Financial Planning – Pro Forma Statements - Percentage of Sales Approach

General points to keep in mind in financial planning:

- General economic atmosphere will affect the future sales. Some industries are prone to macro variables, like retailing, others are based on specific hits and misses of particular projects, like the movie industry.
- It is important to pay attention whether a company is operating in a competitive environment, in which case, future cost increases may not be passed along to the consumers in the form of higher prices, which, in turn weakens the profit margins.
- If the company is operating bellow capacity, the asset increase needs may not be as high as the sales increase suggest.
- Investment in new assets is a capital budgeting problem that needs to be addressed as increased sales require increased investment in assets.
- Degree of financial leverage is a capital structure decision and is not organically affected by increase in sales. Management needs to initiate any changes, borrowing short term or long term etc.
- Cash paid to shareholders is a result of dividend policy that needs to be considered in financial planning.
- Liquidity requirements that need to be addressed as the sales increase and this is a Net Working Capital decision.

Company A, Pro Forma Income Statement		
	2013	2014 (Projected)
Sales	$1,000	1,200
Costs	800	960
Net Income	200	240

Note that PM stays the same. In general, this is not necessarily the case, for example, if depreciation or interest expense does not vary directly with sales.
Dividends are usually decided independently and affect the addition to retained earnings.

Company A, Pro Forma Balance Sheet								
	2013	**% of Sales**	**2014 (Projected)**		**2013**	**%of Sales**	**1st Step**	**2014 (Projected)**
Assets	$500	50%	600	Debt	250	25%	300	110
				Equity	250	25%	300	490
Total	500		600	Total	500		600	600

1st Step:
How can Net Income be $240 in 2014 and the Equity went up by only $50 (through retained earnings) from 2013 to 2014?
One possible explanation: Company may choose to distribute $190 to shareholders as dividends. In this case, "Dividends" is the item that helps us balance the balance sheet. We call this the "plug variable".
Then, in this case the Plug Variable: Dividends = 240 -50 =190.

Alternatively:
Suppose Company A does not pay dividends, then addition to retained earnings is $240, which makes the Equity go up from 2013 to 2014 by $240 making the new Equity number equal to 250+240=490. Then, note that the balance sheet is not balanced. The assets increased by $100 (that is what is needed to increase the sales). We do not want to increase the Assets further but the right handside of the balance sheet is higher than the left hand side. That is, we have more funding available than necessary. If we are not going to distribute the extra funds to shareholders, the only option left to us is to pay off some debt with the extra funds. Debt must be paid 250-140 = 110. In this case, Debt is the plug variable, and the balance sheet is balanced!

A company cannot go on growing its sales number without having to expand and improve its assets at some point. Therefore, growth in sales requires asset increase. Finance decisions are separate from this! Note that in the above example, company could fund the 20% in sales by itself without needing external funds. That is, to be able to increase sales by 20%, the company needs to increase its assets by $100. As it turns out, the extra Net Income (Profit) that will be obtained from increased sales is more than enough to cover $100!

This may not be always the case, as the following example indicates:

First, separate the accounts into two groups, those that vary directly (spontaneously) with sales and those do not! Given a sales forecast, we will then be able to calculate how much financing the firm will need to support the predicted sales level.
Note that COGS, Depreciation, Interest are all simplified in a single "Costs" item.
d: dividend payout ratio (the portion of the Net Income that is paid out to stock holders)
b: retention ratio, or, plowback ratio (the portion of the Net Income that is retained within the company and added to "retained earnings")
Note that d=1-b
For the following example assume that it is company policy to have d=1/3, and projected Sales Increase: 25%.
Try to fill out the last column of the following two tables yourself if the sales from 2013 to 2014 goes up by 25%.

Company B, Pro Forma Income Statement			
	2013	**% of Sales**	**2014 (Projected)**
Sales	$1,000		
Costs	800	80%	
Taxable Income	200	20%	
Taxes(34%)	68	6.8%	
Net Income	132	13.2%	
Dividends	44	4.4%	
Additions to Retained Earnings	88	8.8%	

Company B, Pro Forma Balance Sheet								
	2013	**% of Sales**	**2014 (Projected)**		**2013**	**%of Sales**	**1st Step**	**2014 (Projected)**
Current Assets				***Current Liabilities***				
Cash	160	16%	200	Accounts Payable	300	30%	375	
Accounts Receivable	440	44%	550	Notes Payable	100	n/a		
Inventory	600	60%	750	***Total Current Liabilities***	400	n/a		
Total Current Assets	1,200	120%	1,500	*Long-Term Debt*	800	n/a		
Net Fixed Assets	1,800	180%	2,250	***Owners' Equity***				
				Stock	800	n/a		
				Retained Earnings	1,000	n/a		
Total Assets	3,000	300%	3,750	***Total Liabilities and O.E.***	3,000	n/a		

Assuming the Management's objective is to keep the NWC the same, last columns of the Income Statement and the Balance Sheet can be filled as follows:

(Note that "keeping NWC the same" is a plausible constraint. But, it is possible that the company may have other constraints! Keeping NWC the same is not a must, it is provided as an example among many different constraints/objectives a company may have.)

Company B, Pro Forma Income Statement			
	2013	**% of Sales**	**2014 (Projected)**
Sales	$1,000		1,250
Costs	800	80%	1,000
Taxable Income	200	20%	250
Taxes(34%)	68	6.8%	85
Net Income	132	13.2%	165
Dividends	44	4.4%	55
Additions to Retained Earnings	88	8.8%	110

Company B, Pro Forma Balance Sheet								
	2013	**% of Sales**	**2014 (Projected)**		**2013**	**%of Sales**	**1st Step**	**2014 (Projected)**
Current Assets				***Current Liabilities***				
Cash	160	16%	200	Accounts Payable	300	30%	375	375
Accounts Receivable	440	44%	550	Notes Payable	100	n/a	100	325
Inventory	600	60%	750	***Total Current Liabilities***	400	n/a	475	700
Total Current Assets	1,200	120%	1,500	*Long-Term Debt*	800	n/a	800	1,140
Net Fixed Assets	1,800	180%	2,250	***Owners' Equity***				
				Stock	800	n/a	800	800
				Retained Earnings	1,000	n/a	1,110	1,110
Total Assets	3,000	300%	3,750	***Total Liabilities and O.E.***	3,000	n/a	3,185	3,750

Short by $565

EFN = (Assets/Sales) x ΔSales – (Spontaneous Liabilities/Sales) x ΔSales – PM x Projected Sales x (1-d)

Note that EFN = $565 can be obtained by using the above formula under some assumptions!!! (remember the class discussion! For this formula to work, Profit Margin (PM) and d should stay the same as the company's sales are growing. Try to think of cases when PM and/or d would not stay the same as sales grow. If you cannot think of any or are not sure, shoot me an email!)

Instead of keeping the NWC the same, the company may have a different financial objective. For example, due to other incentives, the management may want to keep D/E ratio the same.
Check to see if while keeping D/E ratio the same, growing 25% is possible or not. (Note that, everything else is as before, that is, no new stock is issued, dividend payout ratio is the same etc.)

What we have done so far: Given a certain growth rate, we estimated the financing the company would need.
Let's engage in the converse exercise now:
Given a financing policy, can we determine how much growth we can obtain?
Ultimately, what is the relationship between EFN and growth?
For this example, consider a different company. With the following 2013 Income Statement and Balance Sheet. Let's see what level of financing will be needed if this company grows at 0%, or 5%, or 10% ..etc. Assume "addition to retained earnings" is used to pay off debt when they exceed EFN. In the following table, 2014 numbers are projected for a growth level of 20% which ends up requiring $47.2 EFN. Try to calculate the EFN for other growth levels. The results are summarized in the table following the Income Statement & Balance Sheet.

Company C, Pro Forma Income Statement		
	2013	**2014(Proj.)**
Sales	$500	600
Costs	400	480
Taxable Inc.	100	120
Tax(34%)	34	40.8
Net Income	66	79.2
RE	44	52.8

Company C, Pro Forma Balance Sheet							
	2013	**% of Sales**	**2014 (Proj.)**		**2013**	**%of Sales**	**1st Step**
Cur. A.	$200	40%	240	Debt	250	n/a	250
Fix A.	300	60%	360	Equity	250	n/a	302.8
Total	500		600	Total	500		552.8
				EFN			47.2

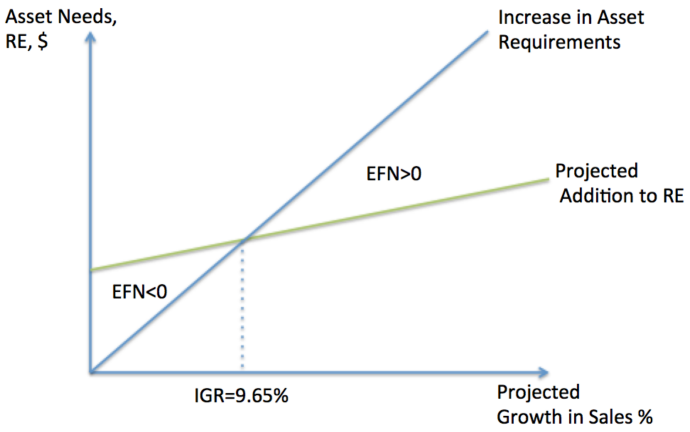
Growth and Projected EFN for Company C				
Projected Sales Growth	**Increase in Assets Required**	**Addition to Retained Earnings**	**EFN**	**Projected Debt/Equity Ratio**
0%	$0	$44	-$44	.70
5	25	46.2	-21.2	.77
10	50	48.4	1.6	.84
15	75	50.6	24.4	.91
20	100	52.8	47.2	.98
25	125	55	70	1.05

If you cannot produce the numbers in this table, shoot me an email!

There are three major components that change in the balance sheet when the company grows:

1. Assets change
2. Spontaneous Liabilities (usually accounts payable) change.
3. Retained Earnings change

To have a visual depiction of these changes and their relationship, assume we combine item 1 and 2, that is, assume we consider NET change in assets (asset change-spontaneous liability) change:



Internal Growth Rate: The maximum growth rate that can be obtained with no external financing of any kind.

IGR = ROAxb/1-(ROAxb)

Assuming:
All assets change according to percentage of sales
Debt stays constant
g denotes the growth rate
Spontaneous liabilities are netted on current assets side
A denotes the beginning level of Assets
S denotes the beginning level of Sales
PM denotes profit margin
B denotes retention ratio,
D denotes the beginning debt
E denotes the beginning equity
NI denotes net income

we can write the External Financing Need (EFN) as:

EFN = A x g - PM x S x (1+g) x b

Note that g will be IGR when EFN is equal to zero.

$0 = g_{IGR} - (NI/A) \times (1+g_{IGR}) \times b$, by solving for g_{IGR}, we obtain:

Formula for Internal Growth Rate: $g_{IGR} = ROA \times b / 1-(ROA \times b)$

Sustainable Growth Rate: The maximum growth rate that can be achieved with no external equity financing while maintaining a constant debt/equity ratio.

SGR = ROExb/1-(ROExb)
Let's try and derive this formula by imposing the constraint of "D/E stays the same" on EFN formula:

$\Delta D = (D+E) \times g - NI \times (1+g) \times b$, by dividing everywhere by $NI \times (1+g) \times b$, and rearranging:

$\Delta D / \Delta E = [(D+E) \times g] / [NI \times (1+g) \times b] - 1$

$(\Delta D / \Delta E) + 1 = [\{(D+E)/E\} \times g] / [\{NI / E \} \times (1+g) \times b]$

$1 = 1 / ROE \times (1+g_{SGR}) \times b$, by solving for g, we obtain:

Formula for Sustainable Growth Rate: $g_{SGR} = ROE \times b / 1-(ROE \times b)$

If a firm does not wish to sell new equity and its profit margin, dividend policy, financial policy, and total asset turnover (or capital intensity) are all fixed, then there is only one possible growth rate!!!

NOTE: You DO NOT need to memorize these formulas, nor need to know how to derive them! But it is a good idea to spend some time in order to understand what they are about!!!