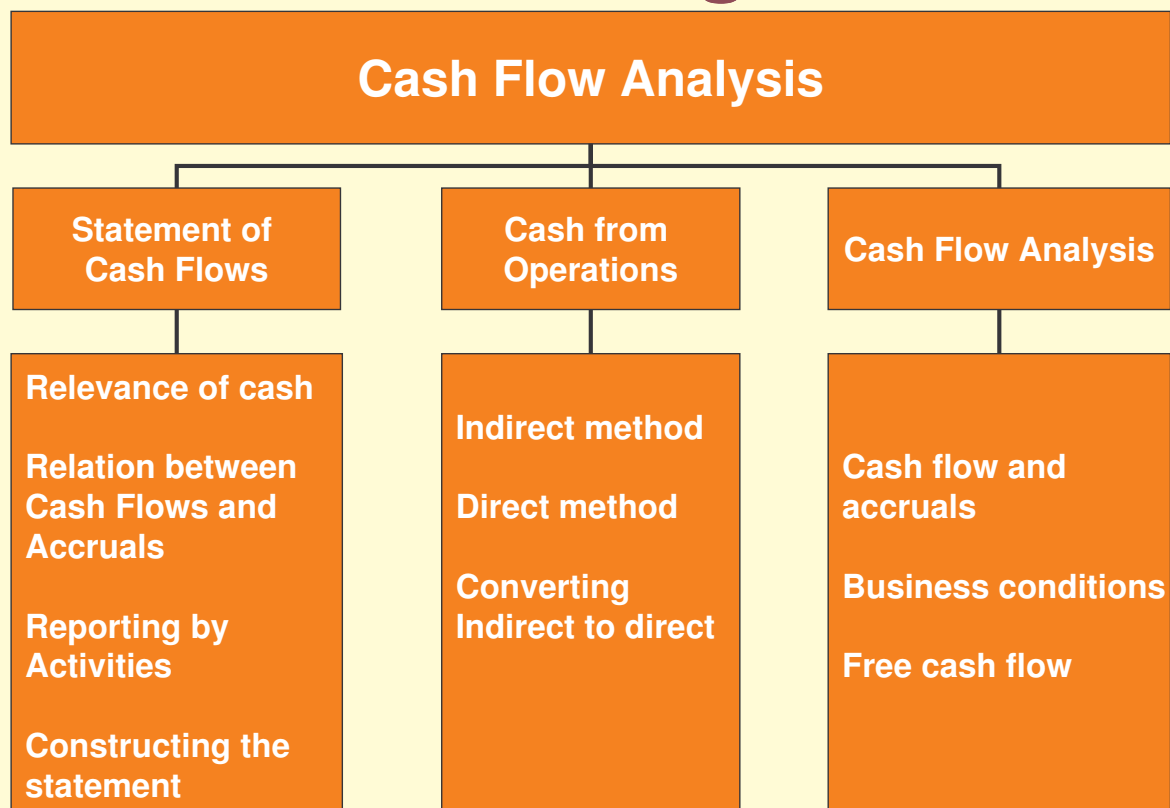


# Cash Flow Analysis

4

Lecture

## Lecture 4: Agenda

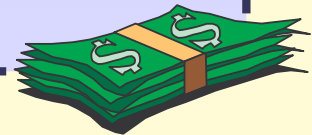


# Statement of Cash Flows

## Relevance of Cash Flows

**Cash Defined** -- refers to cash and cash equivalents.

**Cash equivalents** are short-term, highly liquid investments that are (1) readily convertible to known amounts of cash, and (2) near maturity (typically within 3 months) with limited risk of price changes due to interest rate shifts.



# Statement of Cash Flows

## Relevance of Cash Flows

Cash is the beginning and the end of a company's operating cycle.

Net cash flow is the end measure of profitability.

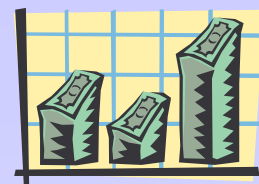
Cash repays loans, replaces equipment, expands facilities, and pays dividends.

Analyzing cash inflows and outflows helps assess liquidity, solvency, and financial flexibility.

**Liquidity** is the nearness to cash of assets and liabilities.

**Solvency** is the ability to pay liabilities when they mature.

**Financial flexibility** is the ability to react to opportunities and adversities.



# Statement of Cash Flows

## Relevance of Cash Flows

The purpose of the **Statement of cash flows (SCF)** is to provide information on cash inflows and outflows of a period. It helps address questions such as:

- How much cash is **generated** from or used in operations?
- What expenditures are made with cash from operations?
- How are **dividends paid** when confronting an operating loss?
- What is the source of cash for **debt payments**?
- What is the source of cash for redeeming preferred stock?
- How is the **increase in investments financed**?
- What is the **source** of cash for new plant assets?
- Why is **cash lower** when income increased?
- What is the **use of cash** from new financing?

## Accruals--The Cornerstone

Net  
Income

=

Operating  
Cash Flow

+

Accruals

# Accruals--The Cornerstone

## Relation between Cash Flows and Accruals

- Accrual and cash accounting **differ** primarily because of **timing differences** in recognizing cash flow consequences of business activities and events
- **Over the life of a company**, cash flows and accrual income are equal, because the time and matching problems are resolved.
- **Operating Cash Flow**: refers to cash from a company's ongoing operating activities.
- **Free cash flow**: reflect the added effects of investments and divestments in operating assets (cash that is free to be paid to debt and debit holders)
- **Net cash flow**: is the change in the cash amount balance

# Accruals--The Cornerstone

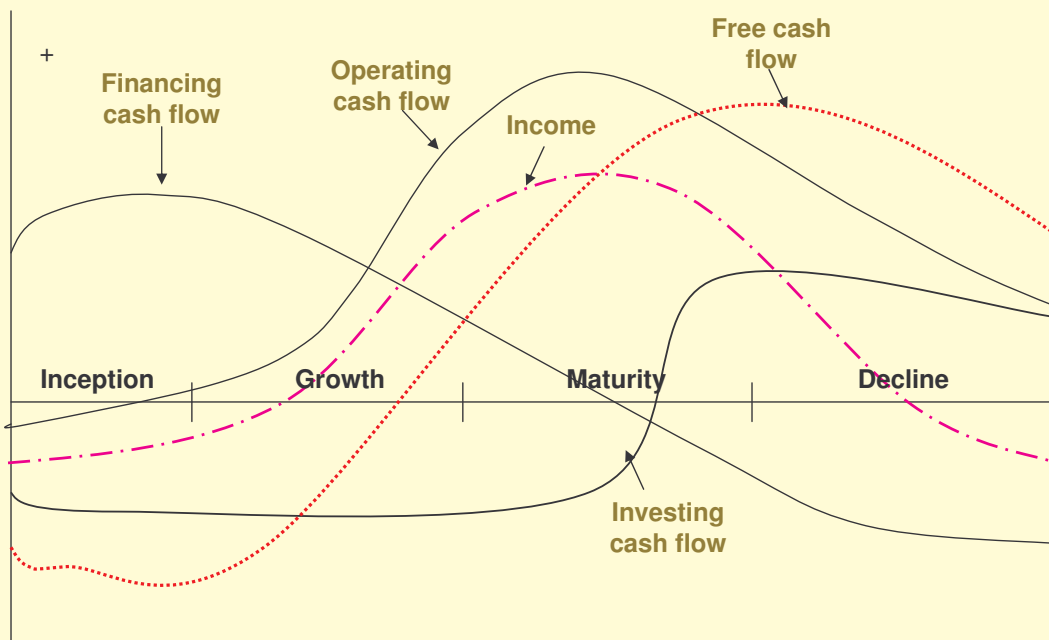
## Relation between Cash Flows and Accruals

$$\begin{array}{rcl} & \text{Operating cash flow (OCF)} & \\ -/+ & \text{Cash investment \& divestment in operating assets} & \\ = & \text{Free cash flow (FCF)} & \\ +/- & \text{Financing cash flows (including investment \& divestment in financing assets)} & \\ = & \text{Net cash flow (NCF)} & \end{array}$$



# Accruals--The Cornerstone

Relevance of Cash Flows and Income over a Company's Life Cycle



## Statement of Cash Flows

Reporting by Activities

Statement of cash flows reports receipts and payments by operating, financing, and investing activities

**Operating activities** are the earning-related activities of a company.

**Investing activities** are means of acquiring and disposing of noncash assets.

**Financing activities** are means of contributing, withdrawing, and servicing funds to support business activities.



# Statement of Cash Flows

## Reporting Net Cash Flows from Operations

### Indirect Method

-Net income is adjusted for non-cash income (expense) items and accruals to yield cash flow from operations

### Direct Method

-Each income item is adjusted for its related accruals

\*Both methods yield identical results-only the presentation format differs.

The format for computing net cash provided by investing and financing activities is the same for both methods.

# Statement of Cash Flows

## Indirect Method

### Net Cash Flows from Operations

**Net Income**

**+ Depreciation and amortization expense**

**-/+ Gains (losses) on sales of assets**

**+/- Cash generated (used) by current assets & liabilities**

**Net cash flows from operating activities**

# Statement of Cash Flows

## Depreciation Add-Back

### Sales

Add Back	-	Expenses
	-	Depreciation and amortization expense
	+/-	Gains (losses) on sales of assets
<hr/>		
		Net Income
	→ +	Depreciation expense
	→ -/+	Gains (losses) on sales of assets
		+/- Cash generated (used) by current assets and liabilities
<hr/>		
		Net cash flows from operating activities

# Statement of Cash Flows

## Constructing the Statement

	Increase	Decrease
Assets	(Outflow)	Inflow
Liabilities	Inflow	(Outflow)

# Statement of Cash Flows

## Income vs. Cash Flows Example

Consider a \$100 sale on account

- (1) In period of sale, net income is increased by \$100 but no cash has been generated.

Net Income	100
Depreciation and amortization expense	0
Gains (losses) on sale of assets	0
Change in accounts receivable	(100)
Net Cash flow from operations	<u>0</u>

- (2) In period of collection no income is recorded.

Net Income	0
Depreciation and amortization expense	0
Gains (losses) on sale of assets	0
Change in accounts receivable	<u>100</u>
Net Cash flow from operations	100

# Statement of Cash Flows

## Steps in Constructing the Statement

- (1) Start with Net Income
- (2) Adjust Net Income for non-cash expenses and gains
- (3) Recognize cash inflows (outflows) from changes in current assets and liabilities
- (4) Sum to yield net cash flows from operations
- (5) Changes in long-term assets yield net cash flows from investing activities
- (6) Changes in long-term liabilities and equity accounts yield net cash flows from financing activities
- (7) Sum cash flows from operations, investing, and financing activities to yield net change in cash
- (8) Add net change in cash to the beginning cash balance to yield ending cash



# Statement of Cash Flows

## Constructing the Statement

<b>Gould Corporation</b>			
Comparative Balance Sheet			
As of December 31, Year 2			
	Year 2	Year 1	Absolute Value of Change
Cash	\$ 75,000	\$ 51,000	\$ 24,000
Receivables	48,000	39,000	9,000
Inventory	54,000	60,000	6,000
Prepaid expenses	6,000	9,000	3,000
Plant assets	440,000	350,000	90,000
Accumulated depreciation	(145,000)	(125,000)	20,000
Intangibles	51,000	58,000	7,000
	<u>\$ 529,000</u>	<u>\$ 442,000</u>	
Accounts payable	\$ 51,000	\$ 56,000	5,000
Accrued expenses	18,000	14,000	4,000
Long-term note payable	30,000	-	30,000
Mortgage payable	-	150,000	150,000
Preferred stock	175,000	-	175,000
Common stock	200,000	200,000	-
Retained earnings	55,000	22,000	33,000
	<u>\$ 529,000</u>	<u>\$ 442,000</u>	

<b>Gould Corporation</b>		
Income Statement		
For the Year Ended December 31, Year 2		
Sales		660,000
Cost of sales		(363,000)
Gross profit		<u>297,000</u>
Operating expenses		(183,000)
Depreciation & amortization		(35,000)
Gain on sale of asset		5,000
Net income		<u>\$ 84,000</u>

1. The company purchased a truck during the year at a cost of \$30,000 that was financed in full by the manufacturer.
2. A truck with a cost of \$10,000 and a net book value of \$2,000 was sold during the year for \$7,000. There were no other sales of depreciable assets.
3. Dividends paid during Year 2 are \$51,000

# Statement of Cash Flows

## Steps in Constructing the Statement

<b>Gould Corporation</b>			
Statement of Cash Flows			
For the Year Ended December 31, Year 2			
Net income		\$ 84,000	
Add (deduct):			
Depreciation & amortization expense		35,000	
Gain on sale of assets		(5,000)	
Accounts receivable		(9,000)	
Inventories		6,000	
Prepays		3,000	
Accounts payable		(5,000)	
Accrued expenses		4,000	
<b>Net cash flow from operating activities</b>			<b>\$ 113,000</b>
Purchase of equipment		(70,000)	
Sale of equipment		7,000	
<b>Net cash flow from investing activities</b>			<b>(63,000)</b>
Mortgage payable		(150,000)	
Preferred stock		175,000	
Dividends		(51,000)	
<b>Net Cash flow from financing activities</b>			<b>(26,000)</b>
Net increase in cash			24,000
Beginning cash			51,000
Ending cash			<u>\$ 75,000</u>

Note: assets costing \$30,000 were purchased during Year 2 and were financed in whole by the manufacturer.

# Cash From Operations

## Indirect Method for CFO

### Deriving Operating Cash Flows from Income for Gould.

<i>Item</i>	<i>Amount (in thousands)</i>	<i>Explanation</i>
Net income, accrual basis	\$ 84	Starting point of conversion
Add (deduct) adjustment to cash basis:		
Depreciation	35	Depreciation has no cash outflow.
Gain on sale of assets	(5)	Remove gain (because it is nonoperating)—cash inflow is cash from investing activities.
Increase in receivables	(9)	Cash flow from sales is <i>less</i> than accrual sales.
Decrease in inventories	6	Cash outflow for inventory <i>exceeds</i> accrual inventory cost included in cost of sales.
Decrease in pre-pays	3	Cash outflow occurred when prepaids were purchased-current expense is non-cash
Decrease in accounts payable	(5)	Cash outflows for purchases (included in cost of goods sold) is <i>less</i> than accrual purchases cost.
Increase in accrued expenses	4	Expense has been recognized but no cash paid yet.
	<u>\$113</u>	

# Statement of Cash Flows

## Reporting Net Cash Flows from Operations

### Indirect Method

-Net income is adjusted for non-cash income (expense) items and accruals to yield cash flow from operations

### Direct Method

-Each income item is adjusted for its related accruals

\*Both methods yield identical results-only the presentation format differs.

The format for computing net cash provided by investing and financing activities is the same for both methods.

# Cash From Operations

## Direct (or inflow-outflow) Method for CFO

1. Reports gross cash receipts and cash disbursement related to operations – essentially adjusting each income statement item from accrual to cash basis.
2. Reports total amounts of cash flowing in and out of a company from operating activities.
3. Offers most analysts a better format to readily assess the amount of cash inflows and outflows for which management has discretion.

# Statement of Cash Flows

## Constructing the Statement

<b>Gould Corporation</b>			
Comparative Balance Sheet			
As of December 31, Year 2			
	Year 2	Year 1	Absolute Value of Change
Cash	\$ 75,000	\$ 51,000	\$ 24,000
Receivables	48,000	39,000	9,000
Inventory	54,000	60,000	6,000
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Intangibles	51,000	58,000	7,000
	<u>\$ 529,000</u>	<u>\$ 442,000</u>	
Accounts payable	\$ 51,000	\$ 56,000	5,000
Accrued expenses	18,000	14,000	4,000
Long-term note payable	30,000	-	30,000
Mortgage payable	-	150,000	150,000
Preferred stock	175,000	-	175,000
Common stock	200,000	200,000	-
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Income Statement			
For the Year Ended December 31, Year 2			
Sales			660,000
Cost of sales			<u>(363,000)</u>
Gross profit			297,000
Operating expenses			(183,000)
Depreciation & amortization			(35,000)
Gain on sale of asset			5,000
Net income			<u>\$ 84,000</u>

1. The company purchased a truck during the year at a cost of \$30,000 that was financed in full by the manufacturer.
2. A truck with a cost of \$10,000 and a net book value of \$2,000 was sold during the year for \$7,000. There were no other sales of depreciable assets.
3. Dividends paid during Year 2 are \$51,000

# Cash From Operations

## Converting Indirect to Direct

### Gould Corporation Cash Flows from Operations (\$ thousands) For Year Ended December 31, Year 2

**Cash flows from operating activities:**

Cash receipts from customers [a]	\$651,000
Cash paid to suppliers [b]	(362,000)
Cash paid general, selling, and administrative expenses [c]	(176,000)
Net cash flows from operations	<u>\$113,000</u>

**Computations:**

[a] Sales of \$660,000 less increase in accounts receivables of \$9,000.

[b] Reminding that: *Purchase = COGS + E.I - B.I.:*  
Cost of goods sold of \$363,000 less decrease in inventories of \$6,000 (yields \$357,000)  
plus decrease in accounts payable of \$5,000 (yields \$362,000)

[c] General, selling, and administrative expenses of \$183,000,  
less decrease in prepaid expenses of 3,000,  
less increase in accrued expenses of 4,000.

# Cash From Operations

## Interpreting Accrual Income and Operating Cash Flow

Gould Corporation			
Comparison of Accrual and Cash Reporting			
	Income Statement	Operating Cash Flows	
Sales	\$ 660,000	\$ 651,000	Cash collections from customers
Gain on Sale of asset	5,000	-	
	665,000	651,000	Total cash collections
Cost of goods sold	(363,000)	(362,000)	Payments to suppliers
Operating expenses	(183,000)	(176,000)	Payments for expenses
Depreciation and amortization	(35,000)	-	
Net Income	<u>84,000</u>	<u>113,000</u>	Cash from operations

# Cash From Operations

## Inferences from analysis of CF

**A range of useful insights drawn from the analysis of CF:**

- Establishing the **major past sources of cash and their use** (common-size analysis can help)
- Appraising the quality of management's decisions over time:
  - where management **committed its resources**,
  - where it **reduced investments**,
  - where **additional cash was derived from**,
  - where **claims against the company were reduced**.
- Enabling to infer the **size, composition, pattern and stability of OCF**
- Explaining for the **variation in cash flow segmentation** (management's ability to redirect funds away from unprofitable opportunities to those of greater potential)
- Inferring **earning quality: assessment of future earnings potential implying demands for additional financing**

# Cash From Operations

## Business Conditions and Cash Flows

**While both successful and unsuccessful companies can experience problems with cash flows from operations, the reasons are markedly different.**

**We must interpret changes in operating working capital items in light of economic circumstances.**

**Inflationary conditions add to the financial burdens of companies and challenges for analysis.**

# Cash From Operations

## Specialized Cash Flow Ratios

**Cash Flow Adequacy Ratio** – Measure of a company's ability to generate sufficient cash from operations to cover capital expenditures, investments in inventories, and cash dividends:

$$\frac{\text{Three-year sum of cash from operations}}{\text{Three-year sum of expenditures, inventory additions, and cash dividends}}$$

**Cash Reinvestment Ratio** – Measure of the percentage of investment in assets representing operating cash retained and reinvested in the company for both replacing assets and growth in operations:

$$\frac{\text{Operating cash flow} - \text{Dividends}}{\text{Gross plant} + \text{Investment} + \text{Other assets} + \text{Working capital (current assets} \\ - \text{current liabilities)}}$$

# Cash From Operations

## Free Cash Flow

**Cash flows from operations**

***Deduct:*** Net capital expenditures required to maintain productive capacity

Dividends on preferred stock and common stock (assuming a payout policy)

---

***Equals*** Free cash flow (FCF)

# Cash From Operations

## Free Cash Flow

Positive free cash flow reflects the amount available for business activities after allowances for financing and investing requirements to maintain productive capacity at current levels.

Growth and financial flexibility depend on adequate free cash flow.

Recognize that the amount of capital expenditures needed to maintain productive capacity is generally not disclosed—instead, most use total capital expenditures, which is disclosed, but can include outlays for expansion of productive capacity.

# Cash Flow Analysis

## Converting CFO to Direct Format

### Form A Worksheet to Compute Cash Flow from Operations (CFO) Direct Presentation

For: \_\_\_\_\_  
Year Ended \_\_\_\_\_  
(in thousands)

		Year		
<b>Cash receipts from operations:</b>				
Net sales or revenues(a)	*1	\$	\$	\$
Other revenue and income (see also lines 22 and 25)	*2			
(I) D in current receivables	3			
(I) D in noncurrent receivables(b)	4			
Other adjustments(c)	5			
Total Cash receipts	6			
<b>Cash disbursements for operations:</b>				
Total expenses (include interest and taxes)(a)	*7			
Less expenses and losses not using cash:				
– Depreciation and amortization	8			
– Noncurrent deferred income taxes	9			
– Other _____	10			
– Other _____	11			
– Other _____	12			
<b>Changes in current operating assets and liabilities:</b>				
I (D) in inventories	13			
I (D) in prepaid expenses	14			
(I) D in accounts payable	15			
(I) D in taxes payable	16			
(I) D in accruals	17			
I or D other _____	18			
I or D other _____	19			
I or D in noncurrent accounts(b)	20			
Total Cash disbursements(d)	21			

# Cash Flow Analysis

## Converting CFO to Direct Format

**Form A (Continued)**  
**Worksheet to Compute Cash Flow from Operations (CFO)**  
**Direct Presentation**

For: \_\_\_\_\_  
**Year Ended** \_\_\_\_\_  
**(in thousands)**

Year

**Dividends received:**

Equity in income of unconsolidated affiliates	*22
Less undistributed equity in income of affiliates	23
Dividends from unconsolidated affiliates	24
Other cash receipts (disbursements)(e)	*25
Describe _____(a)	25
Describe _____(b)	25
<b>Total Cash flow from operations(f)</b>	<b>26</b>

Footnote all amounts that are composites or that are not self-evident. Indicate all sources for figures. I(D) refers to increases (decreases) in accounts.

\*The sum of these five lines must equal reported net income per income statement.

(a) Including adjustment (grossing up) of revenue and expense of discontinued operations disclosed in footnote(s). Describe computation. Include other required adjustments and explain.

(b) Those relating to operations—describe in notes.

(c) Such as removal of gains included above—describe in notes.

(d) Which include (from supplemental disclosures):

Cash paid for interest (net of amount capitalized)                     \$ \_\_\_\_\_

Cash paid for income taxes   \$ \_\_\_\_\_

(e) These include extraordinary items, discontinued operations and any other item not included above. The amount in line 25 is *after* adjustment to cash basis while the \* refers to item(s) included in income *before* such adjustment. (Present details in notes.)

(f) Reconcile to amount reported by company. If not reported, reconcile to change in cash for period along with investing and financing activities.