

Finance Theory II (15.402)

CORPORATE FINANCE



Finance Theory II (15.402) – Spring 2003 – Dirk Jenter

Corporate Finance: Assets and Liabilities

Balance Sheet of P&G, as of 6/30/1999, in \$Millions

Assets			Liabilities		
Current assets	11,358	35%	Current liab.	10,761	34%
Net fixed aseets	12,626	39%	Long-term liab.	9,294	29%
Other long-term assets	8,129	25%	Equity	12,058	38%
Total assets	32,113		Total liabilities	32,113	

Balance Sheet of Manufacturing Sector as of 1998Q4, in \$Billions

Assets			Liabilities		
Current assets	1,700	39%	Current liab.	1,246	28%
Net fixed aseets	1,572	36%	Long-term liab.	1,515	34%
Other long-term assets	1,132	26%	Equity	1,643	37%
Total assets	4,404		Total liabilities	4,404	



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The Liability Side (RHS): Financing

- **“Financing”**: First, focus on liability side of Balance Sheet taking the firm’s assets as a given: *How to finance the firm’s assets? Can we create value on the RHS?*
- How can we forecast how much funding we need?
- Should we finance those funding needs with:
 - Debt?
 - Equity?
 - Other sources?
- If we have enough internally generated funds, what do we do with the excess?
- When should we raise funds from the capital markets?



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The Asset Side (LHS): Valuation

- **“Valuation”**: Then focus on how to maximize the value of the assets, *taking into account their financing. How to create value on the LHS.*
- How do we evaluate a corporate investment project, e.g.,
 - new plant and equipment
 - market entry
- How should we compare:
 - payoffs today vs. down the road?
 - projects with different risks?
- How do we value
 - an established company? a start-up?
 - a merger?



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Our Approach

What we will do

- Acquire a set of **general tools** that are crucial to sound business decisions by:
 - Financial managers
 - General managers
- Apply and confront them to a number of real business cases.
 - Usefulness
 - Limitations

What we won't do

- Pretend to be experts in any industry, financial or other.
- Discuss many institutional aspects in detail.
- Discuss in detail stuff you could learn just as well reading a book or an article (see "readings").



Corporate Finance – Section A

- Lectures twice per week
- Texts:
 - Brealey & Myers, ***Principles of Corporate Finance***, 7th edition,
 - Higgins, ***Analysis for Financial Management***, 7th edition,
 - Case and Readings Packet
- Professor: Dirk Jenter



Corporate Finance – Section B

- Lectures twice per week
- Texts:
 - Brealey & Myers, *Principles of Corporate Finance*, 7th edition,
 - Higgins, *Analysis for Financial Management*, 7th edition,
 - Case and Readings Packet
- Professor: Katharina Lewellen



Course Requirements

- Class Participation (10%)
 - Come prepared to discuss cases
 - Quality more important than quantity (!)
 - Willingness to participate as important as participation
 - Introduce background readings into the discussion
- Case Memoranda (30%)
 - A professional memo to the decision maker
 - Teams of three or four people
 - Hand in all write-ups, except two of your choice
 - Careful: Some cases are required!
 - Two pages (plus exhibits)
- Midterm (30%)
- Final (30%)



Case Memoranda

- Memoranda should be
 - Clearly written and professional
 - Handed in for all of the cases except two of your choice
 - Two pages (not counting charts and tables), Double spaced
 - Font of 11 or 12
 - Teams of three or four students
 - Hand in one copy per team
 - You may not work with students not on your team
 - One & two person teams are discouraged
 - Wilson (I & II) count as one case
 - Wilson, MCI, Dixon, and Ameritrade are required
 - Make sure you turn in 10 memoranda!



The Big Picture:

- | | | | | | | | | | |
|--|------------------|-----|----------------------|-----|---------------|-----|-----------------------|-----|---|
| <p>Lectures (12)</p> <ul style="list-style-type: none"> • Text: Brealey and Myers + Higgins • Notes on the web before class (+ in class) <p>Cases (12)</p> <ul style="list-style-type: none"> • 10 Case write ups: 1-2 page write-ups • Notes on the web after class (+ in class) • Class participation is critical <p>Grades, etc.</p> <table border="0"> <tr> <td>• Case write-ups</td> <td>30%</td> </tr> <tr> <td>• Midterm (in class)</td> <td>30%</td> </tr> <tr> <td>• Final (TBA)</td> <td>30%</td> </tr> <tr> <td>• Class participation</td> <td>10%</td> </tr> </table> | • Case write-ups | 30% | • Midterm (in class) | 30% | • Final (TBA) | 30% | • Class participation | 10% | <ul style="list-style-type: none"> • Feb 6/11 • Feb 13 • Feb 20 • Feb 25 • Feb 27 • Mar 4 • Mar 6 • Mar 11 • Mar 13 <p>Part I: FINANCING</p> <p>Case: Wilson Lumber
Lecture: Capital Structure 1
Lecture: Capital Structure 2
Case: UST Inc.
Case: Massey Ferguson
Lecture: Capital Structure 3
Case: MCI Communications
Financing Review
Case: Intel Corp., 1992</p> <p>Part II: VALUATION</p> <p>Lecture: Free Cash Flows
Case: Ameritrade
Lecture: WACC and APV
Case: Dixon
Case: Diamond Chemicals
Lecture: Real Options
Case: MW Petroleum
Lecture: Valuing a Company
Case: Cooper Industries
Case: Southland</p> <p>Topics</p> <p>Hedging & Risk Management
Corporate Governance
Course Wrap-up</p> <ul style="list-style-type: none"> • Apr 1 • Apr 3 • Apr 8 • Apr 10 • Apr 15 • Apr 17 • Apr 24 • Apr 29 • May 1 • May 6 <ul style="list-style-type: none"> • May 8 • May 13 • May 15 |
| • Case write-ups | 30% | | | | | | | | |
| • Midterm (in class) | 30% | | | | | | | | |
| • Final (TBA) | 30% | | | | | | | | |
| • Class participation | 10% | | | | | | | | |



The Big Picture: Part I Financing

A. Identifying Funding Needs

- Feb 6 Case: Wilson Lumber 1
- Feb 11 Case: Wilson Lumber 2

B. Optimal Capital Structure: The Basics

- Feb 13 Lecture: Capital Structure 1
- Feb 20 Lecture: Capital Structure 2
- Feb 25 Case: UST Inc.
- Feb 27 Case: Massey Ferguson

C. Optimal Capital Structure: Information and Agency

- Mar 4 Lecture: Capital Structure 3
- Mar 6 Case: MCI Communications
- Mar 11 Financing Review
- Mar 13 Case: Intel Corporation



The Case of the Unidentified Industries



Advertising Agency
Computer Software Developer
Health Maintenance Org.
Retail Drug Chain

Airline
Department Store Chain
Meat Packer
Retail Grocery Chain

Commercial Bank
Electric & Gas Utility
Pharmaceutical Manufacturer

Line		A	B	C	D	E	F	G	H	I	J	K
Balance Sheet Percentages												
#1	Cash and marketable securities	5	12	2	1	4	4	3	77	9	67	19
2	Account receivables	85	55	4	15	7	6	4	7	28	9	13
3	Inventories	0	0	1	24	43	0	22	0	13	2	12
4	Other current assets	1	4	2	2	4	6	2	3	3	2	6
5	Plant and equipment (net)	2	7	77	55	37	71	41	9	35	17	48
6	Other assets	7	23	15	3	5	13	29	4	13	2	1
7	Total assets	100	100	100	100	100	100	100	100	100	100	100
8	Notes payable	62	3	0	2	0	4	2	0	0	0	7
9	Accounts payable	18	63	3	17	18	5	13	32	15	6	5
10	Accrued taxes	2	2	0	1	1	0	1	3	6	6	2
11	Other current liabilities	0	0	4	9	17	17	12	2	13	5	8
12	Long-term debt	7	6	29	38	0	40	29	0	19	0	15
13	Preferred stock	4	8	21	5	10	17	14	1	6	0	1
14	Other liabilities	2	0	5	3	0	0	0	0	0	0	0
15	Capital stock and capital surplus	2	10	11	1	3	12	5	11	24	28	16
16	Retained earnings	4	7	28	23	51	5	24	51	18	55	46
17	Total liabilities and stockholder equity	100	100	100	100	100	100	100	100	100	100	100
Selected Financial Data												
18	Current assets/current liabilities	1.11	1.03	1.31	1.46	1.59	0.63	1.1	2.35	1.58	4.72	2.31
19	Cash, marketable securities and accounts receivable/current liabilities	1.1	0.97	0.98	1.4	1.49	0.4	1.04	2.28	1.5	4.59	2.03
20	Inventory turnover (X)	NA	NA	16.7	5.6	5.2	NA	8.6	NA	47.6	7.5	2
21	Receivables collection period	3.278	381	30	31	8	27	6	13	16	37	74
22	Total debt/total assets	0.69	0.1	0.29	0.4	0	0.44	0.31	0	0.19	0	0.22
23	Long-term debt/capitalization	0.09	0.24	0.4	0.57	0	0.66	0.48	0	0.32	0	0.18
24	Net sales/total assets	0.095	0.523	0.464	1.822	3.175	0.828	2.61	2.032	6.473	0.867	0.643
25	Net profit/net sales	0.141	0.047	0.115	0.02	0.031	0.014	0.019	0.131	0.015	0.247	0.106
26	Net profit/total assets	0.013	0.025	0.053	0.037	0.097	0.012	0.049	0.267	0.098	0.214	0.068
27	Total assets/net worth	14.1	5.84	2.31	3.81	1.85	5.77	3.43	1.62	2.39	1.21	1.61
28	Net profit/net worth	0.189	0.144	0.123	0.134	0.179	0.067	0.168	0.432	0.234	0.258	0.11



Industry Groups

- **Group 1:**
 - Advertising agency
 - Airline
 - Commercial bank
 - HMO
 - Electric and Gas Utility
- **Group 2:**
 - Department Store Chain
 - Retail Drug Chain
 - Retail Grocery Chain
 - Airline?
 - Meat Packer?
- **Group 3:**
 - Pharmaceutical Manufacturer
 - Software Developer?



Group 1

- Advertising Agency
- Airline
- Commercial Bank
- HMO
- Utility

Line	Balance Sheet Percentages	A	B	C	F	H
#1	Cash and marketable securities	5	12	2	4	77
2	Account receivables	85	55	4	6	7
3	Inventories	0	0	1	0	0
4	Other current assets	1	4	2	6	3
5	Plant and equipment (net)	2	7	77	71	9
6	Other assets	7	23	15	13	4
7	Total assets	100	100	100	100	100
8	Notes payable	62	3	0	4	0
9	Accounts payable	18	63	3	5	32
10	Accrued taxes	2	2	0	0	3
11	Other current liabilities	0	0	4	17	2
12	Long-term debt	7	6	29	40	0
13	Preferred stock	4	8	21	17	1
14	Other liabilities	2	0	5	0	0
15	Capital stock and capital surplus	2	10	11	12	11
16	Retained earnings	4	7	28	5	51
17	Total liabilities and stockholder equity	100	100	100	100	100
Selected Financial Data						
18	Current assets/current liabilities	1.11	1.03	1.31	0.63	2.35
19	Cash, marketable securities and accounts receivable/current liabilities	1.1	0.97	0.98	0.4	2.28
20	Inventory turnover (X)	NA	NA	16.7	NA	NA
21	Receivables collection period	3,278	381	30	27	13
22	Total debt/total assets	0.69	0.1	0.29	0.44	0
23	Long-term debt/capitalization	0.09	0.24	0.4	0.66	0
24	Net sales/total assets	0.095	0.523	0.464	0.828	2.032
25	Net profit/net sales	0.141	0.047	0.115	0.014	0.131
26	Net profit/total assets	0.013	0.025	0.053	0.012	0.267
27	Total assets/net worth	14.1	5.84	2.31	5.77	1.62
28	Net profit/net worth	0.189	0.144	0.123	0.067	0.432



Identified Industries in Group 1

- A Commercial Bank
- B Advertising Agency
- C Electric & Gas Utility
- F Airline
- H Health Maintenance Organization (H.M.O.)



Group 2

- Dpt. Store
- Drug Chain
- Grocery Chain
- Airline
- Meat Packer

	D	E	F	G	I
Balance Sheet Percentages					
Cash and marketable securities	1	4	4	3	9
Account receivables	15	7	6	4	28
Inventories	24	43	0	22	13
Other current assets	2	4	6	2	3
Plant and equipment (net)	55	37	71	41	35
Other assets	3	5	13	29	13
Total assets	100	100	100	100	100
Liabilities and Equity					
Notes payable	2	0	4	2	0
Accounts payable	17	18	5	13	15
Accrued taxes	1	1	0	1	6
Other current liabilities	9	17	17	12	13
Long-term debt	38	0	40	29	19
Preferred stock	5	10	17	14	6
Other liabilities	3	0	0	0	0
Capital stock and capital surplus	1	3	12	5	24
Retained earnings	23	51	5	24	18
Total liabilities and stockholder equity	100	100	100	100	100
Selected Financial Data					
Current assets/current liabilities	1.46	1.59	0.63	1.1	1.58
Cash, marketable securities and accounts receivable/current liabilities	1.4	1.49	0.4	1.04	1.5
Inventory turnover (X)	5.6	5.2	NA	8.6	47.6
Receivables collection period	31	8	27	6	16
Total debt/total assets	0.4	0	0.44	0.31	0.19
Long-term debt/capitalization	0.57	0	0.66	0.48	0.32
Net sales/total assets	1.822	3.175	0.828	2.61	6.473
Net profit/net sales	0.02	0.031	0.014	0.019	0.015
Net profit/total assets	0.037	0.097	0.012	0.049	0.098
Total assets/net worth	3.61	1.85	5.77	3.43	2.39
Net profit/net worth	0.134	0.179	0.067	0.168	0.234



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Identified Industries in Group 2

- D Department Store
- E Retail Drug Chain
- F Airline
- G Retail Grocery Chain
- I Meat Packer



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Group 3

- Pharmaceutical Manufacturer
- Software Developer

Line	Balance Sheet Percentages	J	K
#1	Cash and marketable securities	67	19
2	Account receivables	9	13
3	Inventories	2	12
4	Other current assets	2	6
5	Plant and equipment (net)	17	48
6	Other assets	2	1
7	Total assets	100	100
8	Notes payable	0	7
9	Accounts payable	6	5
10	Accrued taxes	6	2
11	Other current liabilities	5	8
12	Long-term debt	0	15
13	Preferred stock	0	1
14	Other liabilities	0	0
15	Capital stock and capital surplus	28	16
16	Retained earnings	55	46
17	Total liabilities and stockholder equity	100	100
	Selected Financial Data		
18	Current assets/current liabilities	4.72	2.31
19	Cash, marketable securities and accounts receivable/current liabilities	4.59	2.03
20	Inventory turnover (X)	7.5	2
21	Receivables collection period	37	74
22	Total debt/total assets	0	0.22
23	Long-term debt/capitalization	0	0.18
24	Net sales/total assets	0.867	0.643
25	Net profit/net sales	0.247	0.106
26	Net profit/total assets	0.214	0.068
27	Total assets/net worth	1.21	1.61
28	Net profit/net worth	0.258	0.11



The Identified Industries

- | | | |
|-----|------------------------|---------------------|
| • A | Commercial Bank | Citicorp |
| • B | Advertising Agency | Interpublic |
| • C | Electric & Gas Utility | Consolidated Edison |
| • D | Department Store Chain | Dayton-Hudson |
| • E | Retail Drug Chain | Walgreen |
| • F | Airline | AMR Corp. |
| • G | Retail Grocery Chain | American Stores |
| • H | H.M.O. | U.S. Healthcare |
| • I | Meat Packers | IBP, Inc. |
| • J | Software Developer | Microsoft |
| • K | Pharmaceutical Manuf. | Novo Nordisk |



Any Comments?

Line		A	B	C	D	E	F	G	H	I	J	K
	Balance Sheet Percentages											
#1	Cash and marketable securities	5	12	2	1	4	4	3	77	9	67	19
2	Account receivables	85	55	4	15	7	6	4	7	28	9	13
3	Inventories	0	0	1	24	43	0	22	0	13	2	12
4	Other current assets	1	4	2	2	4	6	2	3	3	2	6
5	Plant and equipment (net)	2	7	77	55	37	71	41	9	35	17	48
6	Other assets	7	23	15	3	5	13	29	4	13	2	1
7	Total assets	100	100	100	100	100	100	100	100	100	100	100
8	Notes payable	62	3	0	2	0	4	2	0	0	0	7
9	Accounts payable	18	63	3	17	18	5	13	32	15	6	5
10	Accrued taxes	2	2	0	1	1	0	1	3	6	6	2
11	Other current liabilities	0	0	4	9	17	17	12	2	13	5	8
12	Long-term debt	7	6	29	38	0	40	29	0	19	0	15
13	Preferred stock	4	8	21	5	10	17	14	1	6	0	1
14	Other liabilities	2	0	5	3	0	0	0	0	0	0	0
15	Capital stock and capital surplus	2	10	11	1	3	12	5	11	24	28	16
16	Retained earnings	4	7	28	23	51	5	24	51	18	55	46
17	Total liabilities and stockholder equity	100	100	100	100	100	100	100	100	100	100	100
	Selected Financial Data											
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19	Cash, marketable securities and accounts receivable/current liabilities	1.1	0.97	0.98	1.4	1.49	0.4	1.04	2.28	1.5	4.59	2.03
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23	Long-term debt/capitalization	0.09	0.24	0.4	0.57	0	0.66	0.48	0	0.32	0	0.18
24	Net sales/total assets	0.095	0.523	0.464	1.822	3.175	0.828	2.61	2.032	6.473	0.867	0.643
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27	Total assets/net worth	14.1	5.84	2.31	3.61	1.85	5.77	3.43	1.62	2.39	1.21	1.61
28	Net profit/net worth	0.189	0.144	0.123	0.134	0.179	0.067	0.168	0.432	0.234	0.258	0.11



Leverage

	Industry	Firm	Total Debt/Total Asset		
			Industry Mean	Industry Std Dev	Industry Median
American Airlines	Airlines	0.44	0.32	0.20	0.31
Dayton Hudson	Department Stores	0.40	0.29	0.17	0.30
American Stores	Grocery Stores	0.31	0.35	0.20	0.32
Consolidated Edison	Combination Utility Services	0.29	0.35	0.05	0.35
Novo Nordisk	Pharmaceuticals	0.22	0.24	0.92	0.08
IBP	Meat Products	0.19	0.31	0.24	0.30
Interpublic	Advertising Agencies	0.10	0.08	0.06	0.09
Walgreens	Drug Stores	0.00	0.24	0.18	0.27
Microsoft	Prepackaged Software	0.00	0.07	0.19	0.01
US Healthcare	HMOs	0.00	0.09	0.11	0.04



Wilson Lumber - Preliminaries

- *Pro Forma* statements are projections of the income statement and balance sheet.
- To project values, assumptions must be made. For example:
 - For Wilson, we make assumptions about Sales Growth and A/P
 - Often assume a historical average percent of sales (e.g., COGS are a fixed percent of sales)
 - Debt levels are sometimes assumed (e.g., debt ratio stays constant or new money raised is from debt)
 - Assumptions are made about dividends and repurchases
 - Balance sheet must balance!
 - If there is extra money, it can go to cash, dividends or repurchases
 - If money is needed, assume the firm raises cash through debt or equity offerings (In Wilson, assume it is from the Bank)



Pro Forma Statements

- Use financial ratios to help inform projections
 - Look at trends through time to see if you should use an historical average or not
 - If something changes dramatically, look for cause.
- The next classes include material on using financial ratios. But the information on the next overhead should help you with Wilson.



Ratio Analysis

- Types of ratios (Look at the definition not the name)
 - Operational Ratios
 - Days of Inventory = $365 \cdot (\text{Inv} / \text{COGS})$
 - Collection Period = $365 \cdot (\text{AR} / \text{Sales})$
 - Payables Period = $365 \cdot ((\text{AP} + \text{Trade Credit}) / \text{Purchases})$
 - Leverage Ratios
 - Liabilities/(Net Worth), Interest Coverage = $\text{EBIT} / \text{Interest}$
 - Profitability
 - Sales Growth -- $\Delta \text{Sales} / \text{Sales}(\text{Last Period})$
 - Gross Profit Margin = $(\text{Sales} - \text{COGS}) / \text{Sales}$
 - Net Profit Margin = $(\text{EBIT} - \text{Tax}) / \text{Sales}$
 - ROA, ROE, COGS/Sales



Next Time

- Wilson Case is due at the beginning of class
- We will discuss Wilson in the next two classes
- Read
 - BM Chapter 29
 - Optional resource: Chapters 2-3 of Higgins

