Stock Valuation

PEG and Other Measures

Nov. 16, 2016

P/E and PEG

Price to Earnings Ratio (P/E)

- Current Stock Price (P)
- Earnings/Share (E)
  - Trailing 12 months (TTM)
  - Forward (projected)

P/E to Growth Ratio (PEG)

- Current Valuation
  - P/E_{TTM}
  - Forecasted Growth Rate (5-year)
- Projected Valuation
  - Forward P/E
  - Forecasted Growth Rate (5-year)

PEG Life-Cycle

- **Emerging company** initially has limited earnings
  - P/E is higher than the average S&P company (currently ~17)
  - Price is bid up with the expectation of future earnings growth
  - Consequently, PEG is higher than maturing company
- **Growing Company,** established earnings, consistent growth
  - PEG ~1.5 to 2 range
- **Maturing company**, consistent earnings**,** limited growth outlook
  - Priced consistent with expected earnings and established growth rate
  - Fairly valued, PEG approaching 1
  - Undervalued, PEG <<1
  - Overvalued company, PEG >>1

Stock Profile - Starbucks

Starbucks Corp **SBUX**:NASDAQ
Hotels Restaurants & Leisure

Last Price	Today's Change	Bid/Size	Ask/Size	Today's Volume
$54.29	+1.54 (2.92%)	$54.28/12	$54.29/11	8,142,461 Above Avg.

As of 1:09 PM ET, 11/07/2016

C Schwab Equity Rating®
Data as of 11/04/2016*

Regular Dividend of $0.25 Announced Thursday

Trade
Margin Requirements

Summary | News | Charts | Ratings | Earnings | Statements | Peers | Ratios | Dividends | Reports | Options | Preferreds

Quote Details | Sector Overview | Total Return | Historical Quote | Key Fundamentals

1 Day | 5 Days | 1 Month | 3 Month | 6 Month | YTD | 1 Year | **3 Years** | 5 Years

Show Events

SBUX:NASDAQ As of Monday, 11/07/2016 +13.69 (33.72%)

Details	
Today's Open	$53.48
Previous Close	$52.75
Day's Range	$53.19 - $54.53
52 Week Range	$50.84 - $63.19
Beta (5 Year)	0.77
Average Volume (10 Day)	11,253,476
Put/Call Ratio (1 Day)	0.7
Put/Call Ratio (30 Day)	0.6

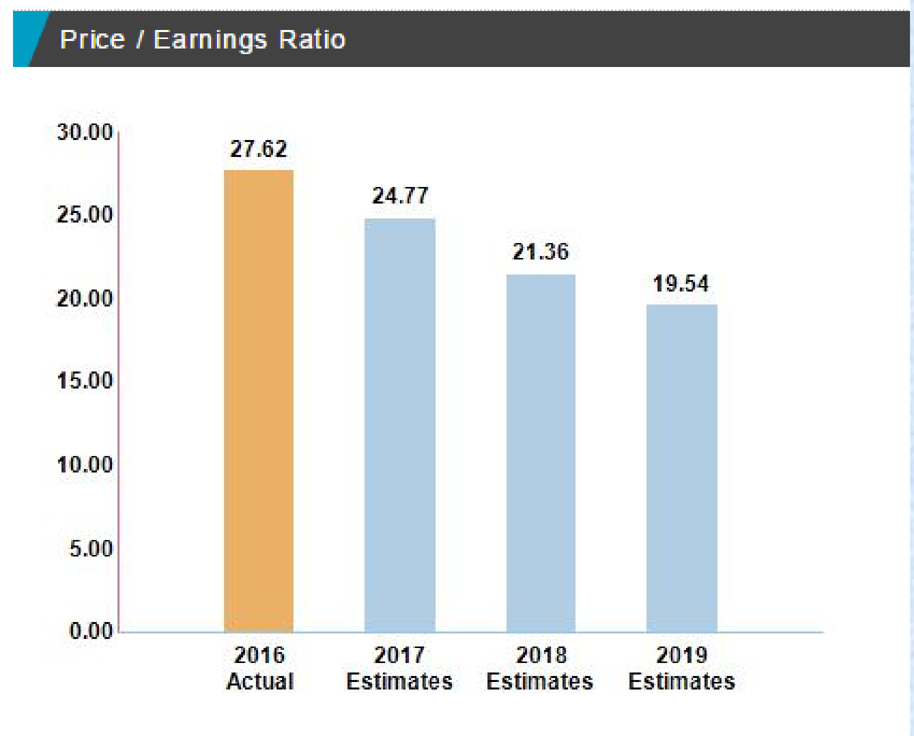
Earnings TTM (GAAP)	Details
Earnings Per Share (07/21/2016)	$1.8958
Price/Earnings	27.82
Forward P/E	24.77
Price to Earnings / Growth (PEG)	1.37

Dividends as of 11/04/2016	Details
Quarterly Dividend	$0.25
Annual Dividend Rate (IAD)	$0.80
Annual Dividend Yield	1.52%
Next Ex-Date	Nov 15, 2016
Next Pay Date	Dec 02, 2016

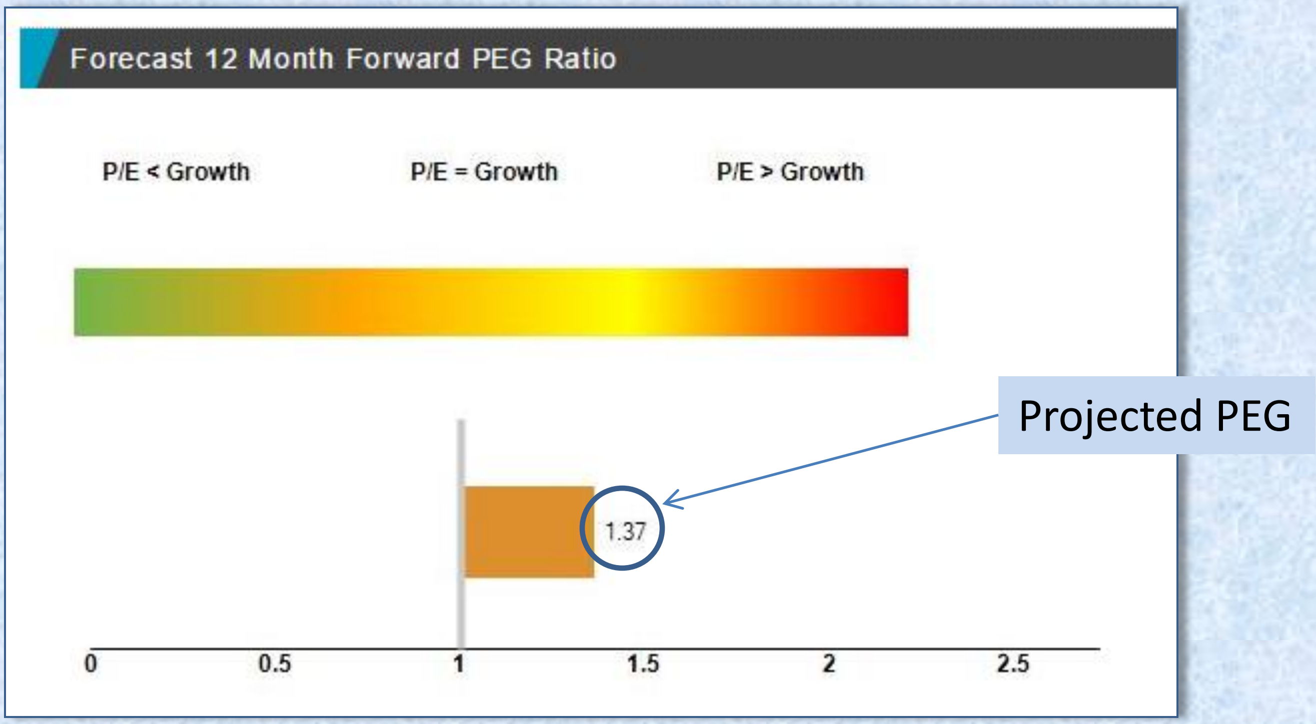
Shares	
Market Capitalization (Large Cap)	$77.4B
Enterprise Value	$78.7B
Shares Outstanding	1.467B
Shares Held By Institutions	67%
Short Interest (as of 10/15/2016)	1.2%

Source: Charles Schwab

Starbucks
P/E Growth Forecast



Starbucks PEG Analysis



Stock Profile - APPLE

Apple Inc **AAPL**:NASDAQ
Technology Hardware, Storage & Peripherals

Trade
Margin Requirements

Last Price	Today's Change	Bid/Size	Ask/Size	Today's Volume
$110.33	+1.49 (1.37%)	$110.33/16	$110.34/9	19,828,197 Below Avg.

As of 1:39 PM ET, 11/07/2016

C Schwab Equity Rating®
Data as of 11/04/2016*

Regular Dividend of $0.57 went Ex

Summary News Charts Ratings Earnings Statements Peers Ratios Dividends Reports Options Preferreds

Quote Details Sector Overview Total Return Historical Quote Key Fundamentals

1 Day | 5 Days | 1 Month | 3 Month | 6 Month | YTD | 1 Year | **3 Years** | 5 Years

Show Events

AAPL:NASDAQ As of Monday, 11/07/2016
+35.96 (48.36%)

Details	
Today's Open	$110.08
Previous Close	$108.84
Day's Range	$109.46 - $110.50
52 Week Range	$89.47 - $121.81
Beta (5 Year)	1.33
Average Volume (10 Day)	36,657,209
Put/Call Ratio (1 Day)	0.9
Put/Call Ratio (30 Day)	0.5

Earnings TTM (GAAP)	Details
Earnings Per Share (10/25/2016)	$8.2759
Price/Earnings	13.15
Forward P/E	11.91
Price to Earnings / Growth (PEG)	1.26

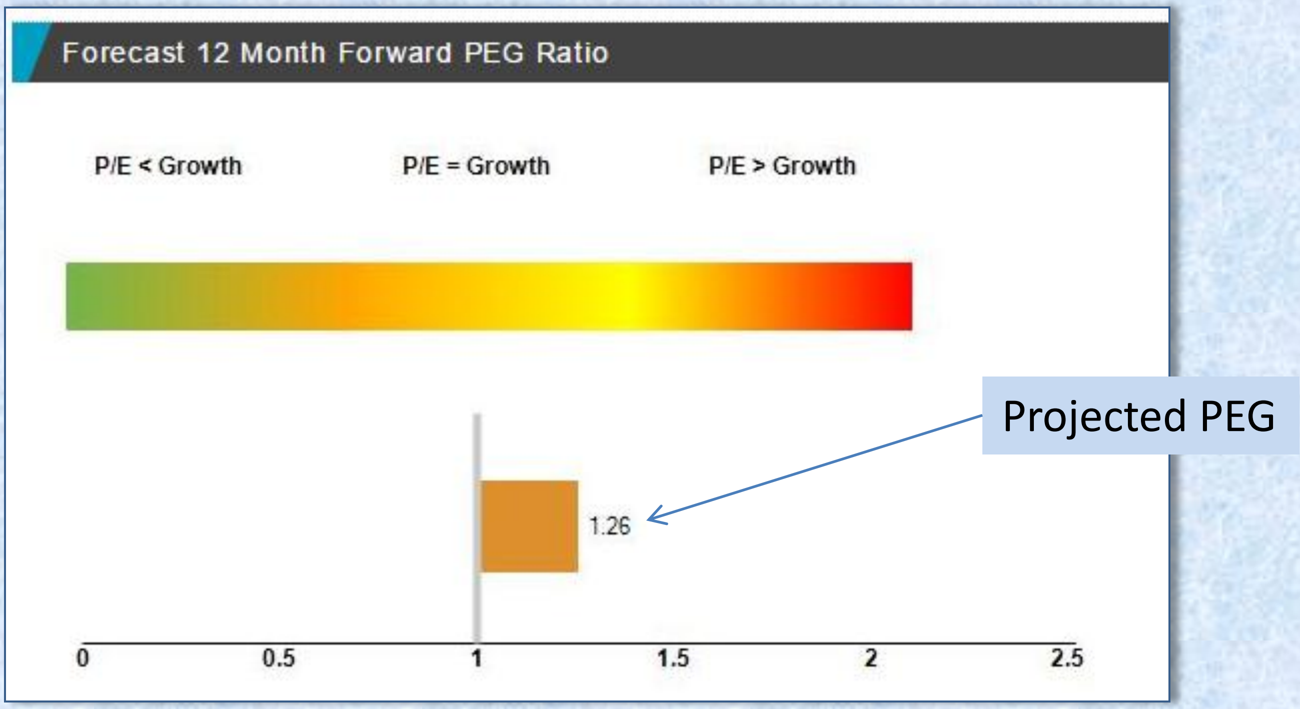
Dividends as of 11/04/2016	Details
Quarterly Dividend	$0.57
Annual Dividend Rate (IAD)	$2.28
Annual Dividend Yield	2.09%
Previous Ex-Date	Nov 03, 2016
Next Pay Date	Nov 10, 2016

Shares	
Market Capitalization (Large Cap)	$580.4B
Enterprise Value	$600.2B
Shares Outstanding	5.332B
Shares Held By Institutions	55%
Short Interest (as of 10/15/2016)	1.0%

Apple
P/E Growth Forecast

Source: NASDAQ.com

Apple PEG Analysis



Stock Profile - Facebook

Facebook Inc **FB**:NASDAQ
Internet Software & Services

Trade
Margin Requirements

Last Price	Today's Change	Bid/Size	Ask/Size	Today's Volume
$122.15	+1.40 (1.16%)	$122.10/7	$122.20/4	22,922,296 Below Avg.

As of close Monday, 11/07/2016

C Schwab Equity Rating®
Data as of 11/04/2016*

FB reported 3rd Quarter 2016 diluted earnings (ex-items) of

Summary News Charts Ratings Earnings Statements Peers Ratios Dividends Reports Options Preferreds

Quote Details Sector Overview Total Return Historical Quote Key Fundamentals

1 Day | 5 Days | 1 Month | 3 Month | 6 Month | YTD | 1 Year | **3 Years** | 5 Years

Show Events

FB:NASDAQ As of close Monday, 11/07/2016 +74.62 (157.00%)

Details	
Today's Open	$122.83
Previous Close	$120.75
Day's Range	$121.35 - $123.2089
52 Week Range	$89.37 - $133.50
Beta (5 Year)	0.83
Average Volume (10 Day)	26,742,740
Put/Call Ratio (1 Day)	1.1
Put/Call Ratio (30 Day)	0.6

Earnings TTM (GAAP)	Details
Earnings Per Share (11/02/2016)	$2.5907
Price/Earnings	46.61
Forward P/E	37.33
Price to Earnings / Growth (PEG)	1.21

Dividends as of –

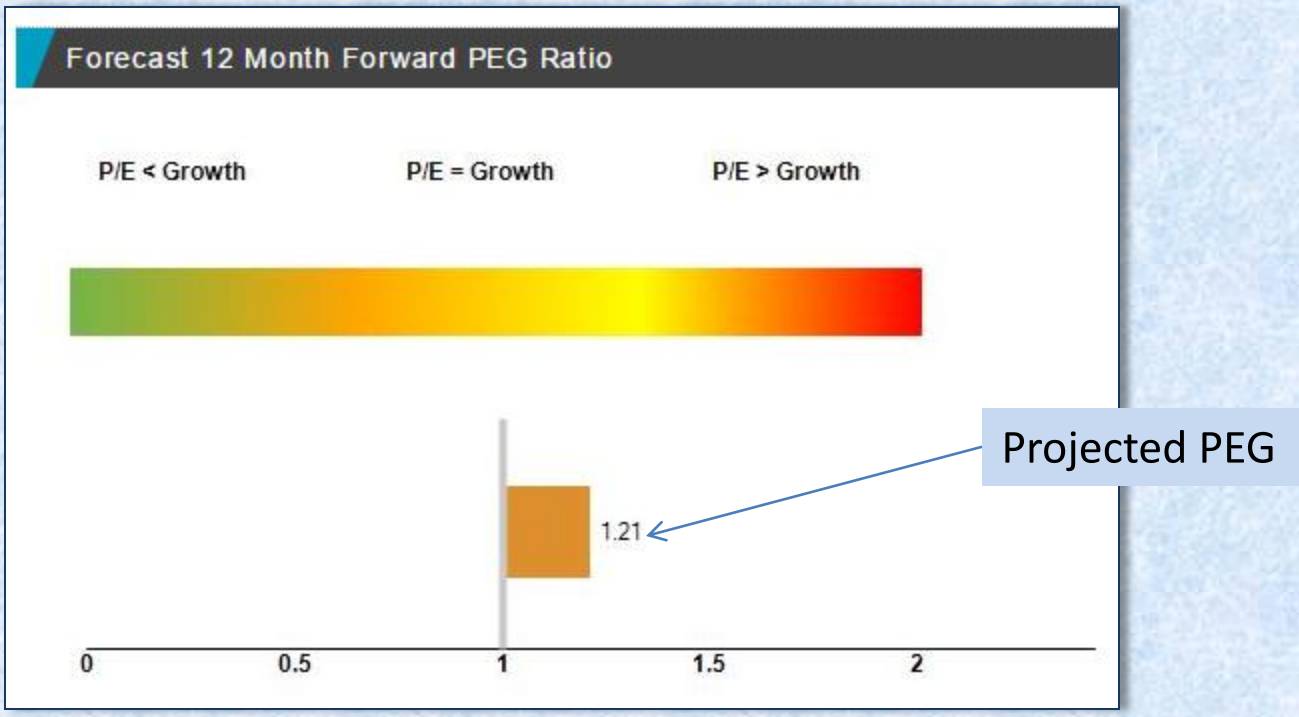
FB does not currently pay a dividend

Shares	
Market Capitalization (Large Cap)	$348.0B
Enterprise Value	$321.9B
Shares Outstanding	2.882B
Shares Held By Institutions	69%
Short Interest (as of 10/15/2016)	0.7%

Facebook
P/E Growth Forecast

Source: NASDAQ.com

Facebook PEG Analysis



Source: NASDAQ.com

Stock Profile - GOOGL

Alphabet Inc **GOOGL**:NASDAQ
Internet Software & Services

Trade
Margin Requirements

Last Price	Today's Change	Bid/Size	Ask/Size	Today's Volume
$802.03	+20.93 (2.68%)	$802.65/4	$803.52/1	1,983,250 Below Avg.

As of close Monday, 11/07/2016

C Schwab Equity Rating®
Data as of 11/04/2016*

Fourth Quarter Earnings Announcement Expected

Summary News Charts Ratings Earnings Statements Peers Ratios Dividends Reports Options Preferreds

Quote Details Sector Overview Total Return Historical Quote Key Fundamentals

1 Day | 5 Days | 1 Month | 3 Month | 6 Month | YTD | 1 Year | **3 Years** | 5 Years

Show Events

GOOGL:NASDAQ As of close Monday, 11/07/2016 +293.52 (57.72%)

Earnings TTM (GAAP)	Details
Earnings Per Share (10/27/2016)	$27.8276
Price/Earnings	28.07
Forward P/E	29.08
Price to Earnings / Growth (PEG)	1.82

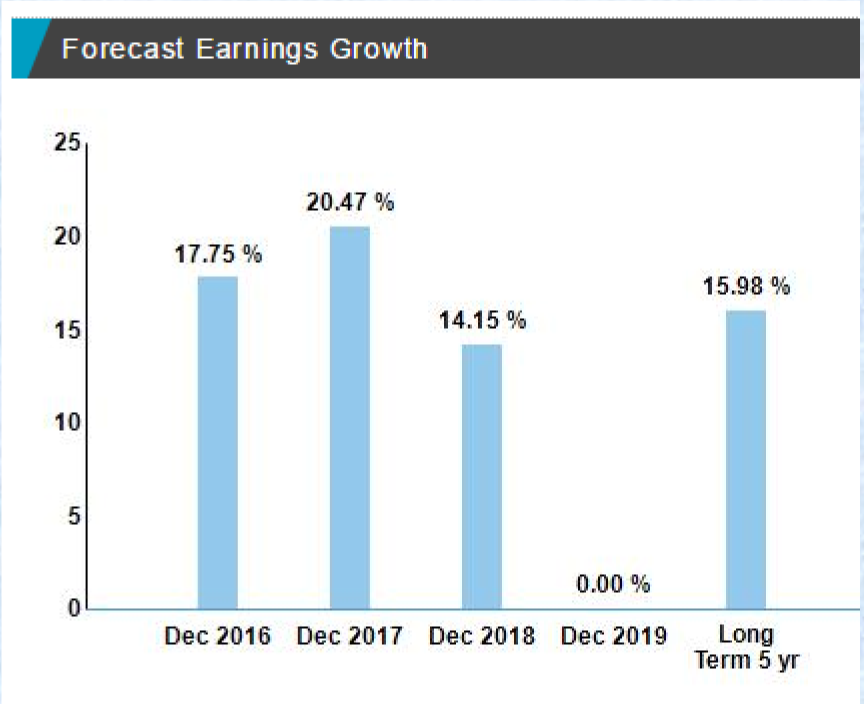
Dividends as of --

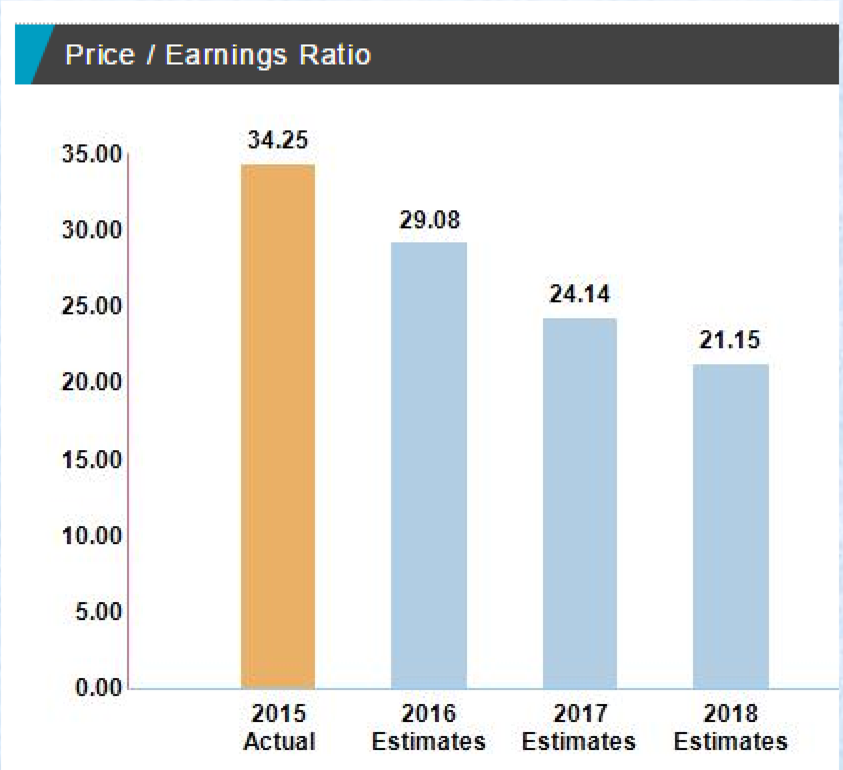
GOOGL has not paid a regular dividend in the last twelve months. See the Dividends tab for information about one time or special dividends

Details	
Today's Open	$794.95
Previous Close	$781.10
Day's Range	$792.90 - $805.00
52 Week Range	$672.66 - $839.00
Beta (5 Year)	0.94
Average Volume (10 Day)	2,355,669
Put/Call Ratio (1 Day)	1.3
Put/Call Ratio (30 Day)	0.6

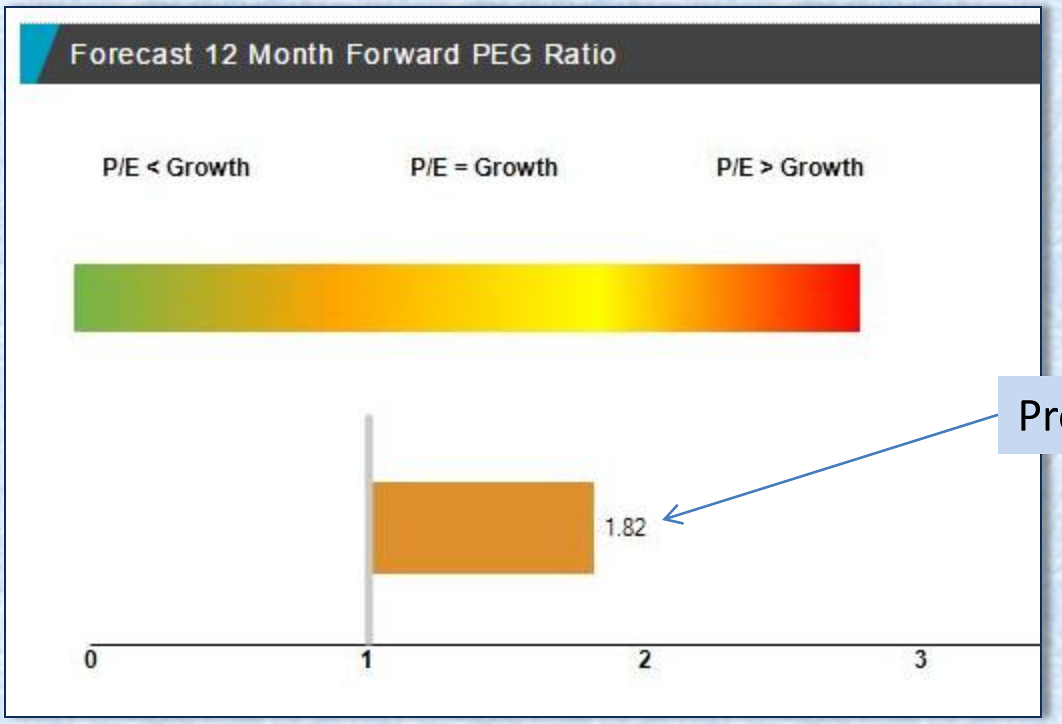
Shares	
Market Capitalization (Large Cap)	$268.8B
Enterprise Value	$451.5B
Shares Outstanding	344.1M
Shares Held By Institutions	78%
Short Interest (as of 10/15/2016)	0.8%

GOOGL
P/E Growth Forecast





GOOGL PEG Analysis



Projected PEG

Stock Profile - Amazon

Amazon.com Inc **AMZN**:NASDAQ
Internet & Direct Marketing Retail

Trade
Margin Requirements

Last Price	Today's Change	Bid/Size	Ask/Size	Today's Volume
$736.13	-6.25 (-0.84%)	$736.03/1	$736.46/3	5,714,472 Average

As of 3:35 PM ET, 11/11/2016

B **Schwab Equity Rating®** Data as of 11/04/2016*

Fourth Quarter Earnings Announcement Expected

Summary News Charts Ratings Earnings Statements Peers Ratios Dividends Reports Options Preferreds

Quote Details Sector Overview Total Return Historical Quote Key Fundamentals

1 Day | 5 Days | 1 Month | 3 Month | 6 Month | YTD | 1 Year | **3 Years** | 5 Years

Show Events

AMZN:NASDAQ As of Friday, 11/11/2016 +366.96 (99.40%)

Details	
Today's Open	$735.50
Previous Close	$742.38
Day's Range	$728.90 - $743.26
52 Week Range	$474.00 - $847.21
Beta (5 Year)	1.47
Average Volume (10 Day)	6,628,780
Put/Call Ratio (1 Day)	0.8
Put/Call Ratio (30 Day)	0.8

Earnings TTM (GAAP)	Details
Earnings Per Share (10/27/2016)	$4.3646
Price/Earnings	170.09
Forward P/E	156.10
Price to Earnings / Growth (PEG)	4.92

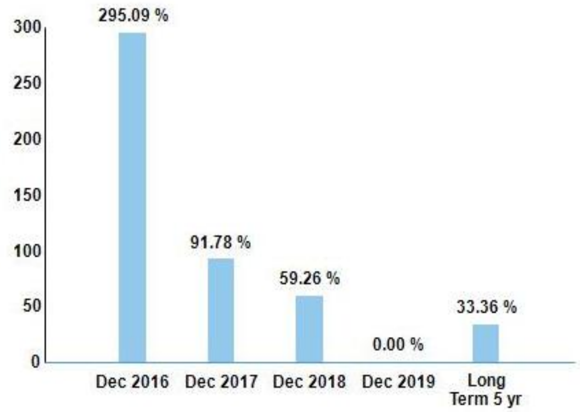
Dividends as of --
AMZN does not currently pay a dividend

Shares	
Market Capitalization (Large Cap)	$352.8B
Enterprise Value	$342.6B
Shares Outstanding	475.2M
Shares Held By Institutions	65%
Short Interest (as of 10/31/2016)	1.1%

Source: Charles Schwab

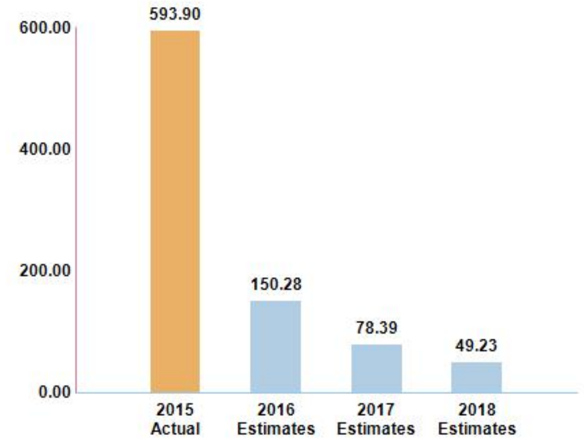
P/E Growth Forecast
Amazon

Forecast Earnings Growth



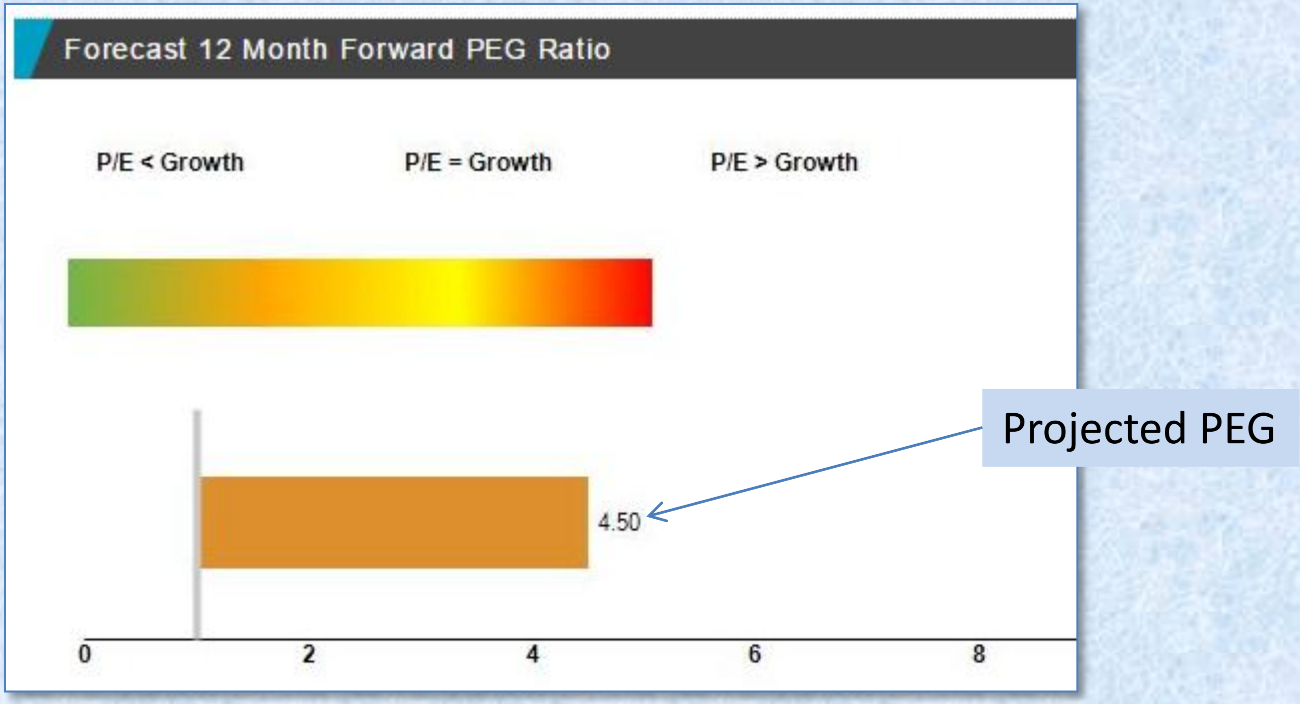
Over the next five years, the analysts that follow this company are expecting it to grow earnings at an average annual rate of 33.36%. This year, analysts are forecasting earnings increase of 295.09% over last year. Analysts expect earnings growth next year of 91.78% over this year's forecasted earnings.

Price / Earnings Ratio



Price/Earnings Ratio is a widely used stock evaluation measure. For a security, the Price/Earnings Ratio is given by dividing the Last Sale Price by the Average EPS (Earnings Per Share) Estimate for the specified fiscal time period.

Amazon PEG Analysis



Other Valuation Measures

- Price to Book (P/B)
- Price to Sales (P/S)
- Price to Cash Flow (P/CF)
- Price to Free Cash Flow (P/FCF)

Price to Book Ratio (P/B)

- What does it tell you?
- "Book value" refers to the net worth of the company's property, buildings, equipment, cash, and other assets, minus bills outstanding, wages owed to employees, debt, and other liabilities. Book value is what the company would be worth if liquidated. Most companies sell at a premium to book value because the company can generate profits from these assets.

- How do you calculate it?
- Stock Price / Book Value Per Share (most recent quarter)

- What's good or bad?
- Price to book is most useful for valuing companies where growth in assets is the goal of the business. Banks, insurance companies, and investment firms are good examples. It is a poor statistic for valuing companies where assets are primarily non-physical, like software and media companies**. A price-to-book value under 1.0 is cheap, and under 2 is considered a favorable valuation.**

- Example
- Johnson and Johnson's reported net equity (same as book value) was about $15 per share for 2007. Using a stock price of 62.63, this gives us a price to book ratio of (62.63 / 15) = 4.18.

Price to Sales Ratio (P/S)

- What does it tell you?
- Compares the stock price to the amount of Sales_{TTM} per share
- How do you calculate it?
- Stock Price / Sales per Share (trailing twelve months)
- What's good or bad?
- The P/S ratio is best used to compare a company against other companies in the same business, or against historical averages of the stock being considered.
- Example
- Johnson and Johnson earned about $20.99 in sales per share of stock for 2007. Using the stock price of 62.63, this gives us a price to sales ratio of (62.63 / 20.99) = 2.96.

Price to Cash Flow (P/CF)

- What does it tell you?
- This ratio is very similar to P/E, except it uses the cash flow per share instead of earnings. This cuts out non-cash earnings and charges like depreciation. Cash flow is normally defined as **earnings before interest, taxes, depreciation, and amortization (EBITDA).** This is a better measure of the actual dollars being generated by the business.
- How do you calculate it?
- Stock Price / Cash Flow per Share (trailing twelve months)
- What's good or bad?
- Companies with higher cash flow than earnings are better performers over the long run. Compare P/CF with P/E and if it is a lower number, consider this a positive sign.
- Simple example
- Johnson and Johnson delivered 5.28 of cash flow per share in 2007, well over it's 3.63 of reported earnings. This is because the company accounted for depreciation of it's equipment, amortization of it's intangible assets, and other accounting tricks that allow the company to pay lower taxes. But the actual amount of cash the business raked in was significantly higher, giving a P/CF of (62.63 / 5.28) = 11.86, well under the P/E of 17.24. This is a positive sign the company may be undervalued, as Wall Street focuses on P/E to a much larger extent.

Price to Free Cash Flow (P/FCF)

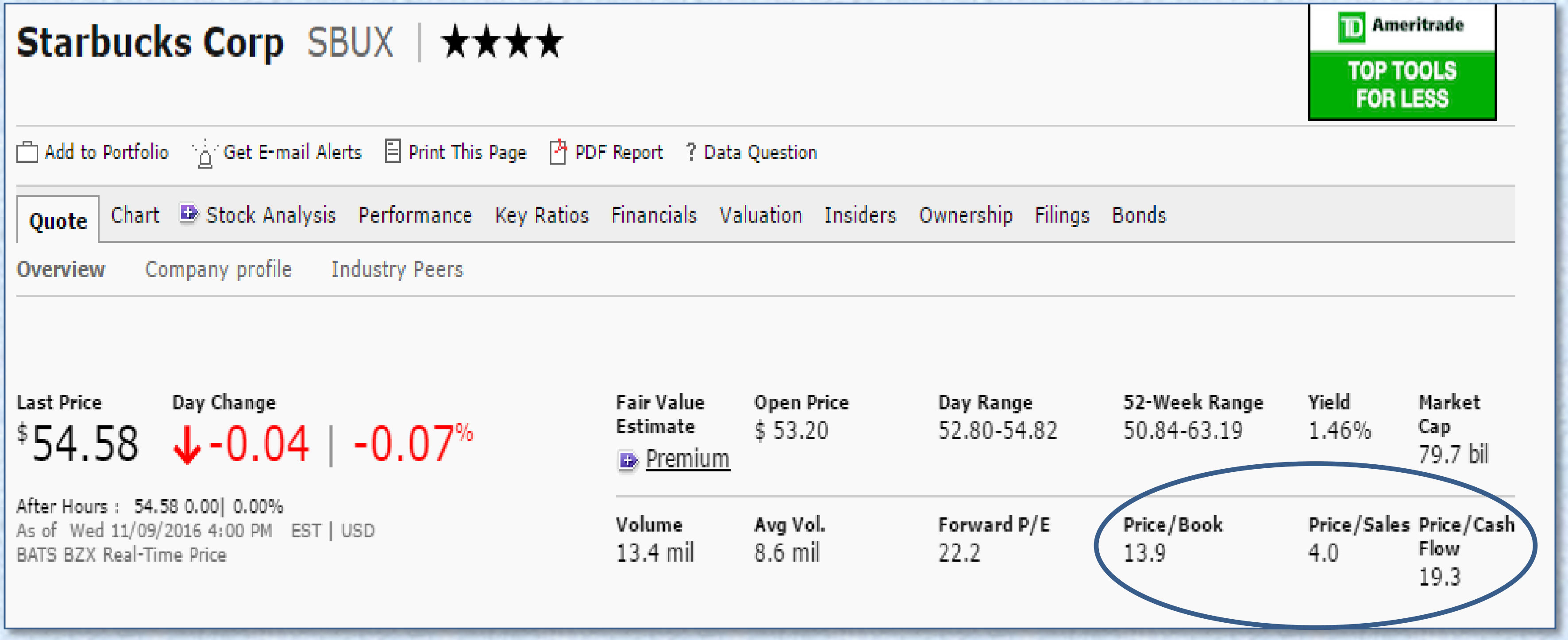
- <u>What does it tell you?</u>
- Same as P/CF, except we subtract out cash needed to replace obsolete equipment and ongoing maintenance expenses. This is considered "free cash flow", that the company can use however it sees fit to reward shareholders. Examples of use of this free cash can be share buybacks, dividend payouts, or investment in growth opportunities.

- <u>How do you calculate it?</u>
- Free Cash Flow = Operating Cash Flow - Depreciation
- Price to Free Cash Flow = Stock Price / Free Cash Flow per Share (ttm)

- <u>What's good or bad?</u>
- Again, if a company can generate more free cash than it reports in earnings, this is the sign of a very well run business. Companies that generate free cash flow well under earnings generally require a lot of capital investment to sustain the business - an undesirable trait.

- <u>Example</u>
- From Johnson and Johnson's 5.28 of cash flow per share, we deduct 0.96 per share of depreciation expense, which is roughly equivalent to maintenance costs. This leaves us with a free cash flow per share of 4.32. Therefore P/FCF is (62.63 / 4.32) = 14.51. This is still well under the P/E of 17.24, a positive sign.

Other Measures
Starbucks



Starbucks Corp SBUX | ★★★★

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Overview   Company profile   Industry Peers

Last Price	Day Change	Fair Value Estimate	Open Price	Day Range	52-Week Range	Yield	Market Cap
$54.58	↓-0.04 | -0.07%	Premium	$ 53.20	52.80-54.82	50.84-63.19	1.46%	79.7 bil

After Hours : 54.58 0.00| 0.00%
As of Wed 11/09/2016 4:00 PM EST | USD
BATS BZX Real-Time Price

Volume	Avg Vol.	Forward P/E	Price/Book	Price/Sales	Price/Cash Flow
13.4 mil	8.6 mil	22.2	13.9	4.0	19.3

Other Measures
APPLE

Apple Inc AAPL | ★★★★

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Overview · Company profile · Industry Peers

Last Price	Day Change	Fair Value Estimate	Open Price	Day Range	52-Week Range	Yield	Market Cap
$110.88	↓-0.18 | -0.16%	Premium	$ 109.88	108.05-111.32	89.47-121.81	2.01%	591.2 bil

After Hours : 110.32 -0.56| -0.51%
As of Wed 11/09/2016 4:00 PM EST | USD
BATS BZX Real-Time Price

Volume	Avg Vol.	Forward P/E	Price/Book	Price/Sales	Price/Cash Flow
57.8 mil	34.9 mil	10.9	4.6	2.8	9.3

Other Measures Facebook

Source: Morningstar

Other Measures
Google

Alphabet Inc A GOOGL | ★★★

TD Ameritrade
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Overview | Company profile | Industry Peers

Last Price	Day Change
$803.30	↓ -8.62 | -1.06%

As of Wed 11/09/2016 3:50 PM EST | USD
BATS BZX Real-Time Price

Fair Value Estimate	Open Price	Day Range	52-Week Range	Yield	Market Cap
Premium	$ 801.83	792.04-811.71	672.66-839.00	—	553.9 bil

Volume	Avg Vol.	Forward P/E	Price/Book	Price/Sales	Price/Cash Flow
2.6 mil	1.5 mil	19.8	4.2	6.6	17.3

Other Measures
Amazon

P/E Valuation

Stock	Price ($/shr)	P/S	P/B	P/E (Forward)	Growth Rate % (5-yr)	PEG (Forecasted)	Valuation
Starbucks	54	4.0	13.9	**24.8**	**18.1**	**1.37**	Fairly
Apple	110	2.8	4.6	**11.9**	**9.6**	**1.26**	Fairly
Facebook	122	14.6	6.6	**37.3**	**31.3**	**1.21**	Fairly **?**
Google	802	6.6	4.2	**29.1**	**16.0**	**1.82**	Fully → Over
Amazon	771	3.0	**21.1**	**150**	**33.4**	**4.5**	>> Over

P/CF Valuation

Stock	Price ($/shr)	P/S	P/B	Growth Rate % (5-yr)	P/CF	PCF/G	Valuation
Starbucks	54	4.0	13.9	18.1	19.3	**1.1**	Fairly
Apple	110	2.8	4.6	9.6	9.3	**1.0**	Under
Facebook	122	14.6	6.6	31.3	28.6	**0.9**	Fairly
Google	802	6.6	4.2	16.0	17.3	**1.1**	Fairly
Amazon	771	3.0	21.1	33.4	26	**.8**	Fairly