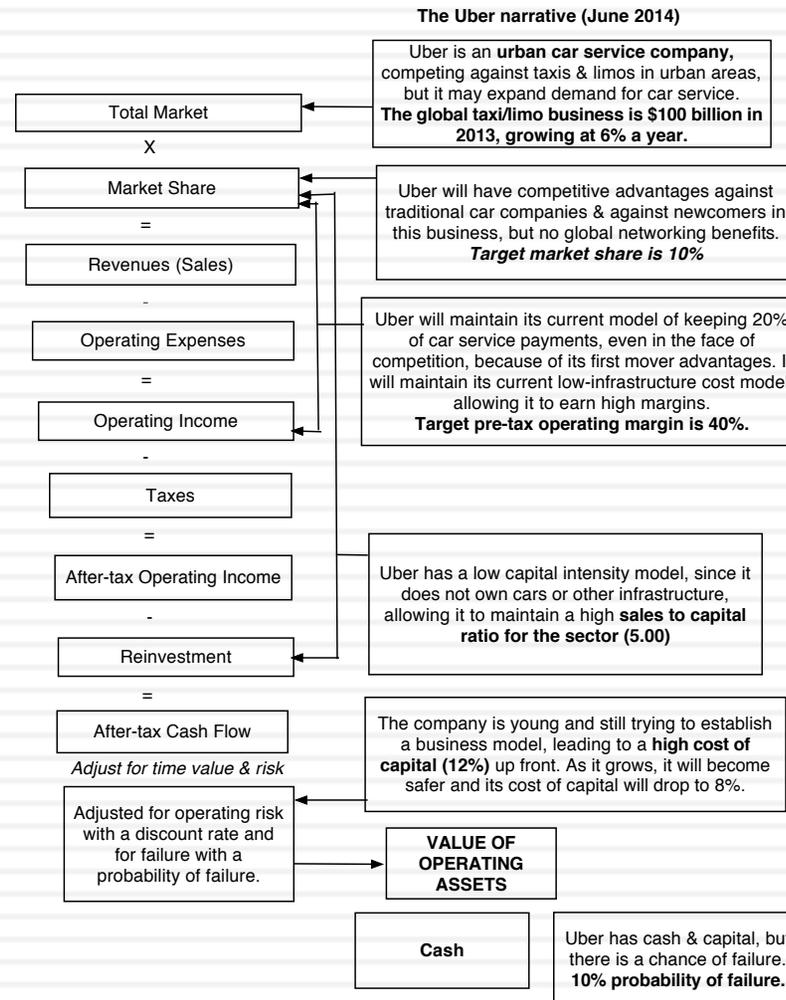


# Step 4: Connect your narrative to key drivers of value



# Step 4: Value the company (Uber)

## Uber: Intrinsic valuation - June 8, 2014 (in US \$)

**Stable Growth (after year 10)**  
 Expected growth rate = 2.50%  
 Cost of capital = 8%  
 Return on capital = 25%  
 Reinvestment Rate = 2.5%/25% = 10%

Terminal Value<sub>10</sub> = 793 / (.08 - 0.025) = \$14,418

Term yr  
 EBIT (1-t) \$881  
 - Reinv 88  
 FCFF \$793

Uber's market share of this market will increase to 10% over the next 10 years.

Global taxi market is \$100 billion currently, expected to grow 6% a year for next ten years.

Uber will keep 20% of the gross cab receipts as its revenues

Uber's operating expenses will amount to 60% of its revenues. (Operating margin=40%)

Uber will pay a tax rate of 30% on its income, increasing to 40% over the next 10 years

Uber will generate \$5 in incremental revenues for every dollar of incremental capital.

	1	2	3	4	5	6	7	8	9	10
Overall market	\$106,000	\$112,360	\$119,102	\$126,248	\$133,823	\$141,852	\$150,363	\$159,385	\$168,948	\$179,085
Share of market (gross)	3.63%	5.22%	6.41%	7.31%	7.98%	8.49%	8.87%	9.15%	9.36%	10.00%
Revenues as percent of gross	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
Annual Revenue	\$769	\$1,173	\$1,528	\$1,846	\$2,137	\$2,408	\$2,666	\$2,916	\$3,163	\$3,582
Operating margin	7.00%	10.67%	14.33%	18.00%	21.67%	25.33%	29.00%	32.67%	36.33%	40.00%
Operating Income	\$54	\$125	\$219	\$332	\$463	\$610	\$773	\$953	\$1,149	\$1,433
Effective tax rate	31%	32%	33%	34%	35%	36%	37%	38%	39%	40%
- Taxes	\$17	\$40	\$72	\$113	\$162	\$220	\$286	\$362	\$448	\$573
After-tax operating income	\$37	\$85	\$147	\$219	\$301	\$390	\$487	\$591	\$701	\$860
Sales/Capital Ratio	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
- Reinvestment	\$94	\$81	\$71	\$64	\$58	\$54	\$52	\$50	\$49	\$84
Free Cash Flow to the Firm	-\$57	\$4	\$76	\$156	\$243	\$336	\$435	\$541	\$652	\$776

Based on the investment of \$1.2 billion made by investors, the imputed value for Uber's operating assets, in June 2014, was \$17 billion.

Value of operating assets = \$6,595

Adjust for probability of failure (10%)  
 Expected value = \$6,595 (.9) = \$5,895

Discount back the cash flows (including terminal value) at the cumulated cost of capital.

Cost of capital for first 5 years = Top decile of US companies = 12%

Cost of capital declines from 12% to 8% from years 6 to 10.

# Step 5: Keep the feedback loop

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1. Not just car service company.: Uber is a car company, not just a car service company, and there may be a day when consumers will subscribe to a Uber service, rather than own their own cars. It could also expand into logistics, i.e., moving and transportation businesses.
2. Not just urban: Uber can create new demands for car service in parts of the country where taxis are not used (suburbia, small towns).
3. Global networking benefits: By linking with technology and credit card companies, Uber can have global networking benefits.

# Valuing Bill Gurley's Uber narrative

	<i>Uber (Gurley)</i>	<i>Uber (Gurley Mod)</i>	<i>Uber (Damodaran)</i>
Narrative	Uber will <u>expand the car service market substantially</u> , bringing in mass transit users & non-users from the suburbs into the market, and use its <u>networking advantage</u> to gain a <u>dominant market share</u> , while maintaining its revenue slice at 20%.	Uber will <u>expand the car service market substantially</u> , bringing in mass transit users & non-users from the suburbs into the market, and use its <u>networking advantage</u> to gain a <u>dominant market share</u> , while cutting prices and margins (to 10%).	Uber will expand the car service market moderately, primarily in urban environments, and use its <u>competitive advantages</u> to get a <u>significant but not dominant market share</u> and maintain its revenue slice at 20%.
Total Market	\$300 billion, growing at 3% a year	\$300 billion, growing at 3% a year	\$100 billion, growing at 6% a year
Market Share	40%	40%	10%
Uber's revenue slice	20%	10%	20%
Value for Uber	\$53.4 billion + Option value of entering car ownership market (\$10 billion+)	\$28.7 billion + Option value of entering car ownership market (\$6 billion+)	\$5.9 billion + Option value of entering car ownership market (\$2-3 billion)

# Different narratives, Different Numbers

<i>Total Market</i>	<i>Growth Effect</i>	<i>Network Effect</i>	<i>Competitive Advantages</i>	<i>Value of Uber</i>
A4. Mobility Services	B4. Double market size	C5. Strong global network effects	D4. Strong & Sustainable	\$90,457
A3. Logistics	B4. Double market size	C5. Strong global network effects	D4. Strong & Sustainable	\$65,158
A4. Mobility Services	B3. Increase market by 50%	C3. Strong local network effects	D3. Semi-strong	\$52,346
A2. All car service	B4. Double market size	C5. Strong global network effects	D4. Strong & Sustainable	\$47,764
A1. Urban car service	B4. Double market size	C5. Strong global network effects	D4. Strong & Sustainable	\$31,952
A3. Logistics	B3. Increase market by 50%	C3. Strong local network effects	D3. Semi-strong	\$14,321
A1. Urban car service	B3. Increase market by 50%	C3. Strong local network effects	D3. Semi-strong	\$7,127
A2. All car service	B3. Increase market by 50%	C3. Strong local network effects	D3. Semi-strong	\$4,764
A4. Mobility Services	B1. None	C1. No network effects	D1. None	\$1,888
A3. Logistics	B1. None	C1. No network effects	D1. None	\$1,417
A2. All car service	B1. None	C1. No network effects	D1. None	\$1,094
A1. Urban car service	B1. None	C1. No network effects	D1. None	\$799

# Step 6: Be ready to modify narrative as events unfold

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Narrative Break/End	Narrative Shift	Narrative Change (Expansion or Contraction)
Events, external (legal, political or economic) or internal (management, competitive, default), that can cause the narrative to break or end.	Improvement or deterioration in initial business model, changing market size, market share and/or profitability.	Unexpected entry/success in a new market or unexpected exit/failure in an existing market.
Your valuation estimates (cash flows, risk, growth & value) are no longer operative	Your valuation estimates will have to be modified to reflect the new data about the company.	Valuation estimates have to be redone with new overall market potential and characteristics.
Estimate a probability that it will occur & consequences	Monte Carlo simulations or scenario analysis	Real Options



Let the games begin... Time to  
value companies..

Let's have some fun!

# Equity Risk Premiums in Valuation

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- The equity risk premiums that I have used in the valuations that follow reflect my thinking (and how it has evolved) on the issue.
  - Pre-1998 valuations: In the valuations prior to 1998, I use a risk premium of 5.5% for mature markets (close to both the historical and the implied premiums then)
  - Between 1998 and Sept 2008: In the valuations between 1998 and September 2008, I used a risk premium of 4% for mature markets, reflecting my belief that risk premiums in mature markets do not change much and revert back to historical norms (at least for implied premiums).
  - Valuations done in 2009: After the 2008 crisis and the jump in equity risk premiums to 6.43% in January 2008, I have used a higher equity risk premium (5-6%) for the next 5 years and will assume a reversion back to historical norms (4%) only after year 5.
  - After 2009: In 2010, I reverted back to a mature market premium of 4.5%, reflecting the drop in equity risk premiums during 2009. In 2011, I used 5%, reflecting again the change in implied premium over the year. In 2012 and 2013, stayed with 6%, reverted to 5% in 2014 and will be using 5.75% in 2015.

# The Valuation Set up

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- With each company that I value in this next section, I will try to start with a story about the company and use that story to construct a valuation.
- With each valuation, rather than focus on all of the details (which will follow the blueprint already laid out), I will focus on a specific component of the valuation that is unique or different.

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# Training Wheels On?

Stocks that look like Bonds, Things Change and  
Market Valuations

**Test 1: Is the firm paying dividends like a stable growth firm?**

Dividend payout ratio is 73%  
In trailing 12 months, through June 2008  
Earnings per share = \$3.17  
Dividends per share = \$2.32

*Training Wheels valuation:  
Con Ed in August 2008*

**Test 2: Is the stable growth rate consistent with fundamentals?**

Retention Ratio = 27%  
ROE = Cost of equity = 7.7%  
Expected growth = 2.1%

*Growth rate forever = 2.1%*

Value per share today = Expected Dividends per share next year / (Cost of equity - Growth rate)  
= 2.32 (1.021) / (.077 - .021) = \$42.30

Cost of Equity = 4.1% + 0.8 (4.5%) = 7.70%

Riskfree rate  
4.10%  
10-year T.Bond rate

Beta  
0.80  
Beta for regulated  
power utilities

Equity Risk  
Premium  
4.5%  
Implied Equity Risk  
Premium - US  
market in 8/2008

On August 12, 2008  
Con Ed was trading at \$  
40.76.

**Test 3: Is the firm's risk and cost of equity consistent with a stable growth firm?**

Beta of 0.80 is at lower end of the range of stable company betas: 0.8 -1.2

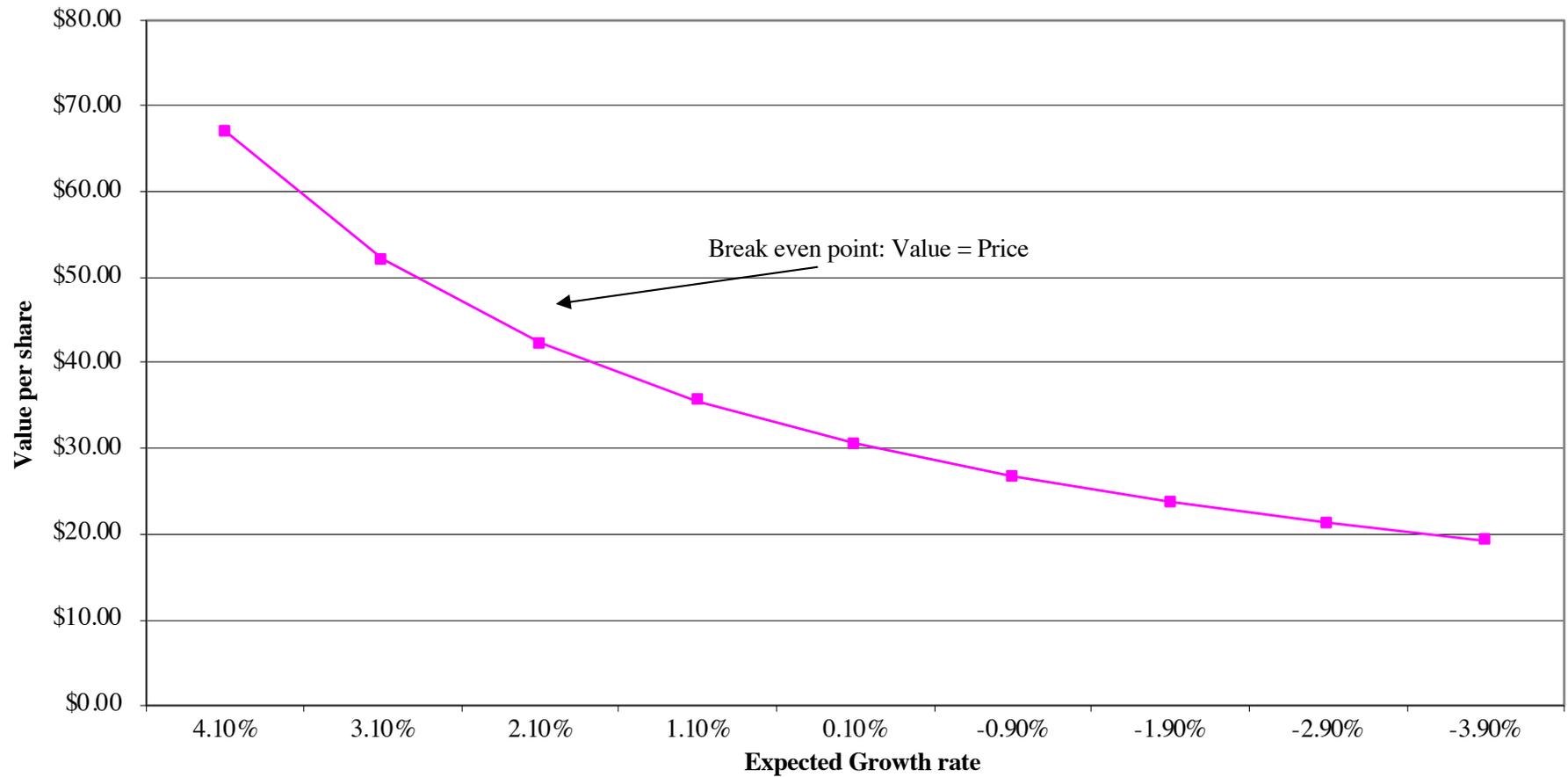
**Why a stable growth dividend discount model?**

1. Why stable growth: Company is a regulated utility, restricted from investing in new growth markets. Growth is constrained by the fact that the population (and power needs) of its customers in New York are growing at very low rates.  
Growth rate forever = 2%
2. Why equity: Company's debt ratio has been stable at about 70% equity, 30% debt for decades.
3. Why dividends: Company has paid out about 97% of its FCFE as dividends over the last five years.

# A breakeven growth rate to get to market price...

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*Con Ed: Value versus Growth Rate*



## From DCF value to target price and returns...

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- Assume that you believe that your valuation of Con Ed (\$42.30) is a fair estimate of the value, 7.70% is a reasonable estimate of Con Ed's cost of equity and that your expected dividends for next year ( $2.32 \times 1.021$ ) is a fair estimate, what is the expected stock price a year from now (assuming that the market corrects its mistake?)
  
- If you bought the stock today at \$40.76, what return can you expect to make over the next year (assuming again that the market corrects its mistake)?

### 3M: A Pre-crisis valuation

**Current Cashflow to Firm**  
 EBIT(1-t)= 5344 (1-.35)= 3474  
 - Nt CpX= 350  
 - Chg WC 691  
 = FCFF 2433  
 Reinvestment Rate = 1041/3474  
 =29.97%  
 Return on capital = 25.19%

Reinvestment Rate  
30%

Return on Capital  
25%

**Expected Growth in EBIT (1-t)**  
 $.30 \times .25 = .075$   
**7.5%**

**Stable Growth**  
 g = 3%; Beta = 1.10;  
 Debt Ratio= 20%; Tax rate=35%  
 Cost of capital = 6.76%  
 ROC= 6.76%;  
 Reinvestment Rate=3/6.76=44%

Terminal Value<sub>5</sub> = 2645 / (.0676 - .03) = 70,409

Op. Assets 60607  
 + Cash: 3253  
 - Debt 4920  
 =Equity 58400  
 Value/Share \$ 83.55

Year	1	2	3	4	5	Term Yr
EBIT (1-t)	\$3,734	\$4,014	\$4,279	\$4,485	\$4,619	\$4,758
- Reinvestment	\$1,120	\$1,204	\$1,312	\$1,435	\$1,540	\$2,113
= FCFF	\$2,614	\$2,810	\$2,967	\$3,049	\$3,079	\$2,645

Cost of capital = 8.32% (0.92) + 2.91% (0.08) = 7.88%

**Cost of Equity 8.32%**

**Cost of Debt**  
 $(3.72\% + .75\%)(1-.35)$   
 = 2.91%

**Weights**  
 E = 92% D = 8%

On September 12, 2008, 3M was trading at \$70/share

**Riskfree Rate:**  
 Riskfree rate = 3.72%

+

**Beta**  
1.15

x

**Risk Premium**  
4%

Unlevered Beta for Sectors: 1.09

D/E=8.8%

*Lowered base operating income by 10%*

### 3M: Post-crisis valuation

*Reduced growth rate to 5%*

*Did not increase debt ratio in stable growth to 20%*

**Current Cashflow to Firm**

EBIT(1-t)= 4810 (1-.35)=	3,180
- Nt CpX=	350
- Chg WC	691
= FCFF	2139
Reinvestment Rate = 1041/3180	
=33%	
Return on capital = 23.06%	

Reinvestment Rate  
25%

Return on Capital  
20%

**Expected Growth in EBIT (1-t)**  
.25\*.20=.05  
5%

**Stable Growth**  
g = 3%; Beta = 1.00;; ERP =4%  
Debt Ratio= 8%; Tax rate=35%  
Cost of capital = 7.55%  
ROC= 7.55%;  
Reinvestment Rate=3/7.55=40%

Terminal Value<sub>5</sub> = 2434 / (.0755 - .03) = 53,481

	First 5 years					Term Yr
Year	1	2	3	4	5	
EBIT (1-t)	\$3,339	\$3,506	\$3,667	\$3,807	\$3,921	\$4,038
- Reinvestment	\$835	\$877	\$1,025	\$1,288	\$1,558	\$1,604
= FCFF	\$2,504	\$2,630	\$2,642	\$2,519	\$2,363	\$2,434

Value/Share \$ 60.53

Cost of capital = 10.86% (0.92) + 3.55% (0.08) = 10.27%

*Higher default spread for next 5 years*

<b>Cost of Equity</b> 10.86%	<b>Cost of Debt</b> (3.96%+.1.5%)(1-.35) = 3.55%	<b>Weights</b> E = 92% D = 8%
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On October 16, 2008, MMM was trading at \$57/share.

**Riskfree Rate:**  
Riskfree rate = 3.96%

*Increased risk premium to 6% for next 5 years*

Beta 1.15 x Risk Premium 6%

Unlevered Beta for Sectors: 1.09      D/E=8.8%

# From a Company to the Market: Valuing the S&P 500: Dividend Discount Model in January 2020

## Rationale for model

Why dividends? Because it is the only tangible cash flow, right?

Why 2-stage? Because the expected growth rate in near term is higher than stable growth rate.

**Dividends**  
\$ Dividends in trailing 12 months = 58.80

**Expected Growth**  
Analyst estimate for growth over next 5 years = 3.96%

$g = \text{Riskfree rate} = 1.92\%$   
Assume that earnings on the index will grow at same rate as economy.

Terminal Value =  $\text{DPS in year 6} / (r-g)$   
 $= (71.39 * 1.0192) / (.0692 - .0192) = 1455.21$

Dividends

61.13    63.55    66.06    68.67    71.39    .....

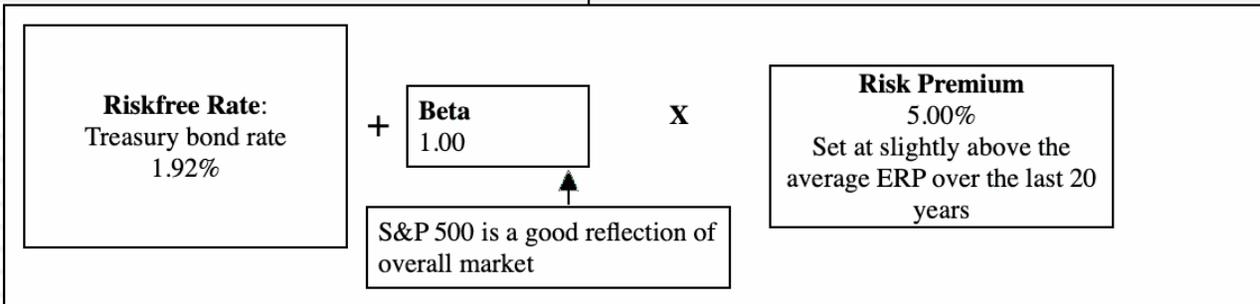
Forever

Discount at Cost of Equity

Value of Equity per share = PV of Dividends & Terminal value at 6.92% = 1311.87

On January 1, 2020, the S&P 500 index was trading at 3230.78

Cost of Equity  
 $1.92\% + 1.00 (5.00\%) = 6.92\%$

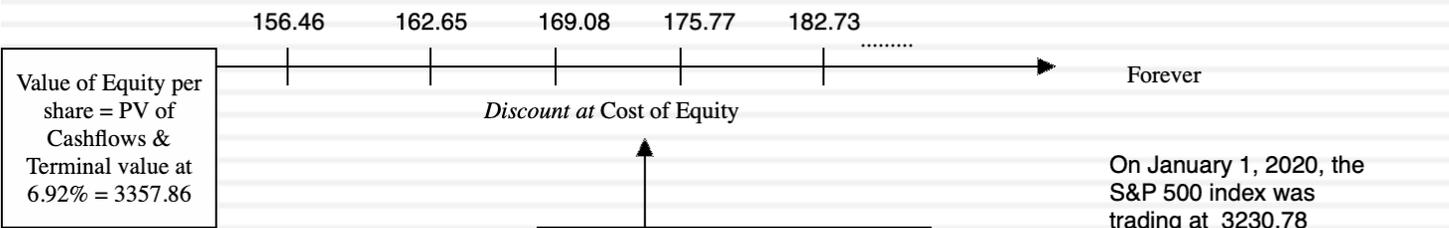
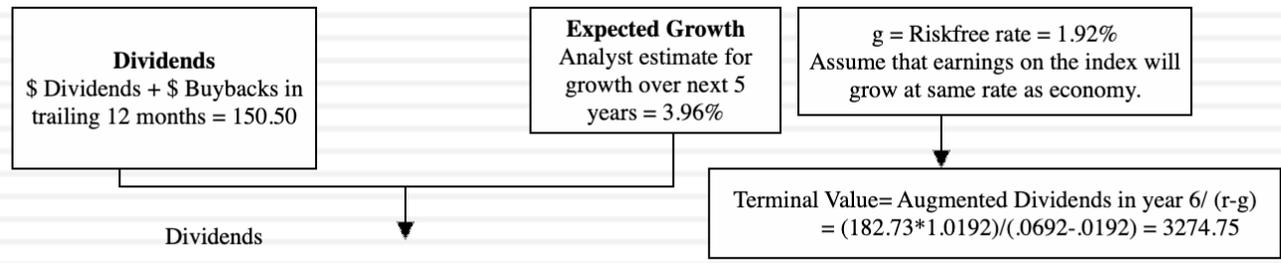


# From a Company to the Market: Valuing the S&P 500: Augmented Dividend Discount Model in January 2020

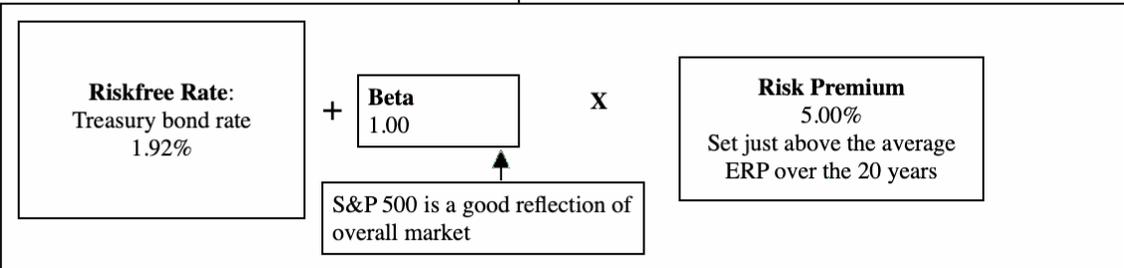
## Rationale for model

Why augmented dividends? Because companies are increasing returning cash in the form of stock buybacks

Why 2-stage? Because the expected growth rate in near term is higher than stable growth rate.



**Cost of Equity**  
 $1.92\% + 1.00 (5.00\%) = 6.92\%$



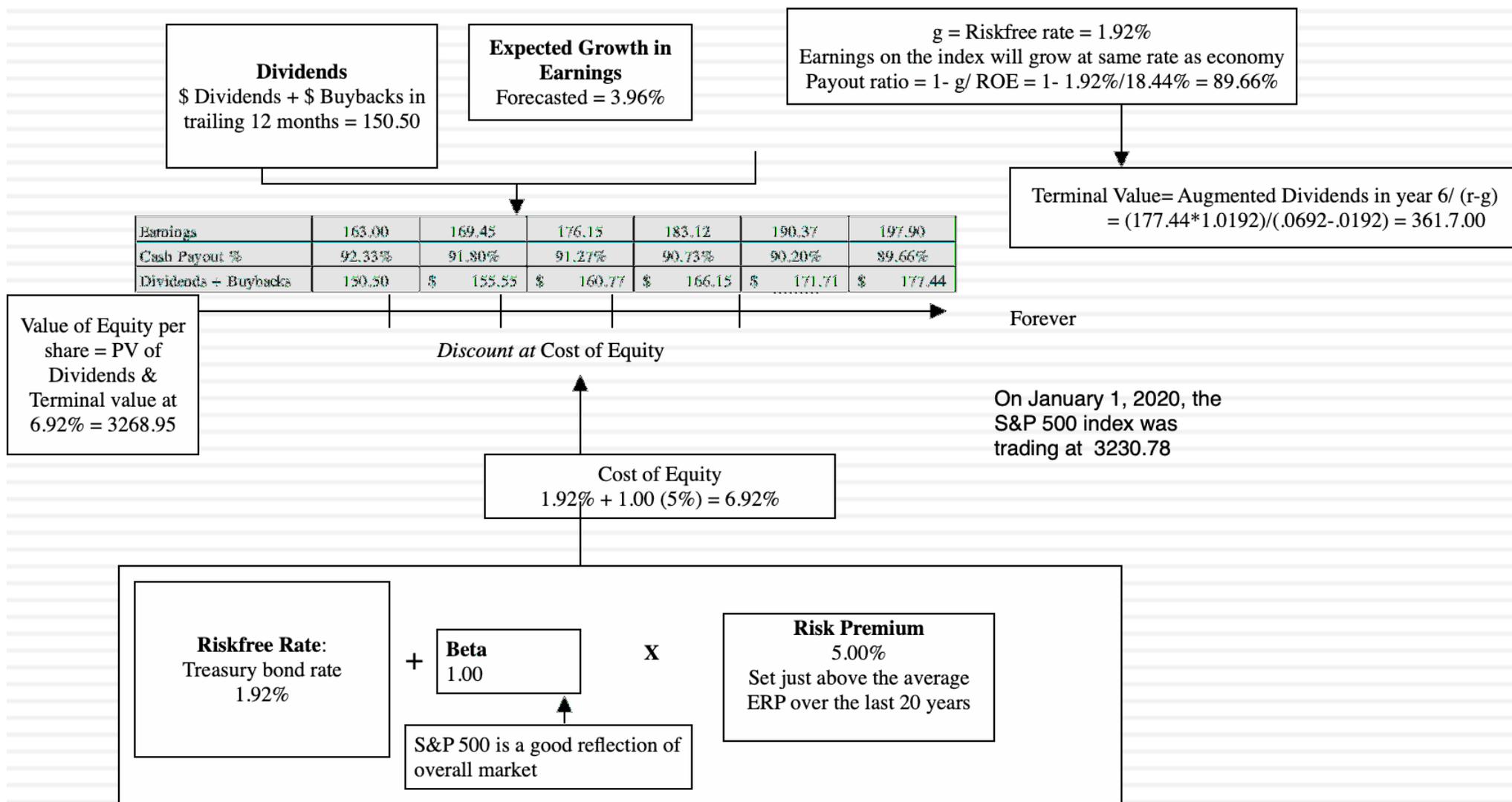
\$	156.46	\$	162.65	\$	169.08	\$	175.77	\$	182.73	186.24
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# Valuing the S&P 500: Augmented Dividends and Fundamental Growth January 2020

## Rationale for model

Why augmented dividends? Because companies are increasing returning cash in the form of stock buybacks

Why 2-stage? Why not?



# Evaluating the Effect of Tax Reform on January 1, 2018

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**Macro Inputs**  
 US T.Bond rate (1/1/18) = 2.41%  
 ERP = 5.08%

## Tax Reform and Aggregate Value Effects: US Equities

	Pre-tax reform	Post-tax reform
Beta	1.07	1.07
Pre-tax cost of debt	3.91%	3.91%
Marginal Tax Rate	38.00%	24.00%
Debt to Capital Ratio	23.51%	23.51%
Revenues	\$12,254.10	\$12,254.10
Operating Income (EBIT)	\$1,438.22	\$1,438.22
Effective tax rate	25.19%	20.00%
After-tax return on capital	12.76%	13.65%
Reinvestment Rate =	59.27%	65.00%
Length of growth period =	5	5
<i>Computed Values</i>	Pre-tax reform	Post-tax reform
Cost of Equity =	7.85%	7.85%
After-tax cost of debt =	2.42%	2.97%
Cost of capital =	6.57%	6.70%
After-tax return on capital =	12.76%	13.65%
Reinvestment Rate =	59.27%	65.00%
Expected growth rate =	7.56%	8.87%
Value of firm		
PV of FCFF in high growth =	\$2,253.08	\$2,139.72
Terminal value =	\$30,926.29	\$34,590.66
Value of firm today =	<b>\$24,750.46</b>	<b>\$27,151.37</b>

**Marginal Tax Rate**  
 The drop in the federal corporate tax rate from 35% to 21% lowers overall marginal tax rate (with state & local taxes) from 38% to 24%

**Effective tax rate**  
 Change in corporate tax rate on US income & shift to regional tax model for global taxes will lower effective tax rate from 25.19% to 20%

**Tax effect on debt**  
 Lower marginal tax rate increases after tax cost of debt and capital (holding debt ratio fixed).

**Higher ROIC/Reinvestment**  
 ROIC rises proportionately with drop in effective tax rate. Capital expensing rules lead to marginally more reinvestment.  
 Expected Growth = ROIC \* Reinvestment Rate

Value with old tax code inputs = \$24,751 billion  
 Value with new tax code inputs = \$27,151 billion  
 Change in value = **\$2,400 billion**  
 Percentage Change in value =  $2400/24,751 = 9.70\%$

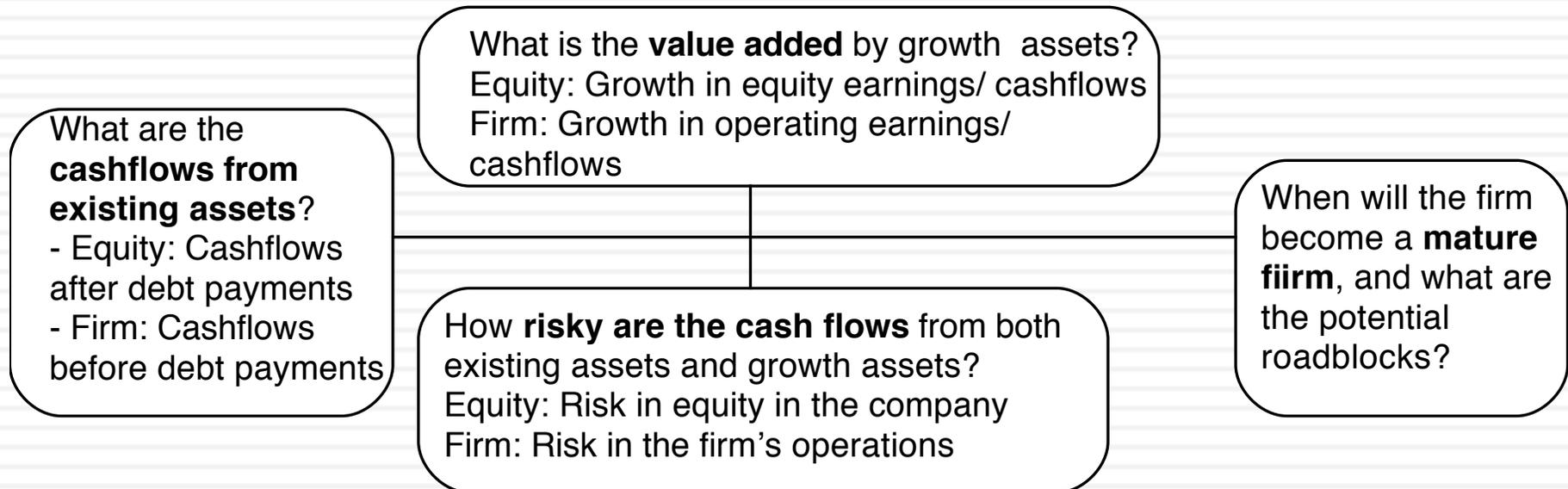
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# The Dark Side of Valuation

Anyone can value a company that is stable,  
makes money and has an established  
business model!

# The fundamental determinants of value...

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# The Dark Side of Valuation...

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- Valuing stable, money making companies with consistent and clear accounting statements, a long and stable history and lots of comparable firms is easy to do.
- The true test of your valuation skills is when you have to value “difficult” companies. In particular, the challenges are greatest when valuing:
  - Young companies, early in the life cycle, in young businesses
  - Companies that don’t fit the accounting mold
  - Companies that face substantial truncation risk (default or nationalization risk)

# Difficult to value companies...

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- Across the life cycle:
  - Young, growth firms: Limited history, small revenues in conjunction with big operating losses and a propensity for failure make these companies tough to value.
  - Mature companies in transition: When mature companies change or are forced to change, history may have to be abandoned and parameters have to be reestimated.
  - Declining and Distressed firms: A long but irrelevant history, declining markets, high debt loads and the likelihood of distress make them troublesome.
- Across markets
  - Emerging market companies are often difficult to value because of the way they are structured, their exposure to country risk and poor corporate governance.
- Across sectors
  - Financial service firms: Opacity of financial statements and difficulties in estimating basic inputs leave us trusting managers to tell us what's going on.
  - Commodity and cyclical firms: Dependence of the underlying commodity prices or overall economic growth make these valuations susceptible to macro factors.
  - Firms with intangible assets: Accounting principles are left to the wayside on these firms.