- A firm will generally undergo several rounds of financing, roughly of the order:
 - Initial equity from the entrepreneur.
 - Angel investors.
 - Venture capitalists.
 - IPO.
 - SEO.
- Be wary of conditions that VCs stipulate in the term sheet for the capital offer.
- There will typically be considerable heterogeneity in the offers depending on the preferences of the VC firm.

Revision — mergers and acquisitions

- Many reasons for companies to merge; typically the firms will be looking for synergy gains or to increase market power.
- 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.
- Stock price reactions to merger announcements typically reflect the friction of information asymmetry.
 - Empirical regularity to see the acquirer's stock price fall while that of the target increases.

Revision — multinational topics (exchange rates)

- 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.

Revision — multinational topics (global taxation)

- U.S. Government currently taxes both domestic and foreign earnings of firms incorporated domestically.
- U.S. multinationals typically don't have to pay taxes to the U.S. Government on foreign earnings until the earnings are repatriated.
- As a result, some firms amass large amounts of earnings overseas in the hope that some policy change will come, which will allow for cheaper repatriation.
- My dissertation research looks at the effect of removing this tax on U.S. firms' overseas earnings.
- Research results show that the policy change would have a positive effect on firms and investors domestically, without necessarily coming at the expense of tax revenues.

Example A

- Announcement of a SEO by a company will always benefit current shareholders when the funds are invested in a positive NPV project. True/False?

Example A solution

- False. This question is related to information asymmetry.
- Whether the new project would create value for the existing shareholders or not depends on the beliefs of the market.
- If the market believes that only low value firms will issue new equity, then firm behaviour consistent with those beliefs can eventuate.
- When the outside investors think the firm has low value, they will demand a large fraction of the company as compensation in exchange for the cash they put-up for the project.
- This large fraction leads to large dilution of ownership.
- Equityholders of a firm with high value can as a result see the dilution of ownership outweigh the increase in firm value attributable to the positive NPV of the project.

Example B

- When managers know more than investors which financial decision can reveal information?
 - (a) Stock repurchase,
 - (b) Stock acquisition of a competitor,
 - (c) Stock split,
 - (d) Seasoned Equity Offering (SEO),
 - (e) All of the above.

Example B solution

- E. A stock repurchase signals that the firm insiders think the current market price is too low; that the shares are undervalued. In this setting, the repurchase sends a positive signal to the market.
- Acquiring a competitor by purchasing their shares can indicate that the competitor has something, in which your company is deficient. Making the acquisition reveals this to the market, causing your company's share price to fall and the target's to increase.
- Stock splits are typically met with a positive reaction by the market. By executing the split, the price per share will fall. This signals to the market that the managers are confident that future performance of the firm shall be strong, which will prevent the share price from falling further.
- An SEO can be met with a negative reaction as again it can signal that the stock price of the firm is overvalued.

Example C

- The debt overhang problem arises when
 - (a) A firm has to pay higher interest rates on loans for more risky investments,
 - (b) Financial distress, caused by debt, forces the firm to sell its assets,
 - (c) A firm cannot raise capital for new projects due to the presence of existing creditors,
 - (d) The interest payment of a highly levered firm leads to negative earnings, which reduces the value of the debt tax shield,
 - (e) None of the above.

Example C solution

- C. Although a new project may have a positive NPV and be beneficial with respect to the value of the firm, raising funds for the project may not be possible.
- In the presence of risky debt, the payoffs from the project may stand to benefit the debt holders. That is — in a scenario whereby they didn't originally receive payment in full — they now may obtain an amount closer to the face value.
- As a result, issuing new equity to pay for the new project may lead the old equityholders to make a loss, (negative NPV from their viewpoint), meaning they'll forgo the project. Have a look at lecture note 9 for an example of this.

Example D

- Which of these situations is most likely to present an example of empire building?
 - (a) A manager of a firm with stable earnings and excess cash initiates a dividend program,
 - (b) A cash-strapped firm compensates a manager with stock options,
 - (c) A manager of a firm with stable earnings acquires a number of unrelated businesses to expand the firms size,
 - (d) A mature cash-cow firm issues equity to finance a repurchase of its debt,
 - (e) A manager of a highly levered firm divests an under-performing division.

Example D solution

- C. Recall that empire-building refers to a situation whereby a manager seeks to increase the size and scope of operations of a firm rather than maximising the value to the firm's owners.
- Part C fits the description since we're told that the acquired businesses are unrelated to the firm's current operations.
- This makes it more likely that the acquisitions will not serve to increase shareholders value.
- The other options are wrong since none of them really refer to expansion of the current business. Option E, for example, is almost capturing the opposite of empire building.

Example E

- When manager invests in a “pet project” he generates a risk-shifting problem. True or false?

Example E solution

- False. These are two completely different concepts. Pet projects refer to when the manager undertakes a project, from which he obtains a positive personal NPV, while that for the firm is negative.
- Risk shifting refers to when the equity holders exploit their limited liability by investing in a project with high volatility.
- By doing so, they increase their payoff in good states of the world, while not affecting their payout in the bankruptcy states.

Example F

- In countries where equity is rarely used to finance new investments by firms, only underpriced firms will like to issue equity. By contrast, in countries where all firms are expected to finance their investments through equity, there is no bad signal associated with it. True or false?

Example F solution

- False. Firms are less likely to issue equity when it's undervalued than when it's overvalued.
- This point relates to the intuitive notion that, when the equity is overvalued, the firm can get a “good deal” by selling more shares and raising more funds.
- So we conclude that the first part of the statement is wrong; although the second part is correct.
- When the investors believe that both undervalued and overvalued firms will issue equity, then doing so will not send a negative signal.

Example G

- In the presence of a clientele effect, when investors desire investing in low beta stocks, companies can decrease their stock's beta by
 - (a) Issuing more equity and repurchasing debt,
 - (b) Issuing more debt and repurchasing equity,
 - (c) Merging with an all equity financed company that has low covariance with the market,
 - (d) Investing in projects with high asset beta,
 - (e) A and C are correct,
 - (f) B and D are correct

Example G solution (1)

- E. Part A is true due to equation 26 from the formula sheet, which says that

$$r_E = r_A + (r_A - r_D) \frac{D}{E} \quad (1)$$

which has r_E decreasing as the leverage ratio falls. Then we see that, from equation 20 on the formula sheet

$$\begin{aligned} r_E &= r_f + \beta_E (r_m - r_f) \\ \Rightarrow \beta_E &= \frac{r_E - r_f}{r_m - r_f} \end{aligned} \quad (2)$$

where r_f and r_m are fixed, meaning that β_E will fall when r_E decreases.

Example G solution (2)

- Part B clearly is describing the opposite of part A, making it false. Part C is true given that β_E for the merged company will be the weighted average of the equity betas for the two companies.
- Part D will cause r_A to rise, meaning that r_E will also rise from equation (1) above. Then similarly, from equation (2), we'd see the β_E fall.

Example H

- Say that a U.S. multinational earns \$100m in the Republic of Ireland, where the domestic corporate tax rate is 12.5%. If the firm decides to repatriate all the earnings right away, how much will they owe on these earnings to the U.S. Government, where the corporate tax rate is 35%?
 - (a) \$35m,
 - (b) \$100m,
 - (c) \$20m,
 - (d) \$22.5m,
 - (e) \$32.5m.

Example H solution

- D. Recall that the U.S. Government gives tax credits on those paid to the Irish Government. That is, the tax rate on the repatriated earnings would be $0.35 - 0.125 = 0.225$, meaning that the tax liability would be \$22.5m.

Example I

- Say an iPhone costs AUD 200 in Sydney and USD 120 in St. Louis, MO. Assume that inflation in Australia is twice that in the United States. If the exchange rate is 1.34 AUD/ USD, then which of the following is true?
 - (A) Absolute PPP holds,
 - (B) Relative PPP predicts an appreciation in the USD.
 - (C) Relative PPP predicts a depreciation in the USD.
 - (E) None of the above.

Example 1 solution

- B. The reason comes from the equation $\Delta e_{AUD/USD} = \pi^{AUS} - \pi^{USA}$. Since $\pi^{AUS} = 2\pi^{USA}$, we get that the difference on the right side is positive.
- A is wrong since $p^{USD} e_{AUD/USD} \neq p^{AUS}$.
- C is wrong as it says the opposite of B.

Concluding remarks

- Thanks everyone, it has been a pleasure.
- Good luck to you all on the final.
- I'll record video feedback on the exam so you can see exactly how you did.
- Stay in touch!

