

DECISION MAKING AND SCENARIOS

MODULE 3.3 – Expressing Business Strategies In Financial Terms

Cash Flow Statements

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Objective

- To learn how business activities, transactions and events impact the cash flow statement
- To learn how to derive cash flows by analyzing the income statement and the change in the balance sheet

Cash Flow Statement – Inflows and Outflows of Cash

- Operating activities:
 - Transactions related to providing goods and services to customers and to paying expenses related to the revenue generating activities (i.e. “income statement” transactions)
- Investing activities:
 - Transactions related to acquisition or disposal of long-term assets
- Financing activities:
 - Transactions related to owners or creditors (issuing debt or equity, paying back loans, paying dividends)

From Earlier - Summary of All Transactions

| | | Assets | | | | | Liabilities | | | Owners' Equity | |
|---------------------------------|--|-----------|---------------------|-----------|-----------|--|------------------|---------------|--|---------------------|-------------------|
| Transaction or Event | | Cash | Accounts Receivable | Inventory | PPE | | Accounts Payable | Wages Payable | | Contributed Capital | Retained Earnings |
| | | | | | | | | | | | |
| Beginning Balance | | \$0 | \$0 | \$0 | \$0 | | \$0 | \$0 | | \$0 | \$0 |
| | | | | | | | | | | | |
| Investment By Owners | | \$240,000 | | | | | | | | \$240,000 | |
| Purchase of PPE | | -\$70,000 | | | \$70,000 | | | | | | |
| Depreciation of PPE | | | | | -\$10,000 | | | | | | -\$10,000 |
| Purchase Of Inventory on Credit | | | | \$99,000 | | | \$99,000 | | | | |
| Payment for Inventory Purchases | | -\$94,000 | | | | | -\$94,000 | | | | |
| Sale of Inventory | | | | -\$90,000 | | | | | | | -\$90,000 |
| Sales Revenue | | | \$200,000 | | | | | | | | \$200,000 |
| Collects from Customers | | \$180,000 | -\$180,000 | | | | | | | | |
| Wages and Benefits Expense | | | | | | | | \$55,000 | | | -\$55,000 |
| Payment for Wages and Benefits | | -\$46,000 | | | | | | -\$46,000 | | | |
| Payment of Dividend | | -\$5,000 | | | | | | | | | -\$5,000 |
| Payment of Taxes | | -\$13,880 | | | | | | | | | -\$13,880 |
| Ending Balance | | \$191,120 | \$20,000 | \$9,000 | \$60,000 | | \$5,000 | \$9,000 | | \$240,000 | \$26,120 |
| | | | | | | | | | | | |
| Totals for | | | | Assets | \$280,120 | | Liabilities | \$14,000 | | Owners' Equity | \$266,120 |

To Construct the Cash Flow Statement Directly

- Look at the transactions that impact the cash account
- Classify them into the three categories
- While straight-forward in concept, for complex firms this becomes difficult to do

Cash Flow Statement - Direct Method

| Cash From Operations | |
|-------------------------------|-------------------|
| Cash Collected From Customers | \$180,000 |
| Cash Paid to Suppliers | (\$94,000) |
| Cash Paid to Employees | (\$46,000) |
| Cash Paid For Taxes | <u>(13,880)</u> |
| Total Cash From Operations | \$26,120 |
| Cash From Investing | |
| Cash Paid for PPE | <u>(\$70,000)</u> |
| Total Cash From Investing | (\$70,000) |
| Cash From Financing | |
| Cash From Issuing Shares | \$240,000 |
| Cash Paid for Dividends | <u>(\$5,000)</u> |
| Total Cash From Financing | \$235,000 |
| TOTAL CHANGE IN CASH | \$191,120 |

Interpretation – So Far Our Cash is Coming Primarily From Financing Activities

- Our Cash Balance is up \$191,120, BUT
 - This is not because the firm's projects generated a lot of cash
 - Instead, cash has increased because of financing activities
 - Specifically, from Issuing Shares of Stock
- For our purposes (project valuation and evaluation), we want to focus on the other two categories
 - OPERATIONS AND INVESTING
 - This is how our projects are performing

Operations and Investing

- Overall, our projects have caused cash to go DOWN by \$43,880
- But this is a misleading measure of our performance because
 - Most of the decline is because of the investment in PPE, which should have additional benefits beyond this first year
 - This is also why Accounting Income spreads this cash flow out over time in the form of depreciation
- This is also why we want to forecast financial statements for future years – to see how much benefits we still expect to be realized

Understanding Our Operating Cash Flows

- Note that Cash from Operations is +\$26,120
- But Net Income was +\$31,120
- These are close (in this case) but not exactly the same
- Why are they different?
 - Not all sales in the income statement are cash
 - Not all expenses in the income statement are cash
 - Anything else?
- Understanding why they're different requires looking to the Balance Sheet

Comparing Net Income To Cash From Operations

| Net Income | | Cash From Operations |
|------------------------|--|-------------------------------|
| Sales Revenue | | Cash Collected From Customers |
| (Cost of Goods Sold) | | (Purchases From Suppliers) |
| (Wage Expense) | | (Wages Paid) |
| (Depreciation Expense) | | |
| (Taxes Paid) | | (Taxes Paid) |
| Net Income | | Cash From Operations |

Comparing Net Income To Cash From Operations

| Net Income | Different Because | Cash From Operations |
|------------------------|---|-------------------------------|
| Sales Revenue | Not all Sales Were Collected | Cash Collected From Customers |
| (Cost of Goods Sold) | Not all Inventory was sold Not all Purchases were paid for | (Purchases From Suppliers) |
| (Wage Expense) | Not all Wages were Paid | (Wages Paid) |
| (Depreciation Expense) | This is not a Cash Flow | |
| (Taxes Paid) | No Difference | (Taxes Paid) |
| Net Income | | Cash From Operations |

The Items that Reconcile Cash and Net income

- Are all in the CHANGES in the Other Balance Sheet Accounts
- This Follows from the Balance Sheet Equation
- Any difference between
 - How Cash Changed and
 - How Retained Earnings Changed
 - Has to be reflected in some other Balance Sheet account

Relation Between Financial Statements


Balance Sheet at 12/31/00

Assets = Liabilities + Owners' Equity

Cash + Noncash assets = Liabilities + Contributed Capital + Retained Earnings



Statement of Cash Flows
for year ended 12/31/01



Income Statement
for year ended 12/31/01
(minus dividends)

Cash + Noncash assets = Liabilities + Contributed Capital + Retained Earnings

Balance Sheet at 12/31/01

In Equation Form -- Changes in Balance Sheets Have to Balance

$$\Delta \text{ Assets} = \Delta \text{ Liabilities} + \Delta \text{ Owners' Equity}$$

$$\Delta \text{ Cash} + \Delta \text{ Noncash Assets} = \Delta \text{ Liabilities} + \Delta \text{ Contributed Capital} + \Delta \text{ Retained Earnings}$$

Substitute $\Delta \text{ Retained Earnings} = \text{Net Income} - \text{Dividends}$

And move everything but Change in Cash to the right side:

$$\text{Cash} = \text{Net Income} - \Delta \text{ Noncash Assets} + \Delta \text{ Liabilities} + \Delta \text{ Contributed Capital} - \text{Dividends}$$

This Gives Us an Alternative (More Common) Way To Present The Cash Flow Statement

- Start with the Income Statement and use the
- CHANGE in Balance Sheet Accounts
- To “infer” the implied Cash Flow Statement
- Even though it looks more complicated at first, it’s easier to forecast

The Relation Between Cash, Income, and Other Balance Sheet Items

$$\text{Cash} = \text{Net Income} - \Delta \text{ Noncash Assets} + \Delta \text{ Liabilities} + \Delta \text{ Contributed Capital} - \text{Dividends}$$

- **For a Given Level of Income**
- If Assets Go UP, Cash Goes DOWN
 - An increase in assets uses up cash
 - An increase in assets means some of our income was invested in those assets instead of cash
- If Liabilities Go UP, Cash Goes UP
 - An increase in liabilities means we haven't paid them yet
- If Owners' Equity goes UP, Cash Goes UP
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Putting Specific Balance Sheet Accounts into Categories

Change in Cash =

Net Income + Depreciation – Change in Working Capital

- Investments in LT Assets + Disposal of LT Assets

+ Changes in LT Liabilities

+ Changes in Contributed Capital – Dividends

Cash From
Operations

Cash From Investing

Cash From Financing

Where Working Capital = ST Assets other than Cash minus ST Liabilities

Working Capital Accounts

- Receivables = Sales that weren't cash (yet)
 - Inventory = Production that wasn't sold (yet)
 - Accounts Payable = Purchases that weren't paid (yet)
 - Wages Payable = Work done that wasn't paid for (yet)
-
- Each of these items is (often) easier to forecast than forecasting cash flow directly
 - Working Capital Accounts are often closely related to the Sales and Expense accounts in Net Income

Cash Flow Statement – More Common Presentation

| Cash From Operations | |
|--|------------------|
| Net Income = $200,000 - 90,000 - 10,000 - 55,000 - 13,880$ | \$31,120 |
| Add: Depreciation | 10,000 |
| Subtract: Change in Accounts Receivable | (\$20,000) |
| Subtract: Change in Inventory | (\$9,000) |
| Add: Change in Accounts Payable | \$5,000 |
| Add: Change in Wages Payable | <u>\$9,000</u> |
| Total Cash From Operations | \$26,120 |
| Cash From Investing (same as before) | (\$70,000) |
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Start with Net Income -- Income was \$31,120 but this is not all cash

Cash Flow Statement – Addback of Depreciation

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One reason for this is because Income contains a **\$10,000 subtraction for depreciation**, But this isn't cash so we add it back

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Cash Flow Statement – Investment in Working Capital

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= **-\$15,000**

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**Firms are often INVESTING in Working Capital during Growth Phases
And RELEASING Working Capital during Contraction Phases**

The Individual Lines in the Operating Section Provide More Details about the Components of Working Capital

- Sales of \$200,000 weren't all cash – \$20,000 is still invested in receivables
- The Cost of Goods Sold of \$90,000 wasn't the cash paid to suppliers because
 - We purchased \$9,000 more than we sold
 - We haven't yet paid for \$5,000 of what we purchased
- The Wage Expense of \$55,000 wasn't all paid yet - \$9,000 is still in the liability account Wages Payable

Summary

- We've learned how to represent business transactions and events into Balance Sheets, Income Statements, and Cash Flow Statements
- We've learned to be able to express Cash Flow Statements in terms of Balance Sheets and Income Statements
- Cash From Operations =
Net Income + Depreciation – Change in Working Capital

Next Module

- We're going to apply these skills to Evaluating a Potential New Product Venture
 - We're going to add multiple periods – the balance sheet at the end of one period is the balance sheet for the start of the next period
 - Lay out a strategic plan and what this implies about future business activities, transactions and events
 - Then take what we learned in this module and translate those into forecasted financial statements – ultimately into forecasts of future cash flows
 - Then take what we learned in Modules 1 and 2 to use Net Present Value Techniques to calculate the Value of adopting this strategy
 - Re-think the strategy along several dimensions and examine what these imply for the present value





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