

Note on Cash Flow Statements

Indirect Cash Flow Statements can be pretty confusing, but they don't have to be if you think about their relationship to the other financial statements. Here I present several examples to help you to intuitively think about how you can use the income statement and the balance sheet to determine the statement of cash flows using the indirect method. After looking at these examples, you can construct even more complicated ones for yourself to strengthen your intuition.

There is a mathematical method for thinking about the indirect method. Here I will repeat the derivation that you saw in class. You should also have this information in

- the note entitled "Understanding the Statement of Cash Flow" in the course packet, and
- the class slides "The Statement of Cash Flow."

Balance Sheet Equation:

$$\begin{aligned} \mathbf{A(t)} &= \mathbf{L(t)} + \mathbf{SE(t)} && \text{Beginning Balance Sheet Equation (at time } t) \\ \mathbf{A(t+1)} &= \mathbf{L(t+1)} + \mathbf{SE(t+1)} && \text{Ending Balance Sheet Equation (at time } t+1 \text{ period)} \end{aligned}$$

Differences:

$$\mathbf{DA} = \mathbf{DL} + \mathbf{DSE}$$

Decompose:

$$\mathbf{DCash} + \mathbf{DOCA} + \mathbf{DNCA} = \mathbf{DCL} + \mathbf{DNCL} + \mathbf{DCC} + \mathbf{DOE} + \mathbf{DRE}$$

Note that $\mathbf{DRE} = \mathbf{NI} - \mathbf{Div}$ so we have:

$$\mathbf{DCash} + \mathbf{DOCA} + \mathbf{DNCA} = \mathbf{DCL} + \mathbf{DNCL} + \mathbf{DCC} + \mathbf{DOE} + \mathbf{NI} - \mathbf{Div}$$

Since we are interested in the change in cash, we re-arrange to solve for the change in cash:

$$\begin{aligned} \mathbf{DCash} &= -\mathbf{DOCA} - \mathbf{DNCA} + \mathbf{DCL} + \mathbf{DNCL} + \mathbf{DCC} + \mathbf{DOE} + \mathbf{NI} - \mathbf{Div} \\ &= +\mathbf{NI} - \mathbf{DOCA} + \mathbf{DCL} - \mathbf{DNCA} + \mathbf{DNCL} + \mathbf{DCC} + \mathbf{DOE} - \mathbf{Div} \end{aligned}$$

Putting in the accounts we know about:

$$\mathbf{DCash} = +\mathbf{NI} - \mathbf{DnetA/R} - \mathbf{DInv.} - \mathbf{DOCA} + \mathbf{DCL} - \mathbf{DnetPPE} - \mathbf{DNCA} + \mathbf{DNCL} + \mathbf{DCC} + \mathbf{DOE} - \mathbf{Div}$$

But the change in net PP&E can be broken down even further into B/S and I/S effects:

$$\begin{aligned} \mathbf{DnetPPE} &= \mathbf{DPPE} - \mathbf{DAccDepreciation} \\ &= \mathbf{Gain(Loss)} - \mathbf{DepExp} + (\mathbf{DPPE} - \mathbf{DAccDepreciation}) - \mathbf{Gain(Loss)} + \mathbf{DepExp} \end{aligned}$$

- Since Gains(Losses) should not affect the Operating Section, but are included in the IncomeStatement, they need to be subtracted(added) from Net Income in this section.
- Since Depreciation Expense is a non-cash expense (but affects Net Income), it needs to be added back to the Net Income in the Operating Section.

Inserting the expanded $\mathbf{DnetPPE}$:

$$\mathbf{DCash} = +\mathbf{NI} - \mathbf{DnetA/R} - \mathbf{DInv.} - \mathbf{DOCA} + \mathbf{DCL} - (\mathbf{Gain(Loss)} - \mathbf{DepExp} + (\mathbf{DPPE} - \mathbf{DAccDepreciation}) - \mathbf{Gain(Loss)} + \mathbf{DepExp}) - \mathbf{DNCA} + \mathbf{DNCL} + \mathbf{DCC} + \mathbf{DOE} - \mathbf{Div}$$

Rearranging:

$$\begin{aligned} \mathbf{DCash} &= +\mathbf{NI} + \mathbf{DepExp} - \mathbf{DnetA/R} - \mathbf{DInv.} - \mathbf{DOCA} + \mathbf{DCL} - \mathbf{Gain(Loss)} && \mathbf{OPERATING} \\ &\quad - (\mathbf{DPPE} - \mathbf{DAccDepreciation}) + \mathbf{Gain(Loss)} - \mathbf{DepExp} - \mathbf{DNCA} + \mathbf{DOE} && \mathbf{INVESTING} \\ &\quad + \mathbf{DNCL} + \mathbf{DCC} - \mathbf{Div} && \mathbf{FINANCIING} \end{aligned}$$

Further:

$$\begin{aligned} \mathbf{DPPE} &= \mathbf{Acquisition} - \mathbf{Disposal at Original Cost} \\ \mathbf{DAccDepreciation} &= \mathbf{DepExp} - \mathbf{AccDepreciation of Disposed Item} \end{aligned}$$

Thus:

$$\begin{aligned} \mathbf{DPPE} - \mathbf{DAccDepreciation} - \mathbf{Gain(Loss)} + \mathbf{DepExp} &= \mathbf{Acquisition} - (\mathbf{Disposal at Original Cost} - \mathbf{AccDepreciation of Disposed Item}) - \mathbf{Gain(Loss)} \\ &= \mathbf{Acquisition} - \mathbf{Proceeds from Disposal} \end{aligned}$$

Example 1 - Revenues and the indirect statement of cash flows

A Simple Example - Services sold with no COGS

Transaction	Assets		=	Liabilities	+	Shareholders' Equity	Notes
	Cash	A/R				Retained Earnings	
Make a sale for cash	\$30,000					\$30,000	Sales Revenue
Make a sale on credit		\$42,000				42,000	Sales Revenue
Customer pays part of A/R	37,000	(37,000)					
	<u>\$67,000</u>	<u>\$5,000</u>				<u>\$72,000</u>	
	Cash Collected of \$67,000	← Equals	Increase in A/R of \$5,000	← Minus the		Net Income of \$72,000	

Statement of Cash Flows

Cash from Operating

Net Income \$ 72,000

Adjustments

(Less increases¹ in Current Assets)

Increase in A/R (5,000)

Cash Increase from Operating \$ 67,000

Cash from Investing \$ 0

Cash from Financing \$ 0

Change in cash \$ 67,000

Beginning cash balance 0

Ending cash balance \$ 67,000

¹ Decreases in Current Assets would be Added

Example 2 - Revenues with COGS and the indirect statement of cash flows

An Example - Goods sold with COGS (Goods sold at 10 times the value of COGS)

Note that each sale is split up into 2 transactions on the BSE: a Revenue component and COGS component

Transaction	Assets			= Liabilities +	Shareholders' Equity	Notes
	Cash	A/R	Inventory			
Purchase Inv w/cash	(\$10,000)		\$10,000			
Make a sale for cash	30,000				\$30,000	Sales Revenue
COGS			(3,000)	← Minus the	(3,000)	COGS
Make a sale on credit		\$42,000			42,000	Sales Revenue
COGS			(4,200)		(4,200)	COGS
Customer pays part of A/R	37,000	(37,000)				
	<u>\$57,000</u>	<u>\$5,000</u>	<u>\$2,800</u>		<u>\$64,800</u>	
	Cash Collected of \$57,000	Increase in A/R of \$5,000	Increase in Inv. Of \$2,800		Net Income of \$64,800	

Statement of Cash Flows

Cash from Operating

Net Income \$64,800

Adjustments

(Less increases² in Current Assets)

Increase in A/R (5,000)

Increase in Inventory (2,800)

Cash Change in Operating \$57,000

Cash from Investing \$0

Cash from Financing \$0

Change in cash \$57,000

Beginning cash balance \$0

Ending cash balance \$57,000

² Decreases would be added

Example 3 - Expenses

An Example - Salary Expenses

Transaction	Assets	=	Liabilities	+	Shareholders' Equity	Notes
	Cash		Salaries Payable		Retained Earnings	
Pay Salaries	(\$13,000)				(\$13,000)	Salary Expense
Accrue Salaries			\$1,000		(1,000)	Salary Expense
	<u>(\$13,000)</u>		<u>\$1,000</u>		<u>(\$14,000)</u>	
	Cash Spent of \$13,000	← Equals	Increase in Salary Pay. of \$1,000	← Plus the	Net Income of (\$14,000)	

Statement of Cash Flows

Cash from Operating

Net Income (\$14,000)

Adjustments

(Less increases³ in Current Assets)

none (0)

(Plus increases⁴ in Current Liabilities)

Change in Salaries Payable 1,000

Cash Increase from Operating (\$13,000)

Cash from Investing \$ 0

Cash from Financing \$ 0

Change in cash (\$13,000)

Beginning cash balance 0

Ending cash balance (\$13,000)

³ Decreases in Current Assets would be added

⁴ Decreases in Current Liabilities would be subtracted

Example 4 - PP&E

An Example - Acquiring and Selling PP&E

Transaction	Cash	Assets PP&E	= Liabilities - Accum. Deprec.	+ Shareholders' Equity Retained Earnings	Notes
Buy PP&E	(\$60,000)	\$60,000			
Sell PP&E (gain)	9,000	(30,000)	(\$25,000)	\$4,000	Gain on sale
Deprec. Exp.			35,000	(35,000)	Deprec. Exp.
	<u>(\$51,000)</u>	<u>\$30,000</u>	<u>\$10,000</u>	<u>(\$31,000)</u>	

Cash spent of \$51,000	← Equals	Increase in PP&E of \$30,000	← Minus	Increase in Accum Depr of \$10,000	← Add	Net Income of (\$31,000)
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Statement of Cash Flows

Cash from Operating

Net Income	(\$31,000)
Adjustments	
<i>(Less increases in Current Assets)</i>	
none	(0)
<i>(Plus increases in Current Liabilities)</i>	
none	0
<i>(and adjustments due to PP&E)</i>	
Add back Depreciation Exp	35,000
Subtract (add) Gain (Loss)	<u>(4,000)</u>

Cash Increase from Operating \$ 0

Cash from Investing

Purchase of PP&E	(\$60,000)
Sale of PP&E	<u>9,000</u>
	(\$51,000)

Cash from Financing

Change in cash	<u>(\$51,000)</u>
Beginning cash balance	0
Ending cash balance	<u>(\$51,000)</u>

Alternate method for determining Cash from Investing:

Less Change Net PP&E	
Change in PP&E	(\$30,000)
Change in Accum Deprec	<u>10,000</u>
	(\$ 20,000)
Plus Gains	4,000
Less Deprec. Exp.	<u>(35,000)</u>
TOTAL Cash from Investing	(\$ 51,000)