ENG M 401
Financial Management for Engineers

Mechanical Engineering

- Sources and uses of funds: Concepts & Example
- Concept of the statement of cash flow
- Cash flow entries

UNIVERSITY OF ALBERTA

The Concept of Sources and Uses of Funds:

- How much funds did we get, where did we get them from, and what did we use them for, are logical questions in understanding any business. By funds we mean *cash!*

- Like the income statement, this question only makes sense over a period of time. The period must be reasonable.

- Year over year or month over month changes in a balance sheet can tell us where funds came from, and where they go to.

Sources and Uses of Funds:

Mechanical Engineering

- Assets measure real things of value. An increase in an asset account is a use of funds (you had to have funds to get the extra assets). A decrease in an asset account is a source of funds.

"credit" "debit" "Double entries"

- Liabilities measure real obligations to pay someone else. An increase in a liability is a source of funds (i.e. you are borrowing more from someone else). A decrease in a liability is a use of funds.

- An increase in equity or retained earnings is a source of funds. Depreciation is a source of funds, since it is a non-cash expense.

Sources and Uses of Funds (2):

Period

B.S. — Income Statement + Retained Earnings — B.S. Time

Equity

- Two successive balance sheets are compared.
- Sources and uses always equal each other. If not, check for a sign error (i.e. application to a wrong column.

Reflect on the sources of funds: of the funds used, how much comes from debt versus operating activities (retained earnings and depreciation)?

Cash Cash

Summary of Account Changes Between Two Balance Sheets

	Increase	**Decrease**
Asset	Use of cash	Source of cash
Liability	Source of cash	Use of cash
Cumulative depreciation	Source of cash	Cumulative depreciation never decreases

exception

The Income Statement of Good / Bad Company

Mechanical Engineering

Income and Retained Earnings Statements for Goodco and Badco

($000)	This Year
Revenue	650
Warranty/bad debt	(-) 6
Net revenue	644
COGS Variable	(-) 320
Contribution margin	324
CM (%)	49.8
SG&A	0
All admin except dep. SG&A	(-) 220
Depreciation	(-) 70
Operating income	34
Other income	12
Net income	46
Retained earnings, start of year	125 +
Net earnings for the year	46
Less dividend paid	(-) 16
Retained earnings, end of year	155

The Last year's Balance Sheet of Good Company

Mechanical Engineering

Goodco Balance Sheets

($000)	Last Year	This Year	Source of funds	Use of funds
Assets				
Current Assets				
Cash	9	22		13
Receivables	95	120		25
Inventory	75	88		13
Prepaids	40	28	12	
Total current	219	258	(skip)	
Fixed Assets				
Cost (Purchase cost)	700	780		80
Less depreciation	140	210	70	
Net	560	570		
Total assets	779	828		

↑ current

↓ long-term

The Last year’s Balance Sheet of Good Company

Mechanical Engineering

			Source of funds	Use of funds
Liabilities				
Current Liabilities				
Short-term credit	51	44		7
Accounts payable	30	48	18	
Accrued expenses	25	9		16
Taxes payable	8	2		6
Current portion of long-term debt	20	20		
Total current	134	123		
Long-term debt	170	175	5	
Shareholders’ Equity				
Capital shares	350	375	25	
Retained earnings	125	155	30	
Total liabilities plus equity	779	828	Total	
Working capital	85	135	160	160
Working capital ratio	1.63	2.10		

The Last year's Balance Sheet of Bad Company

Identical to Goodco

($000)	Last Year	This Year	Source	Use
Assets				
Current Assets				
Cash	9	22		13
Receivables	95	120		25
Inventory	75	88		13
Prepaids	40	28	12	
Total current	219	258		
Fixed Assets				
Cost	700	820		120
Less depreciation	140	210	70	
Net	560	610		
Total assets	779	868		

The Last year's Balance Sheet of Bad Company

Mechanical Engineering

	Last	This	Source	Use
Liabilities				
Current Liabilities				
Short-term credit	51	234	183	
Accounts payable	30	48	18	
Accrued expenses	25	9		16
Taxes payable	8	2		6
Current portion of long-term debt	20	20	-	-
Total current	134	313		
Long-term debt	170	225	55	
Shareholders' Equity				
Capital shares	350	175		175
Retained earnings	125	155	30	
Total liabilities plus equity	779	868		
			Total 368	368
Working capital	85	−55		
Working capital ratio	1.63	0.82		

Same to Goodco

Goodco vs. Badco:

- Goodco and Badco have the same income statement for a one year period. This means that the operational side of their business is identical, i.e. the ability of the business to create value is identical.
- Goodco and Badco have the same balance sheet "last year", which means they start from the same position, i.e. they own the same things and drew the money from the same sources.
- Goodco and Badco have very different balance sheets "this year" because *Management decisions about the business were fundamentally different!*

Why Did Badco Fail, and How Can It Heal:

Mechanical Engineering

- Badco reduced its working capital by using short term debt to (1) reduce its share equity, while also paying (2) a dividend and investing in (3) new equipment. Above the line financing reduced below the line resources.
- Fiddling with receivables, inventory and payables is pointless: working capital won't change..

Current assets/ Liabilities

Badco illustrates why banks have covenants.

Statement of Cash Flow:

- Makes the "reflection" on the sources and uses of funds easier.

- Breaks funds flow into preset categories:
  - Operating Activities (includes non-cash working capital) such as depreciation – Accounts e.g. inventori...
  - Financing Activities (debt and equity) (Retained earnings)
  - Investing Activities
    fixed assets

- The balancing entry is cash. Note that "cash" includes positive and negative (short term borrowing) values. If a company has both, net these out. (net, negative)

Statement of Cash Flow (2):

- Operating Activities:
  - Net income is shown in full, not retained earnings!
  - Add back in depreciation and any other non-cash charge.
  - Add or subtract changes in *non-cash* working capital.
- Investing Activities:
  - Add/subtract asset acquisition cost and gain/loss on sale of *shares/investments* in other companies.
- Financing Activities:
  - Add/subtract equity injection or withdrawal.
  - Add/subtract new long term borrowing or repayment.
  - Subtract dividends paid.

usually small

see the slide later

debt

OA plus FA plus IA equals change in net cash.

Statement of Cash Flow (3):

- To complete a Statement of Cash Flow, two Balance Sheets (start of period and end of period) and the Income Statement for the intervening time period must be used.

- The SCF gives net cash position; the breakdown between cash and short term borrowings, if a company has both, is arbitrary. — Auto - balanced derived from other items

The Statement of Cash Flow answers the question “where did our money come from, and where did it go”.

What Do We Look for on the SCF?

- Profitable? Steady profits?
- How much cash is coming from operations?
- Non cash WC growing? Justified by sales (IS)?
- Dividend? Steady? What fraction of income?
- Investment relative vs to depreciation:
  - Larger (hence growing)
  - ~Same (stable) + Good
  - Smaller (blowdown of assets)
- Financing
  - Locking in or paying back long term debt? +
  - Issuing or buying back shares? Common or preferred?

Statement of Cash Flow:

Sources / uses

- Non-cash working capital changes
  - Look into all the "Current" accounts in the starting and ending balance sheets for the financial period, i.e. the current assets and current liabilities
  - Exclude "cash", "S. T. Credit Line" and "Current portion of the L T Debt".
  - Work out the "Source of cash" and "Use of Cash" entries
  - Sum the Changes up into the total "Source" and "Use"
  - The "Non-cash WC changes" are represented as the "Source" minus "Use" amounts

The SCF Lets Us Screen Investments:

Mechanical Engineering

- Steady profitability, slow growth, high dividend payout ratio is appealing to older investors who need cash yield from investments to live.
- Dividends are not typically important to young investors, who don't need the cash and are focused on long term growth.
- Where capital investment is high, retained earnings is often the source. "Stick with me, we'll be really big in 20 years" has more appeal to a 30 year old than an 80 year old.
- Earnings variability requires a tolerance for risk, because it usually gets reflected in share price.

- Using the statement of cash flow to screen investment
- Aligning management decisions with owners' interests
- Role of cash

Statement of Cash Flow:

Mechanical Engineering

Goodco and Badco Statement of Cash Flow

($000)	Goodco	Badco
Cash Derived from Operating Activities		
Net income for the year	46	46
Depreciation and non-cash items	70	70
Changes in non-cash working capital	–30	–30
Total	86	86
Cash Used for Investing Activities		
Purchase of fixed assets	–80	–120
Loss or gain on sale of assets	0	0

Statement of Cash Flow:

Total	–80	–120
Cash Derived from Financing Activities		
Changes in equity	25	–175
Changes in long-term debt	5	55
Less dividends paid	–16	–16
Total	14	–136
Increase (decrease) in cash	20	–170
Net cash, beginning of year	–42	–42
Net cash, end of year	–22	–212
Increase (decrease) in cash	20	–170

Operational vs. Financial Management:

- All businesses require that management address two areas:
  - Operational health: does our underlying business activity create value independent of how we finance the business?
  - Financial health: have we raised money in a way that can sustain the business?
- The income statement is the primary source of evidence of operational health. Contribution margin is a critical measure.
- The balance sheet is the primary source of evidence of financial health.
- The Statement of Cash Flow links these two.

The Cash Flow Statement

- Three types of activities:

1. **Operating Activities**: include operating cash flows related to the production and sales of goods or services. All non-cash expenses (such as depreciation) are added back to net income. Any adjustments in working capital are also included.
2. **Investing Activities**: cash flow transactions related to investment activities, which included purchasing new fixed assets, selling old equipment, and buying and selling financial assets.
3. **Financing Activities**: cash transactions related to financing any capital assets used in business. Activities include the amount of borrowing and paying of existing debt.

Consolidated Statement of Cash Flows: Research In Motion

Mechanical Engineering

Operating Activities

Financing Activities

Investing Activities

	For the three months ended February 28, 2009	For the year ended March 1, 2009
Cash flows from operating activities		
Net income	$ 518,259	$ 1,892,616
Items not requiring an outlay of cash:		
Amortization	116,125	327,896
Deferred income taxes	3,291	(36,623)
Income taxes payable	(456)	(6,897)
Stock-based compensation	8,900	38,100
Other	5,598	5,867
Net changes in working capital items	**(360,975)**	**(769,114)**
Net cash provided by operating activities	**290,742**	**1,451,845**
Cash flows from financing activities		
Issuance of common shares	2,183	27,024
Excess tax benefits from stock-based compensation	(52)	12,648
Repayment of debt	(14,061)	(14,305)
Net cash provided by financing activities	**(11,930)**	**25,367**
Cash flows from investing activities		
Acquisition of long-term investments	(67,326)	(507,082)
Proceeds on sale or maturity of long-term investments	127,048	431,713
Acquisition of capital assets	(251,932)	(833,521)
Acquisition of intangible assets	(221,964)	(687,913)
Business acquisitions	(48,425)	(48,425)
Acquisition of short-term investments	(250,018)	(917,316)
Proceeds on sale or maturity of short-term investments	170,178	739,021
Net cash used in investing activities	**(542,439)**	**(1,823,523)**
Effect of foreign exchange loss on cash and cash equivalents	(2,541)	(2,541)
Net decrease in cash and cash equivalents for the period	**(266,168)**	**(348,852)**
Cash and cash equivalents, beginning of period	**1,101,714**	**1,184,398**
Cash and cash equivalents, end of period	**$ 835,546**	**$ 835,546**