Aalto University
School of Business

Financial Statement Analysis (22E00100)

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Cash Flow Analysis

Framework for Business Analysis and Valuation

STEP 1
Understanding the Past

1. **Information Collection**
2. **Understanding the Business**
3. **Accounting Analysis**
4. **Financial Ratio Analysis**
5. **Cash Flow Analysis**

→

STEP 2
Forecasting the Future

1. **Structured Forecasting**
2. **Income Statement Forecasts**
3. **Balance Sheet Forecasts**
4. **Cash Flow Forecasts**

→

STEP 3
Valuation

1. **Cost of Capital**
2. **Valuation Models**
   - **Residual Income-Based Valuation**
   - **Cash Flow-Based Valuation**
3. **Valuation Ratios**
4. **Complications**
   - **Negative Values**
   - **Value Creation and Destruction though Financing Transactions**

Earnings vs. Cash Flows

- One feature of accrual accounting is that firms can report oodles of accounting earnings in periods when they generate very little cash.
  - As a simple example, a firm selling its goods on credit records sales revenue but doesn't actually receive any cash unless and until the customer pays.
  - More complicated transactions (or accounting distortions) can create even larger gaps between accounting earnings and cash flows.
  - The fact that earnings and cash flows are different isn't, by itself, a sure sign of trouble.
- Accrual accounting process is designed to generate more timely measures of wealth creation than cash-basis accounting.

Earnings vs. Cash Flows

- Nonetheless, generating cash, not earnings, is the ultimate long-term goal of the firm.
- Cash is what the firm needs to buy assets and pay creditors, and it is what investors ultimately want to receive as a return on their investment.

Cash Flow Analysis

Evaluate the cash flow implications of the firm's operating, investing and financing activities

- are net operating and investing cash flows negative? - if so, how is the cash shortfall to be financed?
- are net operating and investing cash flows positive? - if so, what does management propose to do with the free cash flow?
- what are the cash flow commitments associated with the firm's financing policy? - how does management propose to meet these commitments?
- what are management's capital expenditure plans and how will these be financed?

The Statement of Cash Flows

- You can intuitively think of the statement of cash flows as a summary of all transactions that ran through the company's checking accounting during the year.
- The statement of cash flows summarizes these transactions by dividing them into operating, investing, and financing activities.
- To illustrate the logic behind the construction of this statement, we start with the basic accounting equation:

$$\text{Assets} = \text{Liabilities} + \text{Equity}$$

The Statement of Cash Flows

$$\text{Assets} = \text{Liabilities} + \text{Equity}$$

We next divide assets into cash and noncash assets, take the change in each item over the year (denoted by Δ), and rearrange to get

$$\Delta\text{Cash} = -\,\Delta(\text{Noncash Assets}) + \Delta\text{Liabilitites} + \Delta\text{Equity}$$

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Forecasting

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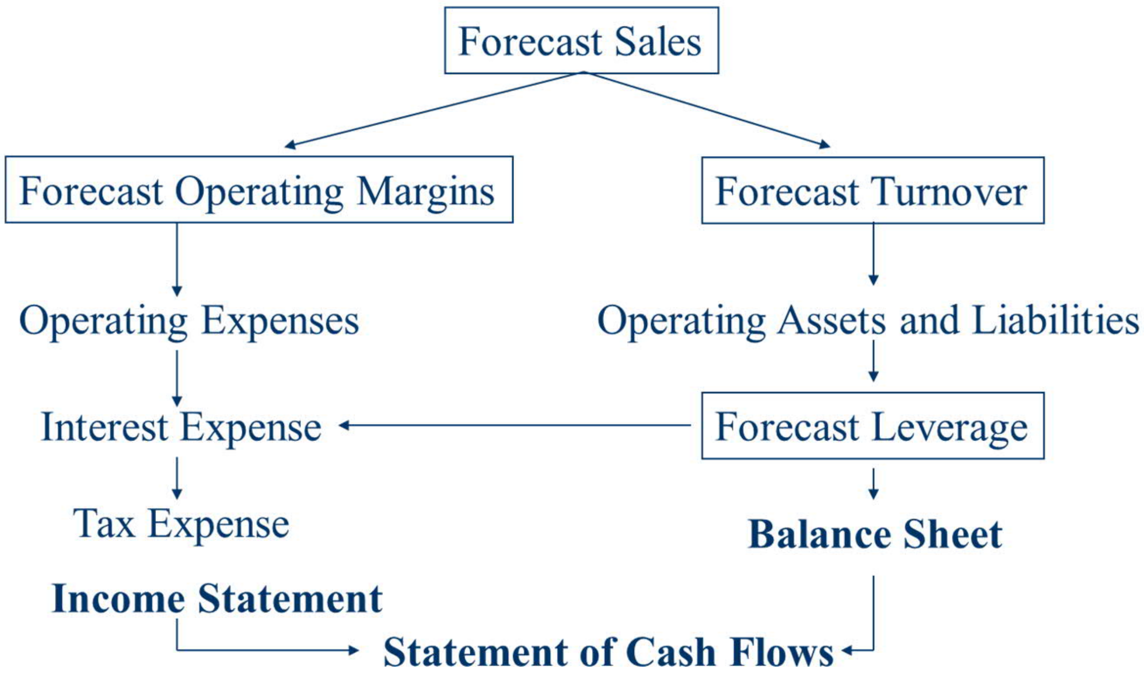
Some Pointers on Forecasting

- Starting point is the most recent financial statements
- Incorporate what you have learned from business strategy, accounting and financial analysis
- Incorporate management’s expansion plans
- Income statement is main focus, but balance sheet is also important

The Forecasting Process



Other Issues in Forecasting

- Quarterly versus Annual Forecasts
- Forecast Horizon
- Terminal Period Assumptions
- Balance Sheet Plug
- Forecasting EPS
- Financial Analysis on Forecasts as a Reality Check

Forecasting Horizon Guidelines

		Industry-Wide Growth Prospects		
		Low (mature)	**Medium (consolidating)**	**High (start-up)**
Firm-Specific Competitive Advantage	**None**	5 years	10 years	20 years
	Yes, but only short run	5 years	10 years	20 years
	Yes and for longer run	10 years	20 years	20 Years

Terminal Period Assumptions

- Terminal sales growth rate should approximate long-term forecast of GDP growth rate (about 3%)

- Terminal ROE should approximate the cost of capital assuming:
  - Competitive equilibrium
  - No accounting distortions

The Balance Sheet Plug

- Usually a financial asset (e.g., cash) or liability/equity, but which one?
  - Cash & Marketable Securities (but what if there isn't enough?)
  - Debt (but what if we can't find a lender on favorable terms)
  - Equity (but what if we can't sell new stock on favorable terms)

Forecasting EPS

- We have already forecast earnings
- But what about the number of shares?
- Two issues
  - Number of shares outstanding
    - We have already forecast $ of new share issuances, but at what price will new shares be issued?
  - Adjustments for diluted EPS
    - For diluted EPS, we need to adjust for potentially dilutive securities (employee stock options, convertible debt etc.)

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Pointers on Forecasting:
Sales Growth

- Sales Growth
  - Three channels for sales growth
    - Industry sales growth
    - Increase in market share within industry
    - Enter new industry
  - Three drivers of sales growth
    - Increase productive capacity
    - Increase efficiency with which existing productive capacity is used
    - Increase price at which product is sold
  - Terminal sales growth rate should equal long-term economy-wide growth rate

Pointers on Forecasting:
Costs and Expenses

- Cost of Goods Sold
  - Closely linked to sales through gross margin
  - Need to factor in potential shifts in gross margin
    - Economies of scale in production/allocation of fixed overhead
    - Impact of competitive pressures on gross margin
  - Research & Development Expenses
    - Not directly tied to current sales, but tend to closely track sales
    - Check MD&A for discussion of existing and potential new R&D projects

Pointers on Forecasting:
Costs and Expenses

- Selling General and Administrative Expenses
  - Closely linked to sales
  - Often subject to economies of scale, particularly for early-stage companies
  - Often exhibit ‘sticky cost’ phenomenon, whereby costs are relatively less responsive to reductions in sales growth

Pointers on Forecasting:
Costs and Expenses

- Depreciation
  - The depreciation rate on gross PP&E equals the reciprocal of the useful life of asset
  - For a firm in 'steady-state', the depreciation rate on net PP&E equals the reciprocal of half the useful life of asset
  - Remember that depreciation expense is often buried in, and hence implicitly forecast as, part of other expenses
- Amortization
  - For definite-lived intangibles, similar pointers to depreciation
  - For indefinitely-lived intangibles, amortization is replaced by periodic impairments
  - Impairments are more difficult to forecast, but if the firm has a track record of losses in the business unit to which the intangible is attached, then an impairment is more likely

Pointers on Forecasting:
Costs and Expenses

- Interest Expense
  - Tied to cost of debt
  - Beware of classification issues, whereby interest expense is combined with other items, such as interest income

- Effective Tax Rate
  - Statutory tax rate of 20% plus other taxes
  - Remember to model the impact of permanent differences and the valuation allowance on deferred tax assets

Pointers on Forecasting:
Assets and Liabilities

- Cash
  - Need a small amount of cash to facilitate operations (approx. 3% of assets)
  - Many companies stockpile cash
    - Companies with positive free cash flow accumulate cash
    - Companies with negative free cash flow raise a significant amount of capital in the form of cash and then ‘burn’ through the cash over several years
    - In such cases, model the firm’s financing decisions and use cash as the ‘plug’
- Receivables
  - Usually track sales
  - Changes in credit policy and bargaining power of key customers can change the relationship to sales

Pointers on Forecasting:
Assets and Liabilities

- Inventories
  - Usually track sales
  - Slowing turns can indicate either:
    - Build up of obsolete inventory that must be written off
    - Stockpiling of new product that will lead to higher future sales
    - Read MD&A, Notes etc. to try and figure this out
- Other Current Assets
  - Identify the nature of any material items and try to determine whether they are likely to track sales or remain fixed

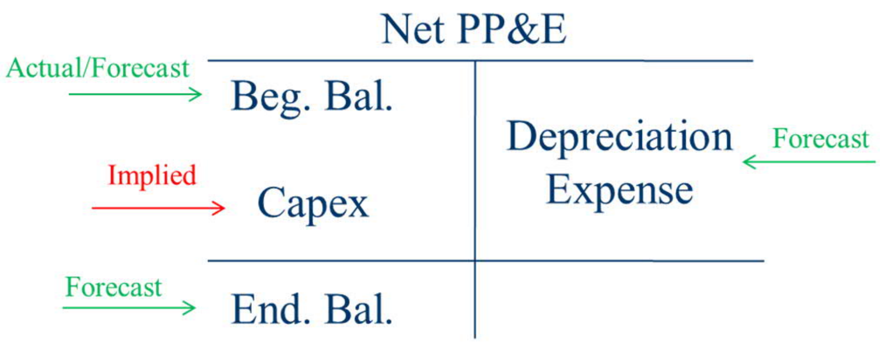
Pointers on Forecasting:
Assets and Liabilities

- Accounts Payable
  - Usually track sales
  - Changes in credit policy and bargaining power of key suppliers can change the relationship to sales

- Other Current Liabilities
  - Identify the nature of any material items and try to determine whether they are likely to track sales or remain fixed

Pointers on Forecasting:
Assets and Liabilities

- PP&E
  - Usually tracks sales growth
  - But not sales growth that originates from increased efficiency in the use of productive capacity or from price increases
  - Check whether your PP&E and depreciation expense forecasts generate implied capex forecasts that correspond with management's capex spending plans in MD&A



Pointers on Forecasting:
Assets and Liabilities

- Investments
  - Don't usually track sales
  - Identify the nature of any material items and try to determine their key drivers
- Intangibles
  - Don't usually track sales, since only purchased intangibles are recognized
  - If the firm has a track record of losses in the business unit to which the intangible is attached, then an impairment is likely

Pointers on Forecasting:
Assets and Liabilities

- Other Assets and Liabilities
  - Identify the nature of any material items and try to determine whether they are likely to track sales or remain fixed
- Debt
  - Typically tracks totals assets based on company's target debt-asset ratio
  - Pay attention to management's financing plans in MD&A
- Preferred Stock and Minority Interest
  - Unless management expressly indicates that they plan to change these sources of financing, the best forecast can be to leave at current levels
  - Minority interest should be adjusted for minority interest in earnings and dividends