Cash Flow

Cash Flow more important than Profit (Net Income)

- *necessary* to pay bills (including taxes) and exploit growth opportunities
- *consistent* with wealth maximization (dividends are paid in cash)
- *unambiguous* (can't be manipulated)

Statement of Cash Flows

flow of actual cash through firm during period
includes cash flows from Operations, Investment, Financing

Operating Cash Flow

analogous to Net Income, but excludes non-cash income/expenses (and interest)

Investment Cash Flows

purchase/sale of fixed assets and marketable securities
interest and dividends *received*

Financing Cash Flow

some consider interest *paid* an operating cash flow

Statement of Cash Flows: Direct ("Top-down")

Requires detailed information

Similar to Income Statement, but with all non-cash items filtered out

	Cash Collected from Customers
–	Cash Paid to Suppliers
–	Cash Operating Expenses (Selling & Administration)
–	Taxes
	= Cash Flow from Operating Activities
+	Cash Received from Sales of Assets
–	Cash Paid to Purchase Assets
+	Interest Received from Loans to Others
+	Dividends Received from Other Firm's Stock
	= Cash Flow from Investment Activities
+	Cash Received from Selling New Securities
–	Repayment of Debt (Principal)
–	Retirement/Repurchase of Firm 's Own Stock
–	Interest Paid on Firm's Own Debt
–	Dividends Paid on Firm's Own Stock
	= Cash Flow From Financing Activities
=	Net Cash Flow

Statement of Cash Flows: Indirect ("Bottom-Up")

Most commonly used ("Reconciliation")

Requires Income Statement and 2 Balance Sheets

	Net Income
+	Depreciation
–	Change in Accounts Receivable
–	Change in Inventories
+	Change in Accounts Payable
+	Change in Accruals
	= Cash Flow from Operating Activities
–	Change in Marketable Securities
–	Change in (Gross) Fixed Assets
+	Interest Received from Loans to Others
+	Dividends Received from Other Firms' Stock
	= Cash Flow from Investment Activities
+	Change in Long-term Debt
+	Sale of New Stock
–	Retirement/Repurchase of Firm's Own Stock
–	Interest Paid on Firm's Own Debt
–	Dividends Paid on Firm's Own Stock
	= Cash Flow From Financing Activities
=	Net Cash Flow

Ambiguity: Net Income v. Operating Cash Flow

Depreciation Method	Straight-Line			Accelerated		
	Income Statement	**Cash?**	**Cash Flow Statement**	**Income Statement**	**Cash?**	**Cash Flow Statement**
Sales (all cash)	1000	Y	1000	1000	Y	1000
Costs (all cash)	700	Y	(700)	700	Y	(700)
Depreciation	100			200		
EBIT	200			100		
Interest	0			0		
EBT	200			100		
Taxes: 40%	80	Y	(80)	40	Y	(40)
NI	120			60		
Depreciation	100			200		
Cash Flow	220		220	260		260

When depreciation increases, NI falls but OCF rises.
Though depreciation is not itself a cash flow, it reduces taxes.
Interest is a cash flow, but from financing, not operations. It also reduces taxes.

Calculating Operating Cash Flow (OCF)

"Bottom-up" (reconciliation) approach:
Start with income to investors, add back non-cash expenses, subtract non-cash receipts

OCF = NI + Depreciation + Interest

= 120 + 100 + 0 = 220 (straight-line)
or = 60 + 200 + 0 = 260 (accelerated)

"Top-down" approach:

OCF = Cash Revenues – Cash Costs – Taxes
= Revenues – Costs – T_C (Revenues – Costs – Depreciation)
= (Revenues – Costs)(1 – T_C) + T_C (Depreciation)

= (1000–700)(1–0.4) + 0.4(100) = 220 (straight-line)
or = (1000–700)(1–0.4) + 0.4(200) = 260 (accelerated)

Calculating Operating Cash Flow (OCF), alternative

Alternative "bottom-up approach," starting with EBIT

OCF = EBIT – Taxes + Depreciation

= 200 – 80 + 100 = 220 (straight-line)
or = 100 – 40 + 200 = 260 (accelerated)

This works since, from the Income Statement,

$$NI = EBIT - Interest - Taxes$$

$$so \quad NI + Interest = EBIT - Taxes$$

$$and \quad NI + Interest + Depreciation = EBIT - Taxes + Depreciation$$

Free Cash Flow (FCF)

Definition
Cash flow actually available to investors, after deducting an allowance for investments in assets (fixed and current) necessary to maintain the income stream into the future
Payment will not impair future operations

Where it comes from

$$FCF = OCF - \underbrace{\Delta Fixed\ Assets - \Delta Net\ Working\ Capital}_{\text{outlay to maintain cashflow}}$$

where Δ means "change in,"
and

$$\Delta Fixed\ Assets = \underbrace{\Delta Net\ Fixed\ Assets}_{\text{new investment}} + Depreciation$$

$$\Delta Net\ Working\ Capital = \Delta Current\ Assets - \underbrace{\Delta Accounts\ Payable - \Delta Accruals}_{\text{"spontaneous financing"}}$$

Cash Flows to Investors

Where it goes

Cash flow paid out of Free Cash Flow to investors, both creditors (bondholders and other lenders) and owners (shareholders)

$$FCF = Cash\ Flow\ to\ Creditors + Cash\ Flow\ to\ Shareholders$$

where

$$Cash\ Flow\ to\ Creditors = Interest\ paid - \underbrace{Net\ new\ borrowing}_{new\ issues - repayments}$$

and

$$Cash\ Flow\ to\ Shareholders = Dividends\ paid - \underbrace{Net\ new\ equity\ raised}_{new\ issues - repurchases}$$

Summary

$$\left.\begin{array}{l} OCF \\ -\Delta FA \\ -\Delta NWC \end{array}\right\} \rightarrow FCF \rightarrow \begin{cases} CFC \\ CFS \end{cases}$$

Reminder: Sources and Uses of Cash

Sources provide inflows
Decrease in assets: e.g., sell fixed or current assets
Increase in claims (liability or equity): e.g., take out bank loan, sell new securities

Uses provide outflows
Increase in assets: e.g., purchase fixed or current assets
Decrease in claims (liability or equity): e.g., pay off bank loan, repurchase/retire securities

	Assets	Claims
Source (inflow)	↓	↑
Use (outflow)	↑	↓

End-of-Period Cash Balance = Beginning-of-Period Cash Balance
\+ Cash Inflows
– Cash Outflows