

Corporate Finance Lecture 2 - Capital Markets

- Financial Assets
- Financial Markets
- Market Efficiency
- Financial Analysis
- Leverage

FHTW Berlin
Winter 2008/2009
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Financial Assets / Securities

- Common stock (Shares / equities)
 - Unit of equity ownership in a corporation; this ownership is represented by a stock certificate, which names the company and the shareowner
 - Authorized shares vs. shares outstanding
- Bond
 - Any interest-bearing security, that obligates the issuer to pay the bondholder a specified sum of money (at specific time intervals), and to repay the principal amount of the loan at maturity
 - The owner of bearer bonds presents bond coupons to be paid interest
 - The owner of registered bonds appears on the records of the issuer
 - Secured vs. unsecured bonds (= debentures)
 - Convertible bond (à exchange for other securities in the future)
 - Eurobonds (bond issue denominated in a specific currency à e.g. Eurodollar)
 - Government bonds (gilts, treasury bonds, ...)
- Options (calls and puts)
- Futures
- ...



Financial markets

- Why are corporate financial managers interested in financial markets?
- Companies are reliant on the financial markets for raising funds and for the valuation of the enterprise in those markets (see example next page)
 - Companies will use the markets to deploy the funds entrusted by the investors
 - The stock market as primary and secondary market
 - primary: to raise new capital through the issue of a security (share or bond)
 - secondary: once shares / bonds are issued they can be sold and traded on the stock exchange
 - Market places: NYSE, NASDAQ (National Association of Securities Dealers Automated Quotations System), LSE, Frankfurter Börse, XETRA, HKEx (Hong Kong Exchanges & Clearing Ltd.), Borsa Italiana, ...
 - Rating Agencies: evaluation of securities investment risk (e.g. Moody's, Standard & Poor's)

A firm's market value

Let Miller.inc be a listed (LSE: quoted) company on the NYSE

Share price October 1st 2008: 20\$

Shares outstanding: 20 Mio.

à Value of Miller Corporation as per October 1st 2008:

$$20.000.000 * 20\$ = 400 \text{ Mio. \$}$$

Assume further Miller Corporation has debt in the order of 100 Mio.\$ in the form of 5% bonds traded at a price of 920\$ for a 1000\$ face value and no further debt

à Value of Miller as per October 1st 2008:

$$400 \text{ Mio. \$} + (100 \text{ Mio. \$} * 920 / 1000) = 492 \text{ Mio. \$}$$

We call that the "market capitalization" of Miller Corporation

Why share price matters to the company

→ Companies care about their share prices (even though the share price does not affect directly the firm's operations) for several reasons:

- new cash is to be raised: the higher the share price, the fewer shares have to be sold – the better off are the existing shareholders (why ? what about dividends ?)
- the managers performance will be linked directly or indirectly to the share price (agency theory)

(Capital) Market Efficiency

The six lessons of market efficiency (Brealey/Myers, Principles of Corporate Finance, 7/e)

1. Markets have no memory: any sequence of past (stock)price changes contains no information about future changes
2. Trust market prices: in an efficient market, there is no way for most investors to achieve consistently superior rates of return
3. Read the entrails: prices (stock / bond) impound all available information – example: if the firm's bonds are offering a much higher than average yield, one can deduce that the firm is most probably in trouble
4. There are no financial illusions: investors are unromantically concerned with the firm's cash flows
5. The do-it-yourself alternative: investors will not pay others for what they can do equally well themselves (e.g. diversify, create leverage)
6. Seen one stock, seen them all: stocks should be almost perfect substitutes (such as similar brands of coffee)

Financial Analysis

Financial Analysis - what it is and why we need it:

- Understanding the past is a necessary prelude to contemplating the future
- We use financial data to analyze a firm's overall performance and assess its current financial standing
- Measure the company's performance compared to its competitors and/or the industry average
- Sources:
 - Balance sheet
 - Income statement
 - Cash-flow Statement (Sources and uses of funds statement)

Executive Paper Corporation

Balance Sheet

(figures in \$ millions)

ASSETS	Dec 2006	Dec 2007	Change
Current Assets			
Cash & securities	75,00	110,00	35,00
Receivables	433,10	440,00	6,90
Inventory	339,90	350,00	10,10
Total current assets	848,00	900,00	52,00
Fixed assets			
Property, plant, equipment	929,50	1.000,00	70,50
less accumulated depreciation	396,70	450,00	53,30
Net fixed assets	532,80	550,00	17,20
Total assets	1.380,80	1.450,00	69,20
LIABILITIES AND SHAREHOLDERS' EQUITY			
Current liabilities			
Debt due within 1 year	96,60	100,00	3,40
Payables	349,90	360,00	10,10
Total current liabilities	446,50	460,00	13,50
Long-term debt	425,00	450,00	25,00
Shareholders' equity	509,30	540,00	30,70
Total liabilities and Shareholders' equity	1.380,80	1.450,00	69,20

Income Statement

(figures in \$ millions)

Revenues	2.200,00
Costs	1.980,00
Depreciation	53,30
EBIT	<u>166,70</u>
Interest	42,50
Tax	49,70
Net income	<u>74,50</u>
Dividends	43,80
Retained earnings	<u>30,70</u>
Earnings per share	<u>5,26</u>
dividend per share	3,09

Sources and uses of funds

(figures in \$ millions)

Sources

Net income	74,50
Depreciation	53,30
Operating cash flow	127,80
Issues of long-term debt	25,00
Issues of equity	0,00
Total sources	152,80

Uses

Increase in net working capital	38,50
Investment in fixed assets	70,50
Dividends	43,80
Total uses	152,80

Statement of Cash Flows

Cash Inflows

Generation of funds in normal operations
Sale of plant and equipment Liquidation of long-term investment
Sale of bonds, common stock, preferred stock and other securities

Cash flows from operating activities *)



Cash flows from investing activities



Cash flows from financing activities



Add items 1,2 and 3 to arrive at net increase in cash

Cash Outflows

Expenditure of funds in normal operations
Purchase of plant and equipment Long-term investment
Retirement or purchase of bonds, common stock, and other securities Payments of cash dividends

*) The principal revenue-producing activities of the entity and other activities that are not investing or financing activities

Statement of Cash Flows

Cash Flow from Operating Activities

net income	74,50
plus depreciation	53,30
plus increase in payables	10,10
less increase in inventory	-10,10
less increase in receivables	-6,90
net cash flow from operating activities	<u>120,90</u>

Cash Flow from Investing Activities

acquisition of property, plant, equipment	-70,50
net cash outflow from investing activities	<u>-70,50</u>

Cash Flow from Financing Activities

Dividends to shareholders	-43,80
proceeds from short-term debt	3,40
proceeds from long-term debt	25,00
net cash used by financing activities	<u>-15,40</u>

cash&securities beginning of the year	75,00
increase / (decrease) in cash&securities	35,00
cash&securities end of the year	<u>110,00</u>

Financial Ratios

LEVERAGE		Executive Paper	Industry average
Debt ratio	<i>(long-term debt + value of leases) / (long-term debt + value of leases + equity)</i>	0,45	0,47
Debt-equity ratio	<i>long-term debt + value of leases) / equity</i>	0,83	0,87
Times interest earned (or Interest Cover)	<i>(EBIT + depreciation) / interest</i>	5,18	4,20

LIQUIDITY

Current ratio	current assets / current liabilities	1,96	1,70
Acid test ratio (Quick ratio)	(cash + short-term securities + receivables) / current liabilities	1,20	0,91
Cash ratio	(cash + short-term securities) / current liabilities	0,24	0,08

EFFICIENCY

Sales-to-Assets (Asset turnover ratio)	sales / average total assets	1,55	0,73
Days in inventory (Inventory turnover ratio)	average inventory / (cost of goods sold / 365)	63,59	45,20
Average collection period	average receivables / (sales / 365)	72,43	4,26

PROFITABILITY

Net profit margin	(EBIT - tax) / sales	5,32%	4,70 %
Return on Assets (ROA) <i>(Return on Investment (ROI))</i>	(EBIT - tax) / average total assets	8,27%	4,60 %
Return on equity (ROE)	earnings available for common stockholders / average equity	14,20%	3,70
Payout ratio	dividends / earnings	0,59	0,50

MARKET VALUE

Price-earnings ratio	stock price / earnings per share	9,50	19,40
Dividend yield	dividend per share / stock price	6,19%	2,20
Market-to-Book ratio	stock price / book value per share	1,31	1,50

The DuPont Formula

Donaldson Brown, an engineer with E.I. du Pont de Nemours and Co. (DuPont) developed a formula in 1919 which is still used today to analyze and understand the factors which impact return on investment.

$$ROA = (EBIT - tax) / assets = (sales / assets) * ((EBIT - tax) / sales)$$

Sales-to-assets ratio

Net profit margin

$$ROE = (EBIT - tax - interest) / equity = (assets / equity) * (sales / assets) * ((EBIT - tax) / sales) * ((EBIT - tax - interest) / (EBIT - tax))$$

Leverage ratio

Sales-to-assets ratio

Net profit margin

"debt burden"

This formula, on a stand-alone basis, provides insight as to how a company can improve its ROE. That is, the company can improve ROE in four primary ways:

1. by improving its net profit margins and/or
2. by improving its turnover of assets (i.e., by achieving equivalent sales \$ with less assets \$) and/or
3. by increasing its leverage
4. By decreasing the debt burden (which measures the extent to which profits are reduced by interest payments)

Estimating the default risk

times interest earned, interest cover

$$(i) \text{ times interest earned} = \frac{EBIT}{\text{debt interest p.a.}}$$

$$(ii) \text{ times interest earned} = \frac{EBIT + \text{non-cash charges}}{\text{debt interest p.a.}}$$

Reasoning behind (ii): there are major non-cash flows involved in the enterprise, but the whole purpose of the depreciation provision is to maintain the capital stock !!!

à Therefore (i) is the better formula !!!

... Estimating the default risk

burden coverage

$$\text{burden coverage} = \frac{\text{EBIT} + \text{non-cash charges} + \text{lease payments}}{\text{debt interest p.a.} + \text{sinking fund before tax} + \text{lease payments}}$$



$$\text{sinking fund before tax} = \text{sinking fund} / (1 - \text{tax rate})$$

A sinking fund provision is a pool of money set aside by a corporation to help repay a bond issue.

Financial Leverage

- The cost of capital is a hurdle rate for capital budgeting decisions !
- It depends on the business risk of the firm's investment opportunities - the risk of a common stock reflects the risk of the real assets held by the firm ! à **business risk**
- Shareholders bear financial risk when debt gets involved
- Borrowing creates **financial leverage**
- Financial leverage does not affect the risk or the expected returns on the firm's assets (these have not changed assuming that debt is invested in same/similar real assets)
- Financial leverage does push up the risk (à **financial risk**) of the common stock and lead the stockholders to demand a corresponding higher return

Capital Structure

- Companies finance their long-term operations primarily through two sources of capital - debt and equity.
- One of the most important financing decisions a company makes is the proportion of debt to owner's equity in the company's **capital structure**.
- Summary measures of a company's capital structure include the company's debt to equity ratio (D/E) and debt to total capital ratio (D/(D+E)).
- Interest and principal payments on debt must be paid from operations before any payments can be distributed to equity holders (in the form of dividends or stock buy-backs).
- Therefore, the interest and principal which must be paid on debt are considered **fixed-costs** of operations.

Capital structure and expected return

r := return on capital (= D(ebt) + E(quity))

à $r * (D + E)$ goes to the shareholders

i := interest rate on D(ebt)

à $i * D$ is the fixed debt payment

r_e := return on equity

We can now calculate the return on Equity by the equation:

$$r_e * E = r * (D + E) - i * D$$

$$\text{à } r_e = r + (r - i) * L \quad \text{with } L := (D / E) \text{ denoting the Leverage}$$

Financial Leverage – Example

$$r := 15 \%$$

$$D := 1.500.000,00 \$$$

$$E := 500.000,00 \$$$

$$i := 8 \%$$

$$L = 1.500.000,00 / 500.000,00 = 3,0$$

$$\begin{aligned} \Rightarrow r_e &= r + (r - i) \times L \\ &= 15\% + (15\% - 8\%) \times 3,0 = 36\% \end{aligned}$$

Assume D to be 2.500.000,00 \$, i.e. $L = 5,0$, then

$$r_e = 50\%$$

Further conclusions

The capital budgeting (investment) decision may be separated from the finance decision:

- Employment of debt does not affect the business risk
- Investors expect a return on capital from an investment in the order of their personal “hurdle rate”
- If debt is applied they demand a return higher than their “hurdle rate” (because the stock gets riskier)
- As long as the debt burden can be repaid from excess returns the finance decision has no effect on the investment decision
- How the generated cash-inflows from investment are distributed to the investors is of no relevance to the investment