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:

\[ A(t) = L(t) + SE(t) \]  
Beginning Balance Sheet Equation (at time t)

\[ A(t+1) = L(t+1) + SE(t+1) \]  
Ending Balance Sheet Equation (at time t+1 period)

Differences:

\[ \Delta A = \Delta L + \Delta SE \]

Decompose:

\[ \Delta Cash + \Delta OCA + \Delta NCA = \Delta CL + \Delta NCL + \Delta CC + \Delta OE + \Delta RE \]

Note that \( \Delta RE = NI - Div \) so we have:

\[ \Delta Cash + \Delta OCA + \Delta NCA = \Delta CL + \Delta NCL + \Delta CC + \Delta OE + NI - Div \]

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

\[ \Delta Cash = NI - \Delta OCA + \Delta NCA - \Delta CL - \Delta NCL + \Delta CC + \Delta OE - Div \]

Putting in the accounts we know about:

\[ \Delta Cash = NI - \Delta netA/R - \Delta Inv. + \Delta OCA + \Delta CL - \Delta netPPE + \Delta NCL + \Delta CC + \Delta OE - Div \]

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

\[ \Delta netPPE = \Delta PPE - \Delta AccDepreciation \]

\[ = Gain(Loss) - DepExp + (\Delta PPE - \Delta AccDepreciation) - Gain(Loss) + DepExp \]

- 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 \( \Delta netPPE \):

\[ \Delta Cash = NI - \Delta netA/R - \Delta Inv. - \Delta OCA + \Delta CL - (Gain(Loss) - DepExp + (\Delta PPE - \Delta AccDepreciation)) + Gain(Loss) + DepExp - \Delta netPPE - \Delta NCL + \Delta CC + \Delta OE - Div \]

Rearranging:

\[ \Delta Cash = NI + DepExp - \Delta netA/R - \Delta Inv. - \Delta OCA + \Delta CL + Gain(Loss) - (\Delta PPE - \Delta AccDepreciation) - Gain(Loss) + DepExp + (\Delta PPE - \Delta AccDepreciation) + Gain(Loss) - DepExp - \Delta NCA + \Delta NCL + \Delta CC + \Delta OE - Div \]

Further:

\[ \Delta PPE = Acquisition - Disposal at Original Cost \]
\[ \Delta AccDepreciation = DepExp - AccDepreciation of Disposed Item \]

Thus:

\[ \Delta PPE - \Delta AccDepreciation - Gain(Loss) + DepExp = Acquisition - (Disposal at Original Cost - AccDepreciation of Disposed Item) - Gain(Loss) \]

Sloan School of Management, 15.515
Example 1 - Revenues and the indirect statement of cash flows

A Simple Example - Services sold with no COGS

<table>
<thead>
<tr>
<th>Transaction</th>
<th>Assets</th>
<th>= Liabilities + Shareholders' Equity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make a sale for cash</td>
<td>$30,000</td>
<td></td>
<td>$30,000 Sales Revenue</td>
</tr>
<tr>
<td>Make a sale on credit</td>
<td></td>
<td></td>
<td>$42,000 Sales Revenue</td>
</tr>
<tr>
<td>Customer pays part of A/R</td>
<td>37,000</td>
<td>(37,000)</td>
<td>$72,000</td>
</tr>
<tr>
<td></td>
<td>$67,000</td>
<td>$5,000</td>
<td></td>
</tr>
</tbody>
</table>

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 increases 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

<table>
<thead>
<tr>
<th>Transaction</th>
<th>Assets</th>
<th>= Liabilities</th>
<th>+ Shareholders' Equity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase Inv w/cash</td>
<td>($10,000)</td>
<td></td>
<td>$10,000</td>
<td>Sales Revenue</td>
</tr>
<tr>
<td>Make a sale for cash</td>
<td>30,000</td>
<td>Equals</td>
<td>(3,000)</td>
<td>COGS</td>
</tr>
<tr>
<td>Make a sale on credit</td>
<td>$42,000</td>
<td></td>
<td>42,000</td>
<td>Sales Revenue</td>
</tr>
<tr>
<td>Customer pays part of A/R</td>
<td>37,000</td>
<td>(37,000)</td>
<td>$57,000</td>
<td>COGS</td>
</tr>
<tr>
<td></td>
<td>$57,000</td>
<td>$5,000</td>
<td>$2,800</td>
<td>$64,800</td>
</tr>
</tbody>
</table>

### Statement of Cash Flows

Cash from Operating
Net Income $64,800
Adjustments
(Less increases\(^2\) 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

<table>
<thead>
<tr>
<th>Transaction</th>
<th>Assets = Liabilities + Shareholders' Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay Salaries</td>
<td>Cash ($13,000) = Salaries Payable $1,000 + Retained Earnings ($13,000)</td>
</tr>
<tr>
<td>Accrue Salaries</td>
<td></td>
</tr>
</tbody>
</table>

\[
\begin{array}{rcl}
\text{Cash Spent of } \$13,000 & \text{Equals} & \text{Increase in Salary Pay. of } \$1,000 \\
& & \text{Plus the Net Income of } \$(14,000)
\end{array}
\]

Statement of Cash Flows

Cash from Operating

Net Income \(\$(14,000)\)

Adjustments

\(\text{(Less increases in Current Assets)}\)
\(\text{none}\)

\(\text{(Plus increases in Current Liabilities)}\)
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**

<table>
<thead>
<tr>
<th>Transaction</th>
<th>Assets</th>
<th>Liabilities</th>
<th>Shareholders' Equity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buy PP&amp;E</td>
<td>Cash ($60,000)</td>
<td>PP&amp;E $60,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sell PP&amp;E (gain)</td>
<td>9,000</td>
<td>(30,000)</td>
<td>($25,000)</td>
<td>$4,000 Gain on sale</td>
</tr>
<tr>
<td>Deprec. Exp.</td>
<td>($51,000)</td>
<td>$30,000</td>
<td>$10,000</td>
<td>($31,000)</td>
</tr>
</tbody>
</table>

Cash spent of $51,000 = Increase in PP&E of $30,000 - Increase in Accum Deprec of $10,000 + Net Income of ($31,000)

### Statement of Cash Flows

**Cash from Operating**
- Net Income: $(31,000)
- Adjustments:
  - Less increases in Current Assets: none
  - Plus increases in Current Liabilities: none
- Add back Depreciation Exp: 35,000
- Subtract (add) Gain (Loss): $(4,000)

**Cash Increase from Operating**: $0

**Cash from Investing**
- Purchase of PP&E: $(60,000)
- Sale of PP&E: 9,000
- Cash from Selling: $(51,000)

**Cash from Financing**
- Change in cash: $(51,000)
- Beginning cash balance: 0
- Ending cash balance: $(51,000)

**Alternate method for determining Cash from Investing:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less Change Net PP&amp;E</td>
<td>$(30,000)</td>
</tr>
<tr>
<td>Change in PP&amp;E</td>
<td>10,000</td>
</tr>
<tr>
<td>Change in Accum Deprec</td>
<td>$(20,000)</td>
</tr>
<tr>
<td>Plus Gains</td>
<td>4,000</td>
</tr>
<tr>
<td>Less Deprec. Exp.</td>
<td>$(35,000)</td>
</tr>
<tr>
<td>TOTAL Cash from Investing</td>
<td>$(51,000)</td>
</tr>
</tbody>
</table>