

# Net Capital Expenditures

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- Net capital expenditures represent the difference between capital expenditures and 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 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
  - ▣ Adjusted Net Capital Expenditures = Net Capital Expenditures + Current year's R&D expenses - Amortization of Research Asset
- Acquisitions of other firms, since these are like capital expenditures. The adjusted net cap ex will be
  - ▣ Adjusted Net Cap Ex = Net Capital Expenditures + Acquisitions of other firms - 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)

# Working Capital Investments

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- In accounting terms, the 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)
- 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)
- For firms in some sectors, it is the investment in working capital that is the bigger part of reinvestment.

# Working Capital: General Propositions

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1. Working Capital Detail: While some analysts break down working capital into detail (inventory, deferred taxes, payables etc.), 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. So, building of the change in the most recent year is dangerous. 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.

# Volatile Working Capital?

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	<i>Amazon</i>	<i>Cisco</i>	<i>Motorola</i>
Revenues	\$ 1,640	\$12,154	\$30,931
Non-cash WC	-\$419	-\$404	\$2547
% of Revenues	-25.53%	-3.32%	8.23%
Change from last year	\$ (309)	(\$700)	(\$829)
Average: last 3 years	-15.16%	-3.16%	8.91%
Average: industry	8.71%	-2.71%	7.04%
	<i>My Prediction</i>		
WC as % of Revenue	3.00%	0.00%	8.23%

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# Cash Flows III

From the firm to equity



# Dividends and Cash Flows to Equity

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- In the strictest sense, the only cash flow that an investor will receive from an equity investment in a publicly traded firm is the dividend that will be paid on the stock.
- Actual dividends, however, are set by the managers of the firm and may be much lower than the potential dividends (that could have been paid out)
  - ▣ managers are conservative and try to smooth out dividends
  - ▣ managers like to hold on to cash to meet unforeseen future contingencies and investment opportunities
- When actual dividends are less than potential dividends, using a model that focuses only on dividends will understate the true value of the equity in a firm.

# Measuring Potential Dividends

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- Some analysts assume that the earnings of a firm represent its potential dividends. This cannot be true for several reasons:
  - ▣ Earnings are not cash flows, since there are both non-cash revenues and expenses in the earnings calculation
  - ▣ Even if earnings were cash flows, a firm that paid its earnings out as dividends would not be investing in new assets and thus could not grow
  - ▣ Valuation models, where earnings are discounted back to the present, will over estimate the value of the equity in the firm
- The potential dividends of a firm are the cash flows left over after the firm has made any “investments” it needs to make to create future growth and net debt repayments (debt repayments - new debt issues)
  - ▣ The common categorization of capital expenditures into discretionary and non-discretionary loses its basis when there is future growth built into the valuation.

# Estimating Cash Flows: FCFE

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## □ Cash flows to Equity for a Levered Firm

Net Income

- (Capital Expenditures - Depreciation)

- Changes in non-cash Working Capital

- (Principal Repayments - New Debt Issues)

= Free Cash flow to Equity

- I have ignored preferred dividends. If preferred stock exist, preferred dividends will also need to be netted out

# Estimating FCFE when Leverage is Stable

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Net Income

- (1- DR) (Capital Expenditures - Depreciation)
- (1- DR) Working Capital Needs
- = Free Cash flow to Equity

DR = Debt/Capital Ratio

For this firm,

- Proceeds from new debt issues = Principal Repayments +  $\square$  (Capital Expenditures - Depreciation + Working Capital Needs)
- In computing FCFE, the book value debt to capital ratio should be used when looking back in time but can be replaced with the market value debt to capital ratio, looking forward.

# FCFE from the statement of cash flows

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- The statement of cash flows can be used to back into a FCFE, if you are willing to navigate your way through it and not trust it fully.
- FCFE
  - = Cashflow from Operations
  - Capital Expenditures (from the cash flow from investments)
  - Cash Acquisitions (from the cash flow from investments)
  - (Debt Repaid – Debt Issued) (from financing cash flows)
  - = FCFE
- Alternatively, you can also do the following:
  - $FCFE - Dividends + Stock\ Buybacks - Stock\ Issuances + Change\ in\ Cash\ Balance$

# Dividends versus FCFE: Across the globe

<i>Sub Group</i>	<i>FCFE</i>	<i>Dividends</i>	<i>Buybacks</i>	<i>Dividends + Buybacks</i>	<i>% of dividend paying firms</i>
Africa and Middle East	\$85,659	\$114,879	\$3,083	\$117,963	54.64%
Australia & NZ	\$14,445	\$31,975	\$9,846	\$41,821	27.63%
Canada	\$5,499	\$36,040	\$31,425	\$67,466	12.41%
China	\$50,327	\$299,196	\$19,147	\$318,342	73.63%
EU & Environs	\$167,899	\$290,900	\$117,861	\$408,762	43.67%
E. Europe & Russia	\$34,187	\$27,491	\$5,546	\$33,037	43.01%
India	\$44,762	\$24,602	\$6,669	\$31,271	29.41%
Japan	(\$42,357)	\$110,331	\$70,847	\$181,178	69.68%
Latin America	(\$13,487)	\$35,631	\$5,068	\$40,700	60.00%
Small Asia	(\$43,076)	\$116,261	\$10,655	\$126,916	54.69%
UK	\$11,429	\$70,864	\$35,382	\$106,245	51.60%
United States	\$290,411	\$499,570	\$700,425	\$1,199,995	21.95%
Global	\$605,699	\$1,657,741	\$1,015,955	\$2,673,696	46.66%

# Estimating FCFE: Disney

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- Net Income=\$ 1533 Million
- Capital spending = \$ 1,746 Million
- Depreciation per Share = \$ 1,134 Million
- Increase in non-cash working capital = \$ 477 Million
- Debt to Capital Ratio (DR) = 23.83%
- Estimating FCFE (1997):

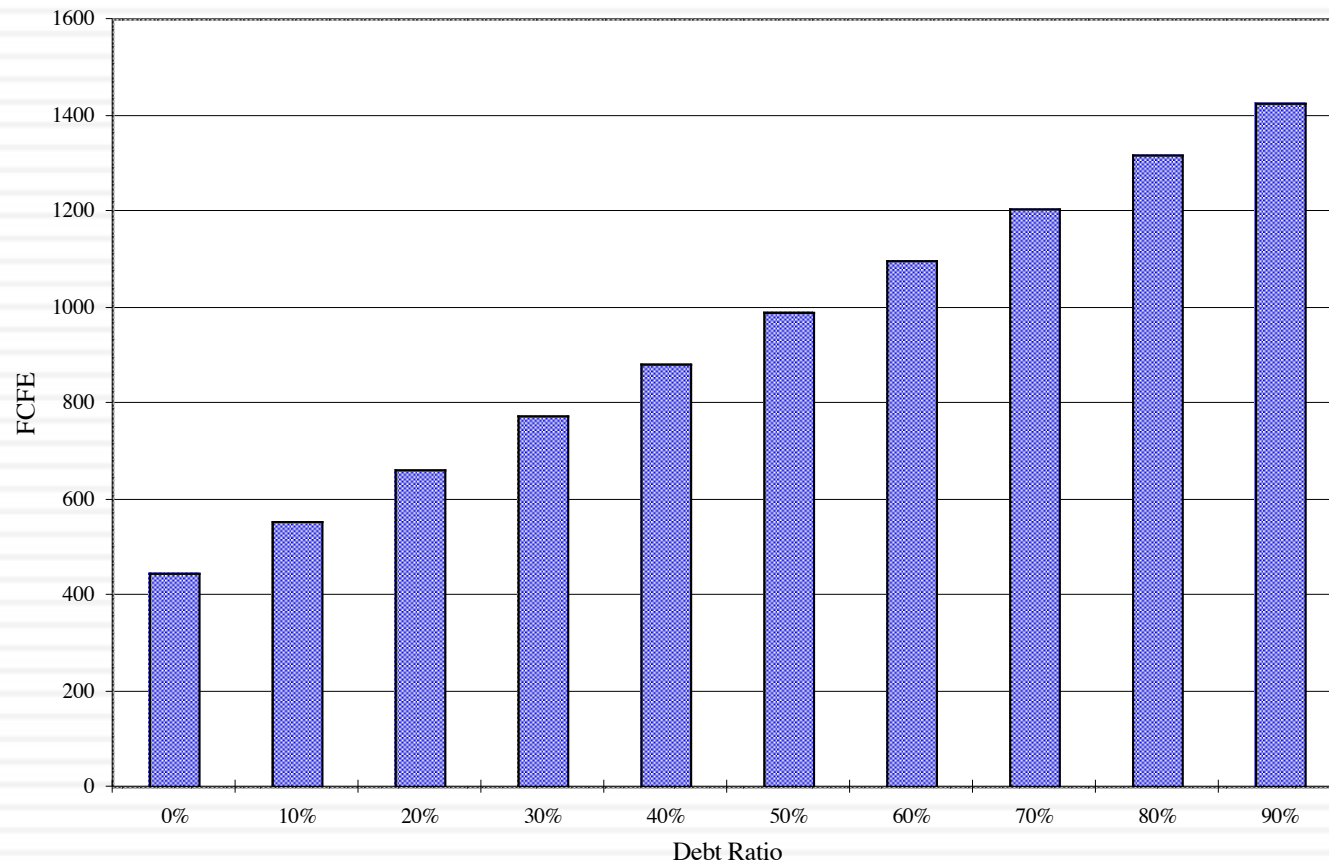
Net Income	\$1,533 Mil
- (Cap. Exp - Depr)*(1-DR)	\$465.90 [(1746-1134)(1-.2383)]
Chg. Working Capital*(1-DR)	\$363.33 [477(1-.2383)]
= Free CF to Equity	\$ 704 Million

Dividends Paid	\$ 345 Million
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# FCFE and Leverage: Is this a free lunch?

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Debt Ratio and FCFE: Disney

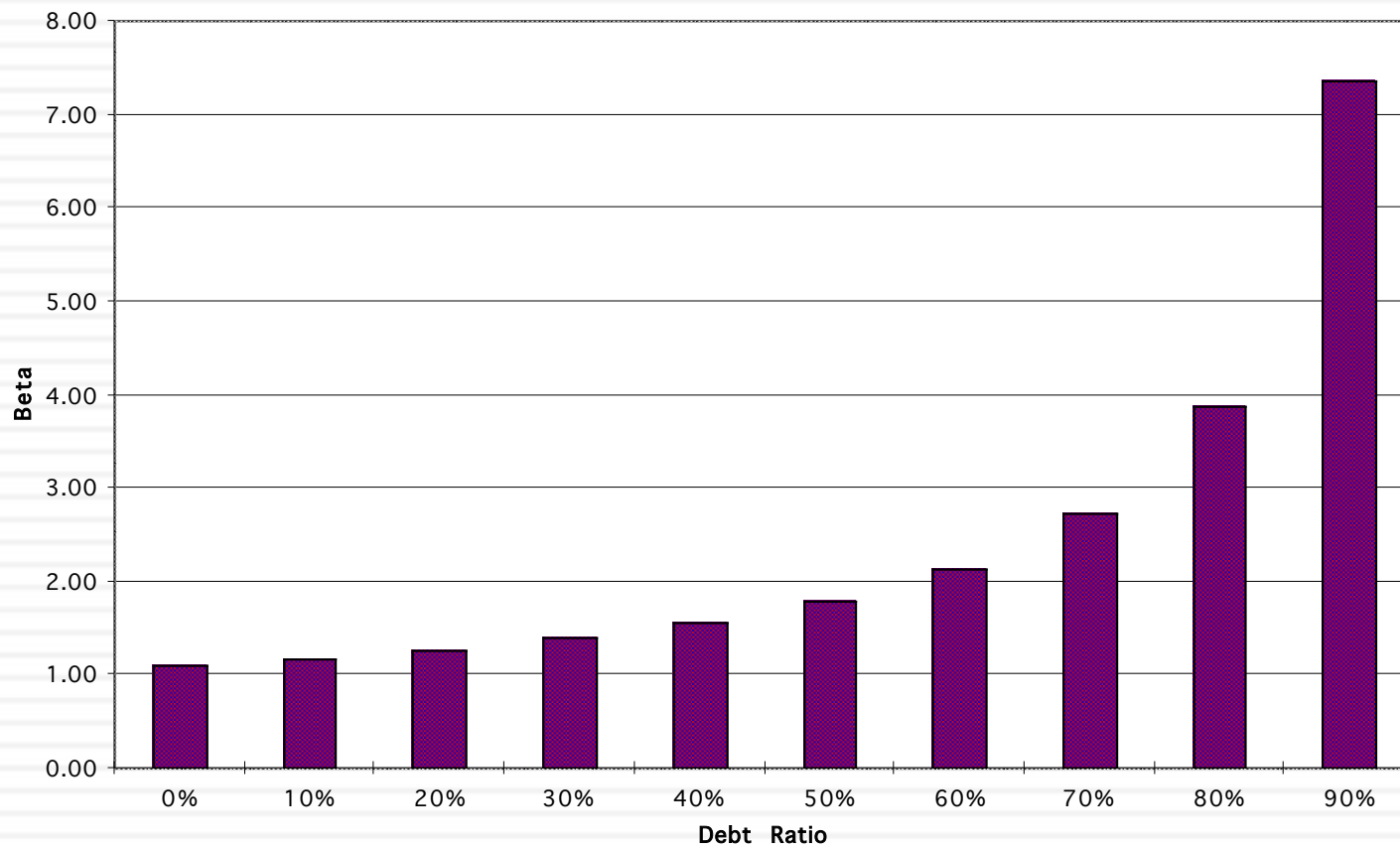




# FCFE and Leverage: The Other Shoe Drops

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Debt Ratio and Beta



# Leverage, FCFE and Value

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- In a discounted cash flow model, increasing the debt/equity ratio will generally increase the expected free cash flows to equity investors over future time periods and also the cost of equity applied in discounting these cash flows. Which of the following statements relating leverage to value would you subscribe to?
  - a. Increasing leverage will increase value because the cash flow effects will dominate the discount rate effects
  - b. Increasing leverage will decrease value because the risk effect will be greater than the cash flow effects
  - c. Increasing leverage will not affect value because the risk effect will exactly offset the cash flow effect
  - d. Any of the above, depending upon what company you are looking at and where it is in terms of current leverage

# Estimating Growth

Growth can be good, bad or neutral...

# The Value of Growth

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- When valuing a company, it is easy to get caught up in the details of estimating growth and start viewing growth as a “good”, i.e., that higher growth translates into higher value.
- Growth, though, is a double-edged sword.
  - The good side of growth is that it pushes up revenues and operating income, perhaps at different rates (depending on how margins evolve over time).
  - The bad side of growth is that you have to set aside money to reinvest to create that growth.
  - The net effect of growth is whether the good outweighs the bad.

# Ways of Estimating Growth in Earnings

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- Look at the past
  - ▣ The historical growth in earnings per share is usually a good starting point for growth estimation
- Look at what others are estimating
  - ▣ Analysts estimate growth in earnings per share for many firms. It is useful to know what their estimates are.
- Look at fundamentals
  - ▣ Ultimately, all growth in earnings can be traced to two fundamentals - how much the firm is investing in new projects, and what returns these projects are making for the firm.

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# Growth I

## Historical Growth

# Historical Growth

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- Historical growth rates can be estimated in a number of different ways
  - ▣ Arithmetic versus Geometric Averages
  - ▣ Simple versus Regression Models
- Historical growth rates can be sensitive to
  - ▣ The period used in the estimation (starting and ending points)
  - ▣ The metric that the growth is estimated in..
- In using historical growth rates, you have to wrestle with the following:
  - ▣ How to deal with negative earnings
  - ▣ The effects of scaling up

# Motorola: Arithmetic versus Geometric Growth Rates

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	Revenues	% Change	EBITDA	% Change	EBIT	% Change
1994	\$ 22,245		\$ 4,151		\$ 2,604	
1995	\$ 27,037	21.54%	\$ 4,850	16.84%	\$ 2,931	12.56%
1996	\$ 27,973	3.46%	\$ 4,268	-12.00%	\$ 1,960	-33.13%
1997	\$ 29,794	6.51%	\$ 4,276	0.19%	\$ 1,947	-0.66%
1998	\$ 29,398	-1.33%	\$ 3,019	-29.40%	\$ 822	-57.78%
1999	\$ 30,931	5.21%	\$ 5,398	78.80%	\$ 3,216	291.24%
Arithmetic Average		7.08%		10.89%		42.45%
Geometric Average		6.82%		5.39%		4.31%
Standard deviation		8.61%		41.56%		141.78%



# A Test

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- You are trying to estimate the growth rate in earnings per share at Time Warner from 1996 to 1997. In 1996, the earnings per share was a deficit of \$0.05. In 1997, the expected earnings per share is \$0.25. What is the growth rate?
  - a. -600%
  - b. +600%
  - c. +120%
  - d. Cannot be estimated

# Dealing with Negative Earnings

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- When the earnings in the starting period are negative, the growth rate cannot be estimated. ( $0.30/-0.05 = -600\%$ )
- There are three solutions:
  - ▣ Use the higher of the two numbers as the denominator ( $0.30/0.25 = 120\%$ )
  - ▣ Use the absolute value of earnings in the starting period as the denominator ( $0.30/0.05=600\%$ )
  - ▣ Use a linear regression model and divide the coefficient by the average earnings.
- When earnings are negative, the growth rate is meaningless. Thus, while the growth rate can be estimated, it does not tell you much about the future.

# The Effect of Size on Growth: Callaway Golf

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Year	Net Profit	Growth Rate
1990	1.80	
1991	6.40	255.56%
1992	19.30	201.56%
1993	41.20	113.47%
1994	78.00	89.32%
1995	97.70	25.26%
1996	122.30	25.18%

□ Geometric Average Growth Rate = 102%

# Extrapolation and its Dangers

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Year	Net Profit
1996	\$ 122.30
1997	\$ 247.05
1998	\$ 499.03
1999	\$ 1,008.05
2000	\$ 2,036.25
2001	\$ 4,113.23

- If net profit continues to grow at the same rate as it has in the past 6 years, the expected net income in 5 years will be \$ 4.113 billion.

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# Growth II

## Analyst Estimates

# Analyst Forecasts of Growth

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- While the job of an analyst is to find under and over valued stocks in the sectors that they follow, a significant proportion of an analyst's time (outside of selling) is spent forecasting earnings per share.
  - ▣ Most of this time, in turn, is spent forecasting earnings per share in the next earnings report
  - ▣ While many analysts forecast expected growth in earnings per share over the next 5 years, the analysis and information (generally) that goes into this estimate is far more limited.
- Analyst forecasts of earnings per share and expected growth are widely disseminated by services such as Zacks and IBES, at least for U.S companies.

# How good are analysts at forecasting growth?

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- Analysts forecasts of EPS tend to be closer to the actual EPS than simple time series models, but the differences tend to be small

Study	Group tested	Analyst Error	Time Series Model Error
Collins & Hopwood	Value Line Forecasts	31.7%	34.1%
Brown & Rozeff	Value Line Forecasts	28.4%	32.2%
Fried & Givoly	Earnings Forecaster	16.4%	19.8%

- The advantage that analysts have over time series models
  - tends to decrease with the forecast period (next quarter versus 5 years)
  - tends to be greater for larger firms than for smaller firms
  - tends to be greater at the industry level than at the company level
- Forecasts of growth (and revisions thereof) tend to be highly correlated across analysts.