

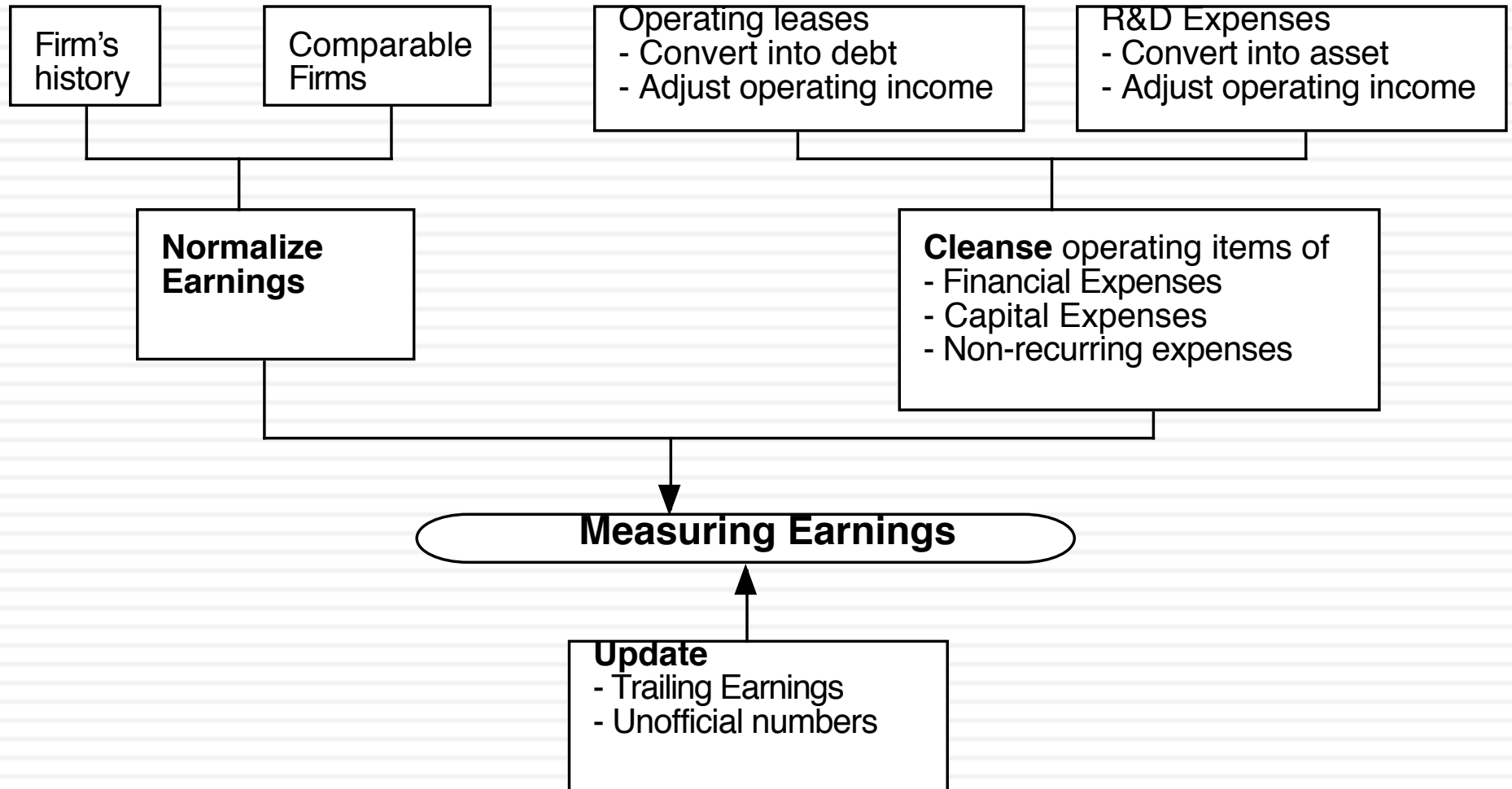
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# Cash Flows I

Accounting Earnings, Flawed but Important

# From Reported to Actual Earnings

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# 1. Updating Earnings

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- When valuing companies, we often depend upon financial statements for inputs on earnings and assets. Annual reports are often outdated and can be updated by using-
  - Trailing 12-month data, constructed from quarterly earnings reports.
  - Informal and unofficial news reports, if quarterly reports are unavailable.
- Updating makes the most difference for smaller and more volatile firms, as well as for firms that have undergone significant restructuring.
- Time saver: To get a trailing 12-month number, all you need is one 10K and one 10Q (example third quarter). For example, to get trailing revenues from a third quarter 10Q:
  - $\text{Trailing 12-month Revenue} = \text{Revenues (in last 10K)} - \text{Revenues from first 3 quarters of last year} + \text{Revenues from first 3 quarters of this year.}$

## 2. Correcting Accounting Earnings

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- Make sure that there are no financial expenses mixed in with operating expenses
  - ▣ Financial expense: Any commitment that is tax deductible that you have to meet no matter what your operating results: Failure to meet it leads to loss of control of the business.
  - ▣ Until 2019, accounting convention treated operating leases as operating expenses, skewing income statements & balance sheets.
- Make sure that there are no capital expenses mixed in with the operating expenses
  - ▣ Capital expense: Any expense that is expected to generate benefits over multiple periods.
  - ▣ There are a whole host of expenses (like R&D) that meet this description that accountants treat as operating expenses.

# A. The Magnitude of Operating Leases

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<i>Highest</i>		<i>Lowest</i>	
<i>Industry Name</i>	<i>Lease Expense/ Sales</i>	<i>Industry Name</i>	<i>Lease Expense/ Sales</i>
Air Transport	12.69%	Homebuilding	0.24%
Trucking	7.33%	Green & Renewable Energy	0.26%
Restaurant/Dining	5.95%	Insurance (Life)	0.34%
Telecom (Wireless)	5.75%	Steel	0.39%
Apparel	5.48%	Auto & Truck	0.41%
Real Estate (Operations & Services)	5.41%	Food Wholesalers	0.45%
Retail (Special Lines)	4.86%	Insurance (Prop/Cas.)	0.46%

# Dealing with Operating Lease Expenses

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- Since they give rise to contractual commitments, operating lease expenses should be treated as financing expenses, with the following adjustments to earnings and capital:
  - **Debt Value of Operating Leases** = Present value of Operating Lease Commitments at the pre-tax cost of debt
  - **Lease Asset:** When you convert operating leases into debt, you also create an asset to counter it of exactly the same value.
  - **Adjusted Operating Earnings** = Operating Earnings + Operating Lease Expenses - Depreciation on Leased Asset

As an approximation, this works:

- **Adjusted Operating Earnings** = Operating Earnings + Pre-tax cost of Debt \* PV of Operating Leases.

# Operating Leases at The Gap in 2003

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- The Gap has conventional debt of about \$ 1.97 billion on its balance sheet and its pre-tax cost of debt is about 6%. Its operating lease payments in the 2003 were \$978 million and its commitments for the future are below:

<i>Year</i>	<i>Commitment (millions)</i>	<i>Present Value (at 6%)</i>
1	\$899.00	\$848.11
2	\$846.00	\$752.94
3	\$738.00	\$619.64
4	\$598.00	\$473.67
5	\$477.00	\$356.44
6&7	\$982.50 each year	\$1,346.04

- Debt Value of leases = \$4,396.85 (Also value of leased asset)
- Debt outstanding at The Gap = \$1,970 m + \$4,397 m = \$6,367 m
- Adjusted Operating Income = Stated OI + OL exp this year - Deprec' n  
= \$1,012 m + 978 m - 4397 m /7 = \$1,362 million (7-year life for assets)
- Approximate OI = \$1,012 m + \$ 4397 m (.06) = \$1,276 m

# The Collateral Effects of Treating Operating Leases as Debt

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<i>Conventional Accounting</i>	<i>Operating Leases Treated as Debt</i>								
<p><i>Income Statement</i></p> <p>EBIT&amp; Leases = 1,990                      - Op Leases = 978                      EBIT = 1,012</p>	<p><i>Income Statement</i></p> <p>EBIT&amp; Leases = 1,990                      - Deprecn: OL= 628                      EBIT = 1,362</p> <p>Interest expense will rise to reflect the conversion of operating leases as debt. Net income should not change.</p>								
<p><i>Balance Sheet</i></p> <p>Off balance sheet (Not shown as debt or as an asset). Only the conventional debt of \$1,970 million shows up on balance sheet</p>	<p><i>Balance Sheet</i></p> <table> <tr> <td>Asset</td> <td></td> <td>Liability</td> <td></td> </tr> <tr> <td>OL Asset</td> <td>4397</td> <td>OL Debt</td> <td>4397</td> </tr> </table> <p>Total debt = 4397 + 1970 = \$6,367 million</p>	Asset		Liability		OL Asset	4397	OL Debt	4397
Asset		Liability							
OL Asset	4397	OL Debt	4397						
<p>Cost of capital = <math>8.20\%(7350/9320) + 4\%(1970/9320) = 7.31\%</math></p> <p>Cost of equity for The Gap = 8.20%</p> <p>After-tax cost of debt = 4%</p> <p>Market value of equity = 7350</p>	<p>Cost of capital = <math>8.20\%(7350/13717) + 4\%(6367/13717) = 6.25\%</math></p>								
<p>Return on capital = <math>1012 (1-.35)/(3130+1970) = 12.90\%</math></p>	<p>Return on capital = <math>1362 (1-.35)/(3130+6367) = 9.30\%</math></p>								



## Miscategorized Financing Expenses as Operating Expenses

To correct the accounting mistake

To correct operating (net) income: Stated Operating income + Current year's Lease expense - Amortization of Lease Asset

To correct financial expenses: Stated interest expense + imputed interest expense on lease debt

Amortize the lease asset over the commitment lifetime.

To correct debt & assets: Take the present value of future financing commitments, using the cost of debt as your discount and show as both an asset (lease asset) and debt (lease debt).

	Item	Explanation
Start with	Revenues	Accountant's estimate of the revenues/sales generated by any transactions made the business during the period.
Net out	Cost of Goods Sold	Estimated costs that are directly associated with producing the product/service sold by the company.
To get	<b>Gross Profit</b>	Unit profitability, before covering other indirect costs and financial expenses
Net out	Operating Expenses	Include all expenses associated with operations this year, with no benefits spilling over into future years.
To get	<b>Operating Profit</b>	Profitability of business/ operations
Net out	Financial Expenses	Expenses associated with non-equity financing (debt, for instance)
Add in	Financial Income	Income earned on cash balance and on financial investments (in companies and securities)
To get	<b>Pretax Profit</b>	Income to equity investors, prior to taxes
Net out	Taxes	Taxes, based upon taxable income. (May not equate to cash taxes paid)
To get	<b>Net Profit</b>	Income to equity investors, after taxes

When accountants treat a financing expense (like lease payment) as an operating expense.

Operating income will be misstated, with financing expenses showing up as operating expenses. Net income will be unaffected.

Assets		Liabilities	
Long Lived Physical Assets	Fixed Assets	Current Liabilities	Short term obligations
Short Lived Assets	Current Assets	Debt	Long term debt
Investments in Securities & other business	Financial Assets	Other Liabilities	Other long term obligations
Assets which are not physical	Intangible Assets	Equity	Shareholders' Equity

Book debt and assets will be understated, as you miss the present value of commitments associated with the financing on both sides of the balance sheet.

Ratio/Statistic	Before correction	After correction	Effect of correction
Operating Margin	Operating income/Sales	Corrected Operating income/Sales	Increase
Net Margin	Net Income/Sales	Net Income/Sales	No change
Return on invested capital	Operating income/ (Book value of equity + Book value of debt - cash)	Corrected Operating income/ (Book value of equity + Book value of debt + Lease debt - cash)	Decrease
Return on equity	Net Income/Book Equity	Net Income/ Book Equity	No change
Debt Ratio (Book)	Book Debt/(Book Debt + Book Equity)	(Book Debt + Lease Debt)/ (Book Debt + Lease Debt + Equity)	Increase
Debt Ratio (Market)	Mkt Debt/(Mkt Debt + Mkt Equity)	(Mkt Debt + Lease Debt)/ (Mkt Debt + Lease Debt + Mkt Equity)	Increase

# Accounting comes to its senses on operating leases

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- In 2019, both IFRS and GAAP made a major shift on operating leases, requiring companies to capitalize leases and show the resulting debt (and counter asset) on the balance sheets.
- That said, the accounting rules for capitalizing leases are far more complex than the simple calculations that I have used, for two reasons:
  - ▣ Accounting has to balance its desire to do the right thing with maintaining some connection to its legacy rules.
  - ▣ Companies have lobbied to modify rules in their sectors to cushion the impact.

# Checking on Accountants.... My lease estimate vs Accountants' Estimate

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Region	My Estimate	Accounting	Accounting as % of my estimate
Australia, NZ & Canada	\$ 13,578.86	\$ 8,412.39	61.95%
United States	\$ 1,152,869.85	\$ 947,989.30	82.23%
Europe	\$ 52,172.26	\$ 24,336.94	46.65%
Emerging Markets	\$ 109,415.47	\$ 18,426.24	16.84%
Japan	\$ 156,071.83	\$ 1,719.90	1.10%
Global	\$ 1,484,108.27	\$ 1,000,884.77	67.44%

## B. The Magnitude of R&D Expenses

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<i>Highest R&amp;D spenders</i>			<i>Lowest R&amp;D spenders</i>		
<i>Industry Name</i>	<i>R&amp;D - LTM (in \$ millions)</i>	<i>Current R&amp;D as % of Revenue</i>	<i>Industry Name</i>	<i>R&amp;D - LTM (in \$ millions)</i>	<i>Current R&amp;D as % of Revenue</i>
Drugs (Biotechnology)	\$ 75,091.63	39.62%	Beverage (Alcoholic)	\$	0.00%
Drugs (Pharmaceutical)	\$ 80,658.49	23.08%	Food Wholesalers	\$ 0.88	0.00%
Software (Internet)	\$ 4,177.58	18.98%	Homebuilding		0.00%
Semiconductor	\$ 50,321.60	17.40%	Hospitals/Healthcare Facilities	\$ 9.72	0.00%
Software (System & Application)	\$ 72,267.59	16.70%	Insurance (Life)		0.00%
Software (Entertainment)	\$ 58,245.69	15.15%	Insurance (Prop/Cas.)		0.00%
Telecom. Equipment	\$ 13,613.55	13.27%	Oil/Gas Distribution		0.00%
Retail (Online)	\$ 54,214.00	10.09%	Real Estate (Development)	\$ -	0.00%
Semiconductor Equip	\$ 6,707.74	9.38%	Real Estate (General/Diversified)		0.00%
Healthcare Products	\$ 14,934.42	8.01%	Restaurant/Dining	\$ 8.82	0.00%

# R&D Expenses: Operating or Capital Expenses

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- Accounting standards require us to consider R&D as an operating expense even though it is designed to generate future growth. It is more logical to treat it as capital expenditures.
- To capitalize R&D,
  - Specify an amortizable life for R&D (2 - 10 years)
  - Collect past R&D expenses for as long as the amortizable life
  - Sum up the unamortized R&D over the period. (Thus, if the amortizable life is 5 years, the research asset can be obtained by adding up 1/5th of the R&D expense from five years ago, 2/5th of the R&D expense from four years ago...:

# Capitalizing R&D Expenses: SAP

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- R & D was assumed to have a 5-year life.

Year	R&D Expense	Unamortized	Amortization this year	
Current	1020.02	1.00	1020.02	
-1	993.99	0.80	795.19	€ 198.80
-2	909.39	0.60	545.63	€ 181.88
-3	898.25	0.40	359.30	€ 179.65
-4	969.38	0.20	193.88	€ 193.88
-5	744.67	0.00	0.00	€ 148.93

Value of research asset = € 2,914 million

Amortization of research asset in 2004 = € 903 million

Increase in Operating Income =  $1020 - 903 =$  € 117 million

# The Effect of Capitalizing R&D at SAP

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<i>Conventional Accounting</i>	<i>R&amp;D treated as capital expenditure</i>						
<p><i>Income Statement</i></p> <p>EBIT&amp; R&amp;D = 3045                      - R&amp;D = 1020                      EBIT = 2025                      EBIT (1-t) = 1285 m</p>	<p><i>Income Statement</i></p> <p>EBIT&amp; R&amp;D = 3045                      - Amort: R&amp;D = 903                      EBIT = 2142 (Increase of 117 m)                      EBIT (1-t) = 1359 m                      Ignored tax benefit = (1020-903)(.3654) = 43                      Adjusted EBIT (1-t) = 1359+43 = 1402 m                      (Increase of 117 million)                      Net Income will also increase by 117 million</p>						
<p><i>Balance Sheet</i></p> <p>Off balance sheet asset. Book value of equity at 3,768 million Euros is understated because biggest asset is off the books.</p>	<p><i>Balance Sheet</i></p> <table> <tr> <td>Asset</td> <td>Liability</td> </tr> <tr> <td>R&amp;D Asset 2914</td> <td>Book Equity +2914</td> </tr> <tr> <td colspan="2">Total Book Equity = 3768+2914= 6782 mil</td> </tr> </table>	Asset	Liability	R&D Asset 2914	Book Equity +2914	Total Book Equity = 3768+2914= 6782 mil	
Asset	Liability						
R&D Asset 2914	Book Equity +2914						
Total Book Equity = 3768+2914= 6782 mil							
<p><i>Capital Expenditures</i></p> <p>Conventional net cap ex of 2 million Euros</p>	<p><i>Capital Expenditures</i></p> <p>Net Cap ex = 2+ 1020 - 903 = 119 mil</p>						
<p><i>Cash Flows</i></p> <p>EBIT (1-t) = 1285                      - Net Cap Ex = 2                      FCFF = 1283</p>	<p><i>Cash Flows</i></p> <p>EBIT (1-t) = 1402                      - Net Cap Ex = 119                      FCFF = 1283 m</p>						
<p>Return on capital = 1285/(3768+530)</p>	<p>Return on capital = 1402/(6782+530)</p>						

## Miscategorized Capital Expenses as Operating Expenses

### Income Statement

	Item	Explanation
Start with	Revenues	Accountant's estimate of the revenues/sales generated by any transactions made the business during the period.
Net out	Cost of Goods Sold	Estimated costs that are directly associated with producing the product/service sold by the company.
To get	<b>Gross Profit</b>	Unit profitability, before covering other indirect costs and financial expenses
Net out	Operating Expenses	Include all expenses associated with operations this year, with no benefits spilling over into future years.
To get	<b>Operating Profit</b>	Profitability of business/ operations
Net out	Financial Expenses	Expenses associated with non-equity financing (debt, for instance)
Add in	Financial Income	Income earned on cash balance and on financial investments (in companies and securities)
To get	<b>Pretax Profit</b>	Income to equity investors, prior to taxes
Net out	Taxes	Taxes, based upon taxable income. (May not equate to cash taxes paid)
To get	<b>Net Profit</b>	Income to equity investors, after taxes

When accountants treat a capital expenditure (like R&D) as an operating expense.

Operating income and net income will be misstated and will be too low (high) for companies with growing (declining) R&D expenses.

To correct the accounting mistake

To correct operating (net) income: Stated Operating (Net) income + Current year's R&D expense - Amortization of R&D Asset

Amortize the R&D asset over amortizable life.

To correct debt & assets: Capitalize past R&D expenses and incorporate that amount into assets (as an R&D asset) and increase book equity by an equal amount.

### Balance Sheet

Assets		Liabilities	
Long Lived Physical Assets	Fixed Assets	Current Liabilities	Short term obligations
Short Lived Assets	Current Assets	Debt	Long term debt
Investments in Securities & other business	Financial Assets	Other Liabilities	Other long term obligations
Assets which are not physical	Intangible Assets	Equity	Shareholders' Equity

Book equity and assets will be understated, as you miss the capitalized effects of past R&D expenses in both items.

### Effects on Ratios/Statistics

Ratio/Statistic	Before correction	After correction	Effect of correction
Operating Margin	Operating income/Sales	Corrected Operating income/Sales	Increase (decrease) for companies with rising R&D expenses.
Net Margin	Net Income/Sales	Corrected Net Income/Sales	Increase (decrease) for companies with rising R&D expenses.
Return on invested capital	Operating income/ (Book value of equity + Book value of debt - cash)	Corrected Operating income/ (Book value of equity + R&D asset + Book value of debt - cash)	Decrease
Return on equity	Net Income/Book Equity	Corrected Net Income/ (Book Equity + R&D asset)	Decrease
Debt Ratio (Book)	Book Debt/(Book Debt + Book Equity)	Book Debt / (Book Debt + Equity + R&D asset)	Decrease
Debt Ratio (Market)	Mkt Debt/(Mkt Debt + Mkt Equity)	Mkt Debt/(Mkt Debt + Mkt Equity)	No change (The market value already incorporates R&D)



### 3. One-Time and Non-recurring Charges

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- Assume that you are valuing a firm that is reporting a loss of \$ 500 million, due to a one-time charge of \$ 1 billion. What is the earnings you would use in your valuation?
  - a. A loss of \$ 500 million
  - b. A profit of \$ 500 million
- Would your answer be any different if the firm had reported one-time losses like these once every five years?
  - a. Yes
  - b. No

## 4. Accounting Malfeasance....

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- Though all firms may be governed by the same accounting standards, the fidelity that they show to these standards can vary. More aggressive firms will show higher earnings than more conservative firms.
- While you will not be able to catch outright fraud, you should look for warning signals in financial statements and correct for them:
  - Income from unspecified sources - holdings in other businesses that are not revealed or from special purpose entities.
  - Income from asset sales or financial transactions (for a non-financial firm)
  - Sudden changes in standard expense items - a big drop in S,G &A or R&D expenses as a percent of revenues, for instance.
  - Frequent accounting restatements
  - Accrual earnings that run ahead of cash earnings consistently
  - Big differences between tax income and reported income

# 5. Dealing with Negative or Abnormally Low Earnings

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	Reason for losses/low earnings	Valuation Response
Quick fixes	One-time or extraordinary charge	Add back the one-time expense to get corrected earnings
	Macro factor (commodity price drop or recession)	Use earnings across the commodity or economic cycle as normalized earnings.
Long term fixes	Young company working on business model	Estimate the profit margin that mature companies in the business earn and target that margin in the long term.
	Structural problems at company	Use an industry average margin as a target and move towards that margin over time, as structural problems are fixed.

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# Cash Flows II

## Taxes and Reinvestment

# 1. What tax rate?

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- The tax rate that you should use in computing the after-tax operating income should be
  - a. The effective tax rate in the financial statements (taxes paid/Taxable income)
  - b. The tax rate based upon taxes paid and EBIT (taxes paid/EBIT)
  - c. The marginal tax rate for the country in which the company operates
  - d. The weighted average marginal tax rate across the countries in which the company operates
  - e. None of the above
  - f. Any of the above, as long as you compute your after-tax cost of debt using the same tax rate.

# The Right Tax Rate to Use

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- The free cash flow to the firm starts with after-tax operating income, where:
  - After-tax Operating Income = Operating Income (1- tax rate)
- In computing free cash flow to the firm, the choice really is between the effective and the marginal tax rate.
  - By using the marginal tax rate, we tend to understate the after-tax operating income in the earlier years, but the after-tax tax operating income is more accurate in later years.
  - By using the effective tax rate, we tend to overstate the after-tax operating income in the later years, as effective tax rates move toward the marginal tax rate.
- You can have your cake and eat it too, by starting with the effective tax rate, and adjusting towards the marginal tax rate over time.

# A Tax Rate for a Money Losing Firm

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- Assume that you are trying to estimate the after-tax operating income for a firm **with \$ 1 billion in net operating losses** carried forward.
- This firm is **expected to have operating income of \$ 500 million each year for the next 3 years**, and the marginal tax rate on income for all firms that make money is 40%. Estimate the after-tax operating income each year for the next 3 years.

	Year 1	Year 2	Year 3
EBIT	500	500	500
Taxes			
EBIT (1-t)			
Tax rate			

## 2. Net Capital Expenditures

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- Net capital expenditures represent the difference between capital expenditures and depreciation.  
Net Cap Ex = Capital Expenditures - Depreciation  
Depreciation is a cash inflow that pays for some or a lot (or sometimes all of) the capital expenditures.
- In general, the net capital expenditures will be a function of how fast a firm is growing or expecting to grow.
  - High growth firms will usually have much higher net capital expenditures than low growth firms.
  - Assumptions about net capital expenditures can therefore never be made independently of assumptions about growth in the future.



# Capital expenditures should include

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- Research and development expenses, once they have been re-categorized as capital expenses. The adjusted net cap ex will be
  - $\text{Adjusted Net Capital Expenditures} = \text{Net Capital Expenditures} + \text{Current year's R\&D expenses} - \text{Amortization of Research Asset}$
- Acquisitions of other firms, since these are like capital expenditures. The adjusted net cap ex will be
  - $\text{Adjusted Net Cap Ex} = \text{Net Capital Expenditures} + \text{Acquisitions of other firms} - \text{Amortization of such acquisitions}$
- Two caveats:
  1. Most firms do not do acquisitions every year. Hence, a normalized measure of acquisitions (looking at an average over time) should be used
  2. The best place to find acquisitions is in the statement of cash flows, usually categorized under other investment activities

# Cisco's Acquisitions: 1999

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Acquired	Method of Acquisition	Price Paid
GeoTel	Pooling	\$1,344
Fibex	Pooling	\$318
Sentient	Pooling	\$103
American Internet	Purchase	\$58
Summa Four	Purchase	\$129
Clarity Wireless	Purchase	\$153
Selsius Systems	Purchase	\$134
PipeLinks	Purchase	\$118
Amteva Tech	Purchase	\$159
		\$2,516

# Cisco's Net Capital Expenditures in 1999

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Cap Expenditures (from statement of CF)	= \$ 584 mil
- Depreciation (from statement of CF)	= \$ 486 mil
Net Cap Ex (from statement of CF)	= \$ 98 mil
+ R & D expense	= \$ 1,594 mil
- Amortization of R&D	= \$ 485 mil
+ Acquisitions	= \$ 2,516 mil
Adjusted Net Capital Expenditures	= \$3,723 mil

□ (Amortization was included in the depreciation number)

# 3. Working Capital Investments

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- **Accounting definition:** Working capital is the difference between current assets (inventory, cash and accounts receivable) and current liabilities (accounts payables, short term debt and debt due within the next year).
- **Valuation definition:** A cleaner definition of working capital from a cash flow perspective is the difference between non-cash current assets (inventory and accounts receivable) and non-debt current liabilities (accounts payable).

# Working Capital: General Propositions

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1. Working Capital Detail: While some analysts break down working capital into detail, it is a pointless exercise unless you feel that you can bring some specific information that lets you forecast the details.
2. Working Capital Volatility: Changes in non-cash working capital from year to year tend to be volatile. It is better to either estimate the change based on working capital as a percent of sales, while keeping an eye on industry averages.
3. Negative Working Capital: Some firms have negative non-cash working capital. Assuming that this will continue into the future will generate positive cash flows for the firm and will get more positive as growth increases.