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	(13,880)
Total Cash From Operations	$26,120
Cash From Investing	
Cash Paid for PPE	($70,000)
Total Cash From Investing	($70,000)
Cash From Financing	
Cash From Issuing Shares	$240,000
Cash Paid for Dividends	($5,000)
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

Δ Assets = Δ Liabilities + Δ Owners' Equity

Δ Cash + Δ Noncash Assets = Δ Liabilities + Δ Contributed Capital
+ Δ Retained Earnings

Substitute Δ Retained Earnings = Net Income – Dividends

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

Cash = Net Income - Δ Noncash Assets + Δ Liabilities +
Δ Contributed Capital - 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

Cash = Net Income - Δ Noncash Assets + Δ Liabilities +
Δ Contributed Capital - 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
  - An increase in owners' equity means we've gotten new funding from investors

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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	$9,000
Total Cash From Operations	$26,120
Cash From Investing (same as before)	($70,000)
Cash From Financing (same as before)	$235,000
TOTAL CHANGE IN CASH	$191,120

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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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Add: Depreciation	10,000
Subtract: Change in Accounts Receivable	($20,000)
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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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Income was $31,120 but this is not all cash

Cash Flow Statement – Investment in Working Capital

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Add: Depreciation	10,000
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A second reason is because we invested $15,000 in Working Capital

Cash Flow Statement – Investment in Working Capital

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Add: Depreciation	10,000
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Total Cash From Operations	$26,120
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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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