Solvay Brussels School Economics & Management

ULB

Université libre de Bruxelles
Programme 2012-2013

CORPORATE VALUATION AND FINANCING
GEST-S-408
Prof. H. Pirotte

LASTNAME : STUDENT Id :

FIRSTNAME :

Final Exam

Form A

Saturday 17 August 2013

Indications

Please read carefully the following indications:

1. The exam lasts 3 hours.
2. Please verify that your document contains exactly 5 pages.
3. There are 20 questions. There are 24 points in total. The best 20 points will be considered for a total maximum grade of 20.
4. Please write your first name and last name on the first page.

Problems

P1 Company valuation

Today is the 31 December 2013. You have recently graduated from Solvay, and after being interviewed by the pair made by Matthew Mackenzie ("MattMack") and Kevin Larsson ("KevLar"), the managers of WishfulInvest financial holding company, you have been hired to help them in analysing a brand new investment opportunity in a firm called DataCloud.

The EBIT generated by DataCloud should be equal to €30 million in 2014, €60 million in 2015 and €75 million in 2016. The debt of the company is currently at a level of €150 million but should decrease quite quickly until 2016. After 2016, both the unlevered FCF and debt should grow at a rate of 2%. Data related to the EBIT, debt, depreciation and investment cash flow of DataCloud are summarized in the table below:

	2013	2014	2015	2016
EBITDA		30	60	75
Depreciation		5	5	5
Investment CF		-8,5	-15,5	-12
Debt	150	133	116	98

The cost of debt is equal to 5%, the interest paid on debt is also equal to 5% (all rates are annual in the present problem, unless otherwise stated) and the tax rate is equal to 30%.

This information so far provides the necessary inputs for cash flows…the key question remains: what kind of cost of capital to use.

Fortunately, KevLar and MattMack have identified a company that has the same activity. This company (named Company A) has a value of €109.3 million and a net income of €10 million. The market value of the debt of this company is €50 million, its cost of debt is equal to 5% but the interest paid on debt is 8%. Those values will stay at the same level in perpetuity (for Company A only, contrarily to DataCloud). The investment cash flow of this company will be equal to the depreciation and the tax rate is 30%.

Q1 Compute the FCF (unlevered) and the present value of tax shield of Company A.

Q2 Compute the cost of assets of Company A (if you don't have an answer for Q1 use 13 as FCF and 25 as PV of tax shield for Company A).

Q3 Compute the capital cash flows of DataCloud for 2014, 2015, 2016 and 2017.

Q4 Compute the terminal value (the value of the cash flows from 2017 on) of DataCloud at the end of 2016 using the Capital Cash Flow method.

Q5 Determine the value of the company at the end of 2013, 2014 and 2015.

Q6 Check the computation you have done using the WACC method (make sure you use a formula which is coherent with what you have done before). **(2 points)**

KevLar and MattMack are quite impressed by what you have done so far; consequently, they have decided to ask for your advice regarding a question that has run through their minds ever since they graduated.

Q7 If the state was to raise personal taxes on the bond coupons, what would be the effect on the aggregate debt/equity ratio? Explain.

P2 Real options

We are on the 31/12/2013. You have just joined a movie company and your new boss is very excited. He has just bought the rights to make the sequel of a very successful movie (at any end of year during the next 2 years, i.e.: until 31/12/2015). On the 31/12/2013 and 31/12/2014, you have to pay an amount of €1 million if you want to keep the rights alive for the next year. The production costs of the movie are €17 million (the costs are independent from the year of production). The outcome (in present value) of the film before production costs is estimated at a value of €20 million today with a volatility of 40%, the risk free rate is equal to 5% (annual rate).

Q8 Use a binomial tree to determine the possible values of the underlying in 2014 and 2015.

Q9 In 2015, use the binomial tree to determine in which states of the world the company should produce the movie.

Q10 In 2014, use your answers to the previous questions to determine (for each state) if the company should kill the option (i.e. produce the movie) or wait. Conclude on the value of the rights in 2014.

Q11 Use our answers to the previous questions to determine if the company should produce or wait in 2013. Conclude on the value of the rights.

P3 Risky debt

Your company has issued zero-coupon bonds with face value of €600 million (represented by 600'000 zero-coupon bonds). Today, the maturity of this issuance is exactly 2 years. The value of the assets of the company is estimated to be €500 million with an annual volatility of its relative variations equal to 50%. The subjective probability of an "up" movement is equal to 46.39% and the equity is represented by 300'000 shares. The risk-free rate is estimated to be 2%, and the market risk premium is 5% (we accept the working hypothesis of Merton's debt and use these in a binomial setting; all rates are annual and continuously compounded). To answer the following questions, use a binomial tree with steps of 1 year.

Q12 Use a two-period binomial tree to determine the value of the assets of the company.

Q13 Determine the total value of the debt today.

Q14 Break down the total value of debt into the following components: face value, risk free rate, loss-given-default and risk-neutral default probability.

Q15 Determine the assets' beta, the beta of debt (if you don't manage to get an answer for the assets' beta, use an assets' beta of 1.4) and the cost of debt.

Q16 Calculate the yield of debt and compare it to the cost of debt found in the previous question. Explain the difference between those numbers.

Q17 If someone was to propose a protection against a default of this issuance (the CF of this product, at the time of default, will be equal to the difference between the face value and the residual value in case of default), what price should he/she propose today?

Q18 If this issue was convertible today, in exactly one year and in exactly 2 years, with a conversion ratio of 1 (which means that you can convert 1 bond into 1 share) what would be the price of this convertible bond? **(2 points)**

Q19 What if this convertible bond was now callable by the shareholders in years 0 and 1 (the call price being equal to €950/bond)? **(2 points)**

P4 Financing policy

Q20 Please read the following article (Financial Times, 14/8/2013) and analyze the share repurchase program of Apple and the debate around it. I.e. why would a company like Apple start repurchasing more massively stocks on top of what they did in the past? Why do they repurchase stock in the first place? Is it good news or bad news? What is the link between Icahn's remarks and the share buy-back? What is the link between stock market's valuation of Apple and the share buy-back? Please answer "deeply" with fundamental arguments (1 page maximum). **(2 points)**

Carl Icahn purchase adds to signs of renewed momentum at Apple
By Tim Bradshaw in San Francisco

Like most industries raided by activist investor, Carl Icahn and Silicon Valley have had a tempestuous relationship. He forced his way on to the board of Motorola in 2008 and spent a brief stint as a Yahoo director until 2009, after agitating in favour of Microsoft's takeover bid. He remains engaged in legal action over Dell's $24bn buyout, which he argues undervalues the computer maker.

So when Mr Icahn on Tuesday took to Twitter to reveal his "large position" in Apple, the word "nice" made for an eye-catching contrast to his usual tactics.

"Had a nice conversation with Tim Cook today," he tweeted. "Discussed my opinion that a larger buyback should be done now. We plan to speak again shortly."

Apple analysts see little prospect of that conversation turning nasty, for now at least.

In the 11 months since Apple's share price peaked above $700, it has faced a relentless barrage of negative commentary, with questions about its ability to innovate, the iPhone's falling market share and stalling revenue growth.

Yet rather than kicking Apple while it's down, Mr Icahn's purchase may come to be seen as a turning point for a stock that is already beginning to regain upward momentum. Indeed, by boosting the stock by almost 5 per cent with fewer than 280 characters, including his view that it is "extremely undervalued", he has already begun to do so.

"While a catalyst today, this tweet isn't the only thing helping Apple recently," said Ben Reitzes of Barclays in a note on Tuesday. Sales of the iPhone beat forecasts in July's results and many expect new versions of its flagship product will be launched next month, just in time to bolster the current quarter's financial performance.

Meanwhile, a wearable "iWatch" and upgraded Apple TV service are also on the horizon, as its recent acquisition of Matcha.tv, a online video recommendation start-up, suggests.

"The momentum is absolutely behind them from the product launch basis," said Amit Daryanani of RBC. "There are a lot of things coming up for investors to get excited about."

In addition to an upgraded iPhone 5, a cheaper smartphone, dubbed the iPhone 5C for its colourful casing, is widely expected next month. Expected to be priced at roughly $300, this lower-specification iPhone will be aimed at customers who buy mobile phones without a monthly contract, through which operators usually subsidise the upfront cost of the device.

By catering to price-sensitive consumers who may not have upgraded to a smartphone before, or those in less developed mobile markets, Mr Daryanani estimates that Apple could sell 60m iPhone 5Cs a year. "It could be a sizeable number."

New iPhones and iPads are unlikely to quiet those who doubt Apple's innovation, but they will revive year-on-year revenue growth, which slowed to a paltry 1 per cent in the three months to June.

Just how successful these upgrades have been will not become clear until Apple reports sales for the run-up to Christmas, next January. In the meantime, the company could easily afford to placate Mr Icahn and the other investors who have doubtless expressed the same desire for a greater share of its $130bn cash pile.

"Apple bought about three times more stock than we expected in the June quarter – more than $16bn worth – showing it was already leaning in a shareholder-friendly direction with a faster pace of buybacks," said Mr Reitzes.

With debt still cheap, Apple could borrow more, after raising $17bn in an oversubscribed bond issue earlier this year, to avoid the costs of repatriating its more than $100bn in offshore cash.

"Interest rates have gone up but at 4 per cent, given the value of the stock right now, that would be a good use of cash," said Walt Piecyk of BTIG Research, noting that much of the improvement to earnings in the last quarter was due to the accelerated buyback.

Mr Icahn's holding in Apple is believed to be a fraction of 1 per cent, so if he does have an agenda beyond the current "nice conversation", he may need the support of other shareholders.

Earlier this year, Greenlight Capital's David Einhorn launched legal action against Apple to try to persuade it to launch a new high-yielding class of share he dubbed "iPrefs". Though Apple went on to increase its share buyback authorisation to $60bn, it is not clear how far that decision was swayed by Mr Einhorn, who has ended his campaign without any iPrefs being issued.

With Apple's stock bouncing from June's lows below $400 to within reach of $500 on Tuesday, support for more radical changes may be harder for Mr Icahn to come by, even though many support his idea for more buybacks.

"Investors were happy in the recent quarter that the share repurchase was so active," said Mr Piecyk. "Some of the pressure on the management team and the board is not as great as it used to be, when the stock was going down."