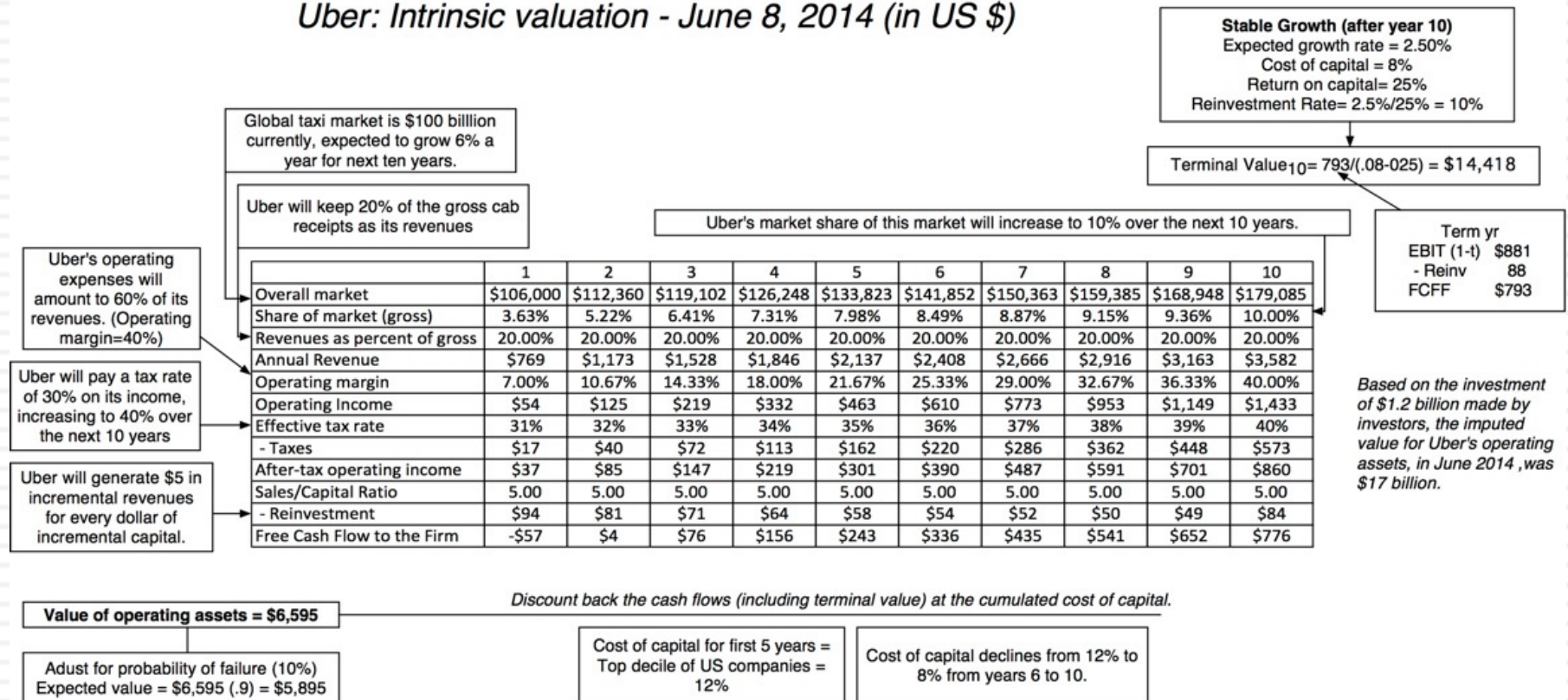


Step 4: Value the company (Uber)

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



Step 5: Keep the feedback loop open...

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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: I have used updated equity risk premiums, as of the time that I did the valuations.

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.

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 (2.32×1.021) 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%

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

Return on Capital
25%

Stable Growth

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

First 5 years

Terminal Value₅ = $2645 / (.0676 - .03) = 70,409$

Op. Assets 60607
 + Cash: 3253
 - Debt 4920
 = Equity 58400

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

Term Yr
 \$4,758
 \$2,113
 \$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%

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

Return on Capital
20%

Stable Growth

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

First 5 years

Terminal Value₅ = $2434 / (.0755 - .03) = 53,481$

Op. Assets 43,975
 + Cash: 3253
 - Debt 4920
 = Equity 42308

Value/Share \$ 60.53

Year	1	2	3	4	5	Term Yr
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

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

Cost of Equity
10.86%

Cost of Debt
 $(3.96\% + 1.5\%)(1-.35)$
 $= 3.55\%$

Weights
E = 92% D = 8%

On October 16, 2008,
MMM was trading at
\$57/share.

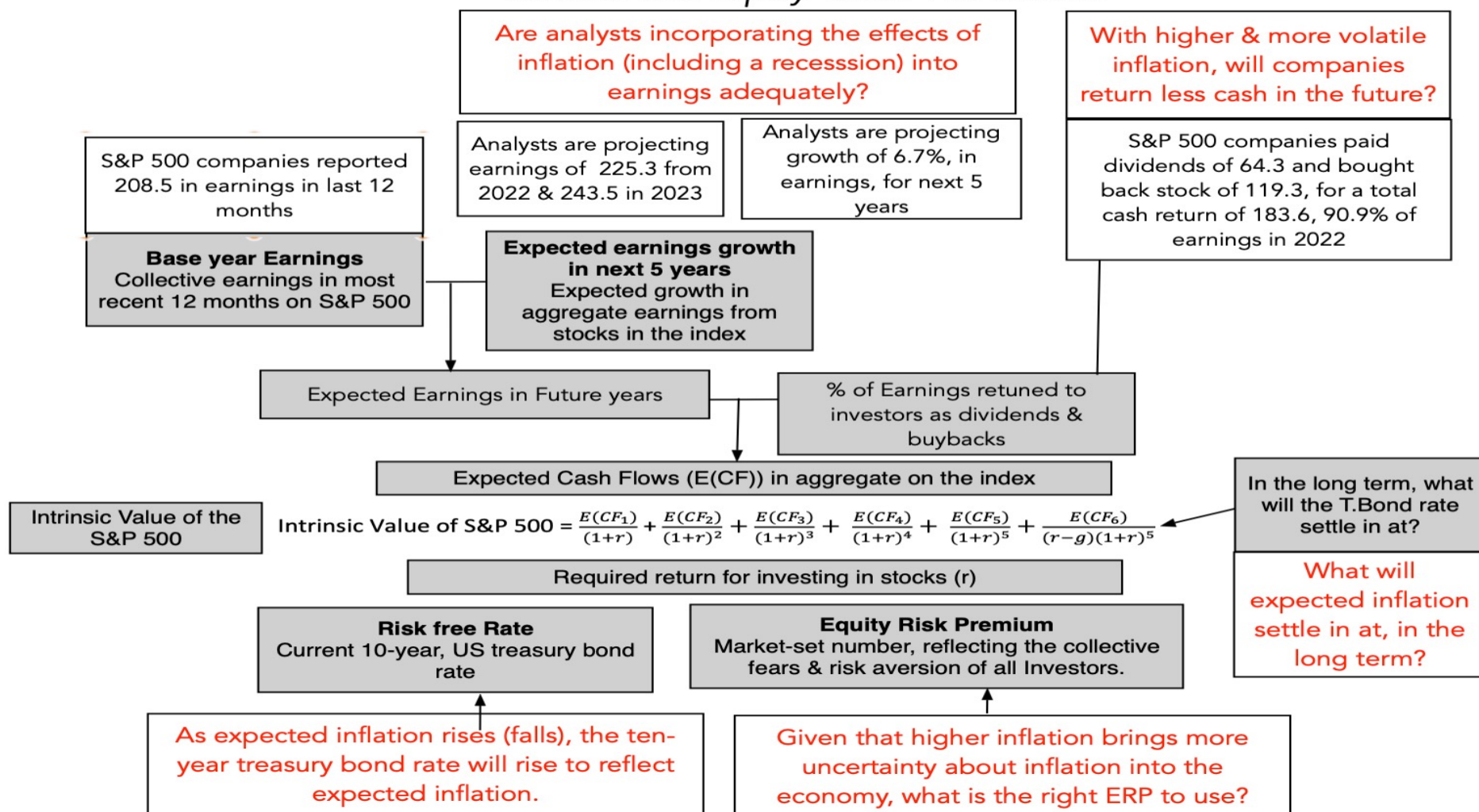
Riskfree Rate:
Riskfree rate = 3.96%

Increased risk premium to 6% for next 5 years

$Beta = 1.15$
 $Risk Premium = 6\%$
 $Unlevered Beta for Sectors: 1.09$
 $D/E = 8.8\%$

Valuing the S&P 500 Index (September 2022)

Inflation and Equity Value: The Drivers



1. Earnings

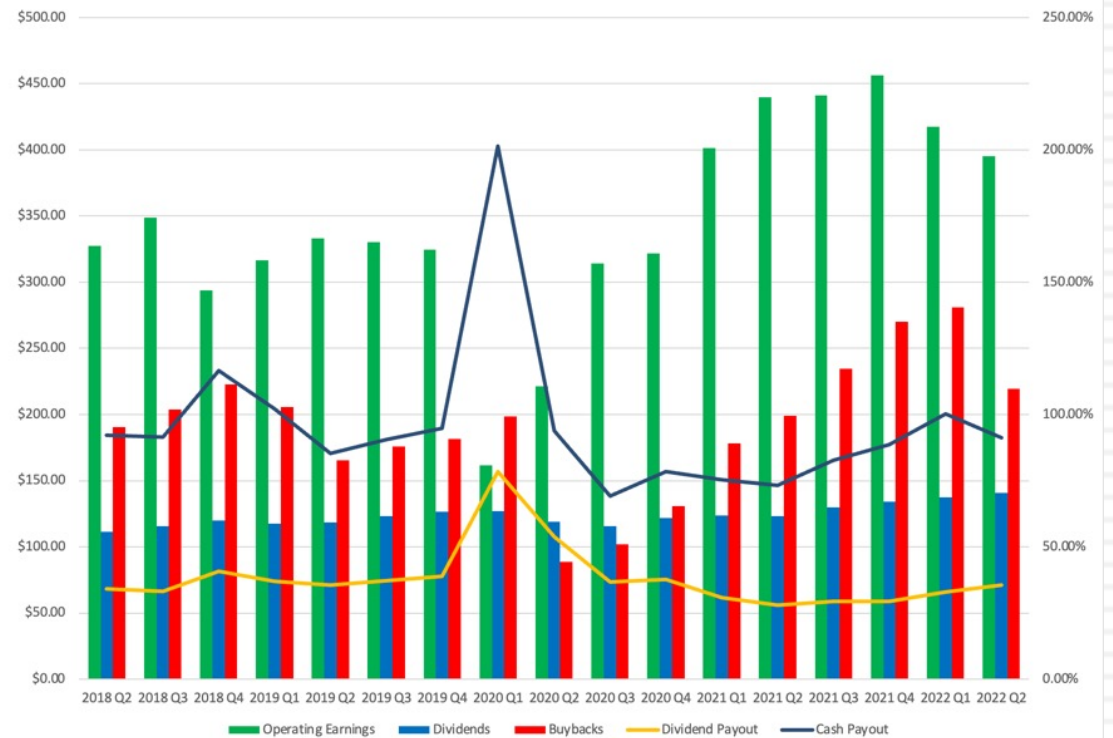
<i>Start of Month</i>	<i>Expected Earnings in 2022</i>	<i>% Change over prior month</i>	<i>% Change over start of year</i>	<i>Expected Earnings in 2023</i>	<i>% Change over prior month</i>	<i>% Change over start of year</i>
01/01/22	223.34			244.94		
02/01/22	223.78	0.20%	0.20%	245.93	0.40%	0.40%
03/01/22	225.43	0.74%	0.94%	247.94	0.82%	1.22%
04/01/22	227.3	0.83%	1.77%	249.52	0.64%	1.87%
05/01/22	227.29	0.00%	1.77%	250.11	0.24%	2.11%
06/01/22	228.03	0.33%	2.10%	248.96	-0.46%	1.64%
07/01/22	229.57	0.68%	2.79%	251.99	1.22%	2.88%
08/01/22	228.27	-0.57%	2.21%	248.35	-1.44%	1.39%
09/01/22	225.36	-1.27%	0.90%	243.64	-1.90%	-0.53%
09/20/22	225.34	-0.01%	0.90%	243.46	-0.07%	-0.60%

2. Cash Return

S&P 500 Aggregate Earnings, Dividends and Buybacks: 2001-2021

Year	Earnings	Dividends	Buybacks	Dividend Payout	Cash Payout
2001	38.85	15.74	14.34	40.51%	77.43%
2002	46.04	15.96	13.87	34.67%	64.78%
2003	54.69	17.88	13.70	32.69%	57.74%
2004	67.68	19.01	21.59	28.09%	59.99%
2005	76.45	22.34	38.82	29.23%	80.01%
2006	87.72	25.04	48.12	28.55%	83.40%
2007	82.54	28.14	67.22	34.09%	115.53%
2008	49.51	28.45	39.07	57.46%	136.37%
2009	56.86	21.97	15.46	38.64%	65.82%
2010	83.77	22.65	32.88	27.04%	66.28%
2011	96.44	26.53	44.75	27.51%	73.91%
2012	96.82	31.25	44.65	32.28%	78.39%
2013	104.92	34.90	53.23	33.26%	84.00%
2014	116.16	39.55	62.44	34.04%	87.79%
2015	100.48	43.41	64.94	43.20%	107.83%
2016	106.26	45.70	62.32	43.01%	101.66%
2017	124.51	48.93	60.85	39.30%	88.17%
2018	152.78	54.39	96.11	35.60%	98.51%
2019	157.18	58.50	87.81	37.22%	93.08%
2020	139.76	57.00	61.66	40.78%	84.90%
2021	205.35	60.65	104.61	29.53%	80.48%
Average				35.56%	85.05%
1st Quartile				29.53%	73.91%
Median				34.09%	83.40%
3rd Quartile				39.30%	93.08%

Quarterly Data on Earnings, Dividends and Buybacks: S&P 500



My S&P 500 Story

An Intrinsic (and Personal) Valuation of the S&P 500 on September 23, 2022

My Earnings Estimates

Analysts are underestimating the effect of a recession on future earnings, and I am reducing their 2023 estimates by 15%, with ripple effects on earnings beyond. (I am leaving 2022 estimates untouched, because the bulk of the year is behind us.

Cash Return

While companies have collectively returned 90.5% of earnings as dividends and buybacks in the most recent 12 months, recession fears and uncertainty will lead them to reduce this cash returns to 80% of earnings (consistent with growth in long term), over time.

Intrinsic Value Estimate (based on your choice of ERP)							
	2021	2022	2023	2024	2025	2026	Terminal Year
Analyst Estimate of Earnings	208.53	225.34	243.46	259.79	273.70	284.65	296.03
My Estimate of Earnings	\$208.53	225.34	206.94	225.03	243.13	252.85	262.97
Expected Earnings Growth Rate		8.06%	-8.16%	6.71%	5.35%	4.00%	4.00%
Expected cash payout as % of earnings	90.50%	90.50%	87.88%	85.25%	82.63%	80.00%	80.00%
Expected Dividends + Buybacks =	\$188.72	\$203.93	\$181.85	\$191.84	\$200.89	\$202.28	210.37
Expected Terminal Value =						\$ 4,207.49	
Riskfree Rate	3.69%	3.75%	3.81%	3.88%	3.94%	4.00%	4.00%
Required Return on Stocks	8.69%	8.75%	8.81%	8.88%	8.94%	9.00%	9.00%
Present Value =		\$187.52	\$153.67	\$148.90	\$143.12	\$2,882.41	
Intrinsic Value of Index =	3515.63						
Actual Index level =	3693.23						
% Under or Over Valuation =	-4.81%						

Ten-year Treasury Bond Rate

I will assume that the bulk of the rise in rates has already occurred, and that the T.Bond rate will converge to 4%, over the next five years.

Equity Risk Premium

The equity risk premium is 5%, close to both the historical average risk premium earned on stocks from 1928 - 2022 and the average implied equity risk premium over the last decade. Adding it to the ten-year bond rate yields the required return on stocks.

In my overarching story for equities, I am building in the assumption that there will be a recession that creates both short term & long term damage to corporate earnings, but helps in restraining inflation, bringing it down from 2022 levels to about 3% in the long term (above the 2011-2021 average of 1.73%).

What if?

Valuing the S&P 500 on Sept 23, 2022									
Riskfree Rate	<i>Earnings = 30% below Estimates</i>			<i>Earnings = 15% below Estimates</i>			<i>Earnings = Estimates</i>		
	<i>ERP = 4%</i>	<i>ERP = 5%</i>	<i>ERP = 6%</i>	<i>ERP = 4%</i>	<i>ERP = 5%</i>	<i>ERP = 6%</i>	<i>ERP = 4%</i>	<i>ERP = 5%</i>	<i>ERP = 6%</i>
2%	4276	3416	2842	4677	3737	3110	5449	4348	3615
3%	4132	3303	2750	4519	3613	3009	5169	4129	3436
4%	3979	3183	2653	4352	3482	2903	4889	3910	3257
5%	3819	3058	2551	4176	3345	2790	4609	3690	3078
6%	3650	2926	2443	3991	3200	2672	4328	3471	2899
<i>Index was trading at 3693 on 9/23/22. Shaded cells are higher than 3693</i>									

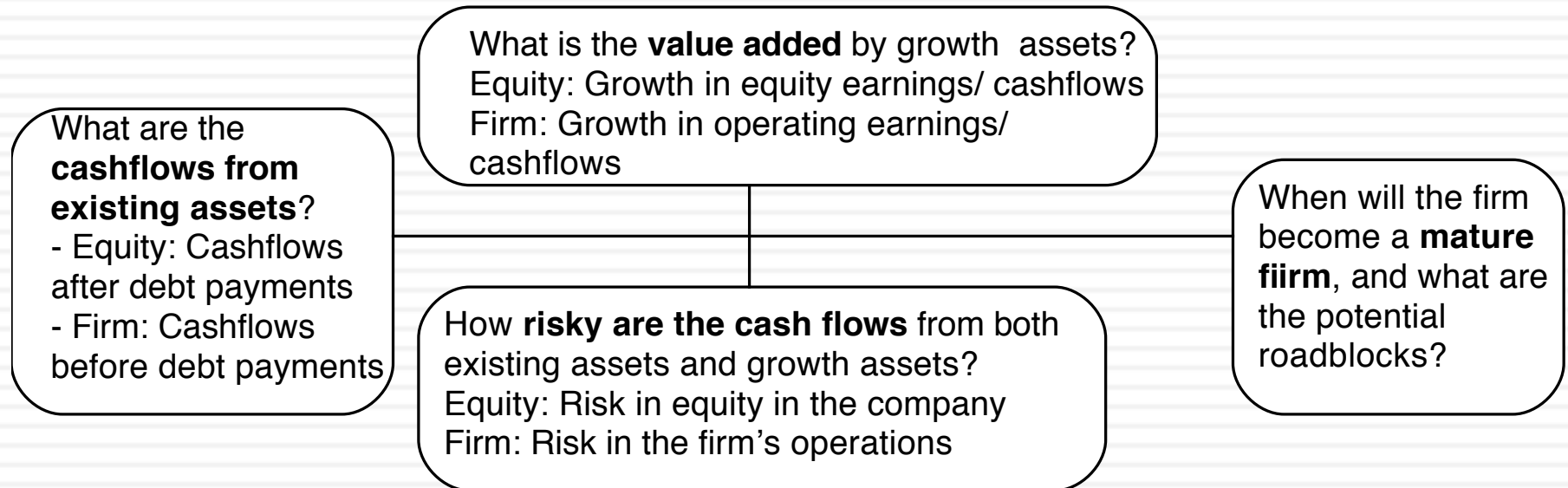
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The Dark Side of Valuation

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.

I. The challenge with young companies...

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Making judgments on revenues/profits difficult because you cannot draw on history. If you have no product/service, it is difficult to gauge market potential or profitability. The company's entire value lies in future growth but you have little to base your estimate on.

Cash flows from existing assets non-existent or negative.

What are the cashflows from existing assets?

Different claims on cash flows can affect value of equity at each stage.

What is the value of equity in the firm?

What is the value added by growth assets?

How risky are the cash flows from both existing assets and growth assets?

Limited historical data on earnings, and no market prices for securities makes it difficult to assess risk.

When will the firm become a mature firm, and what are the potential roadblocks?

Will the firm will make it through the gauntlet of market demand and competition. Even if it does, assessing when it will become mature is difficult because there is so little to go on.

Upping the ante.. Young companies in young businesses...

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- When valuing a business, we generally draw on three sources of information
 - ▣ The firm's current financial statement
 - How much did the firm sell?
 - How much did it earn?
 - ▣ The firm's financial history, usually summarized in its financial statements.
 - How fast have the firm's revenues and earnings grown over time?
 - What can we learn about cost structure and profitability from these trends?
 - Susceptibility to macro-economic factors (recessions and cyclical firms)
 - ▣ The industry and comparable firm data
 - What happens to firms as they mature? (Margins.. Revenue growth... Reinvestment needs... Risk)
- It is when valuing these companies that you find yourself tempted by the dark side, where
 - ▣ "Paradigm shifts" happen...
 - ▣ New metrics are invented ...
 - ▣ The story dominates and the numbers lag...

Amazon in January 2000

