Financial Forecasting

Pro Forma Statements: Income Statement & Balance Sheet
Predict what statements will look like at EOP
Estimate future need for *external* funding required to achieve sales target

Percent of Sales
1. Forecast Sales
2. a. For accounts which vary with sales, use historical ratios to forecast levels needed to achieve sales goal
   b. For other accounts, forecast reasonable levels
   c. Aggregate accounts to Total Assets, Liabilities and Equity
3. External financing required is "plug figure" which equates sources and uses

$$EFR = \text{Total Assets} - (\text{Liabilities} + \text{Equity})$$

4. Test sensitivity of EFR to variations in forecasted sales
5. If EFR not acceptable, change something else (planning?)

Complications
Interest (circularity)
Seasonality

Pro Forma: Practice

Pro Formas already completed

Trapezoid Corporation

Balance Sheet *actual* Dec. 31, 2014				Income Statement *pro forma* 2015	
Current assets	800	Current liabilities	400	Sales	1,000
Net fixed assets	1,000	Long-term liabilities	1,100	COGS	600
Total assets	1,800	Shareholders' equity	300	Operating exp.	100
		Total liab. & equity	1,800	Depreciation exp.	100
				EBIT	200
				Interest exp.	50
				Taxes	50
				Net income	100

Determine
1. Assuming a dividend payout ratio of 25% and no new issues of equity, what would be Trapezoid's projected shareholders' equity for Dec. 31, 2015?
2. Assuming capital expenditures of $200 for 2015, and no sale or disposal of assets, what would be Trapezoid's projected Net fixed assets for Dec. 31, 2015.
3. Does Trapezoid need external funding? If so, how much?

Which Accounts are Affected?

Income Statement	
Sales	Y
− CoGS	Y
− GS&A	Y
− Depreciation	N
= EBIT	
− Interest	N
= EBT	
− Taxes	Y
= NI	Y
− Dividends	Y
= ΔR/E	Y

Balance Sheet			
Assets		**Liabilities and Equity**	
Cash	Y	Accounts Payable	Y
Accounts Receivable	Y	Accrued Expenses	Y
Inventory	Y	Notes Payable	N
Land	N	Long-Term Debt	N
Plant & Equipment	?	Common Stock	N
		Paid-in Capital	N
		Retained Earnings	Y
Total		Total	

Notes:
- Interest will change with financing, not sales
- **ΔR/E = Sales × NPM × Retention Ratio**
- Payables & Accruals will increase spontaneously

An Alternative: Additional Funds Needed

Incremental Approach

$$\text{AFN} = \underset{\text{in Assets}}{\text{Required Increase}} - \underset{\text{in Liabilities}}{\text{Spontaneous Increase}} - \underset{\text{Earnings}}{\text{Increase in Retained}}$$

$$= \left(\frac{\text{Current Assets}}{\text{Sales}}\right)\Delta\text{Sales} + \left(\frac{\text{Fixed Assets}}{\text{Sales}}\right)\Delta\text{Sales} - \underset{\text{in Liabilities}}{\text{Spontaneous Increase}} - \underset{\text{Earnings}}{\text{Increase in Retained}}$$

Note:
- AFN depends on Profitability (NPM) and Dividend Policy (Retention Ratio)

Incorporating Uncertainty into Forecasts

Sensitivity Analysis
Method: Change one pro forma assumption at a time, in a systematic way, observe impact
Benefits: Shows range of possible outcomes, highlights most crucial inputs
Drawbacks: Changes arbitrary, single variable, ignores probabilities

Scenario Analysis
Method: Identify scenarios, vary inputs for each, forecast proformas for each
Benefits: Allows multiple inputs to vary, allows correlations, allows probability
Drawbacks:

Simulation
Method: Assign PDs to inputs, generate random values for each, generate proformas
Benefits: Inputs may be related, allows all variables to change at once
Drawbacks: Hard to interpret

Cash Flow Forecasts

Based on Sources and Uses
List all sources of cash expected during forecast period
List all uses of cash expected during forecast period
Difference is EFR

$$\text{EFR} = \text{Uses of Cash} - \text{Sources of Cash}$$

Cash Budgets

Definition
Particularly useful for short-term cash management
Detailed projection of all cash inflows and outflows during forecast period, with particular attention to their timing, and the difference between accruals and cash
Compare ending cash balance with minimum desired balance
Deficit is EFR as of that date

$$\text{EFR} = \text{Deficit} = \text{Ending cash balance} - \text{Minimum desired balance}$$

Details
- Forecast sales, distinguishing between cash (possibly discounted) and credit sales
- Collections typically lag sales (age receivables, using historic ratios)
- Purchases necessarily lead sales
- Payments usually lag purchases (age payables, note discounts), but lead sales
- Most other flows follow simple patterns
- Firm needs minimum cash balance

Comparing Techniques

Results
Same for all three

Choice Depends of Purpose

Method	Purpose	Remarks
Pro Forma Statements	Planning Credit analysis	Extensible
Cash Flow Forecast		Easier than Pro Forma Broader than Cash Budget
Cash Budget	Short-term forecasting Cash management	