FLAME Investment Lab With The Masters - 2017

Lecture on Valuation by

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# What I Plan to Cover Today

- Mathematics behind valuation multiples

- Drivers of valuation multiples

  - Sensitivity Analysis

- Examples/case studies

- View on current market valuations

- Pockets of under valuation

- Can we time the markets to generate superior returns?

Valuation as a Profession

- Tragedy: The value gets set first and Valuation exercise happens to fit the number
- Is value real or in the eyes of the beholder?
  - Only reality is that there is no fixed valuation of an asset?
  - M&A, Diversified Portfolio Manager, Concentrated Investor, Foreign buyer.
- Is there bias in valuation?
  - All valuations are biased. The only question is by how much and in which direction. E.g. TCS
  - The direction and magnitude of the bias in your valuation is directly proportional to who pays you and how much you are paid.
- Does complexity mean precision
  - Understanding of a valuation model is inversely proportional to the number of inputs required for the model.
  - Simpler valuation models do much better than complex ones.

Investors need to know the range

- **Its almost impossible to find a fixed valuation**

Under Valuation	Fair Valuation Range	Over Valuation
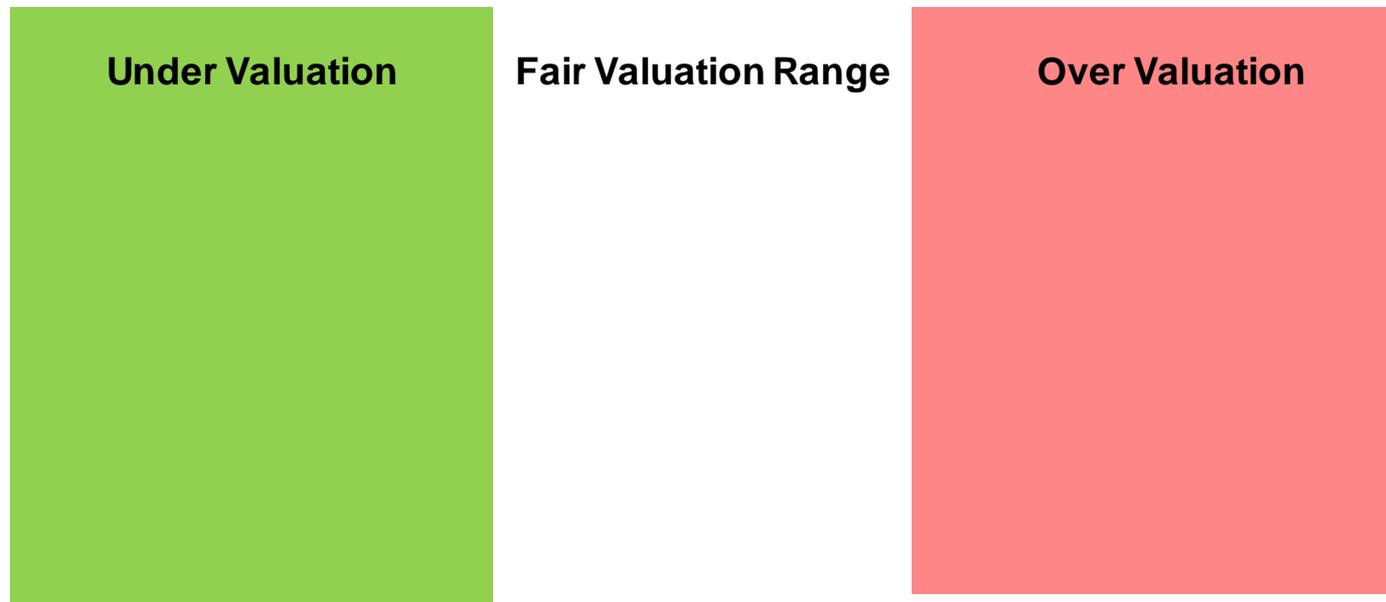
- **Its not impossible to tell whether current price is a bargain**

Why so much discrimination?

11 Year History	'03 - '14 PAT CAGR	P/B	P/E	'03 -'14 Cash Profit CAGR
Asian Paints Ltd.	22%	12.98	50.44	21%
ACC Ltd.	22%	2.66	28.02	17%
Voltas Ltd.	21%	2.93	27.74	17%
Apollo Tyres Ltd.	21%	1.76	10.00	22%

Why so much discrepancy in valuation when earnings growth is the same? What drives PEx?

Simple fundamentals of valuation

- How much do I want to pay NOW for <u>expected</u> future cash flow?
  - Your expected returns drive how much you want to pay NOW
  - E.g. 5 year g-sec: FV = 100, Coupon = 10%

Years		1	2	3	4	5
Capital		100.00	100.00	100.00	100.00	100.00
Coupon (interest paid)	10%	10.00	10.00	10.00	10.00	10.00
Principal Paidback						100.00
Reinvest	0%	-	-	-	-	-
Payout		10.00	10.00	10.00	10.00	110.00
Expected Return	10%	0.91	0.83	0.75	0.68	0.62
		9.09	8.26	7.51	6.83	68.30
Present Value	**100.00**					

$$\text{Value} = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} + \frac{CF_4}{(1+r)^4} ..... + \frac{CF_n}{(1+r)^n}$$

Simple fundamentals of valuation

- How much do I want to pay NOW for <u>expected</u> future cash flow?
  - Your expected returns drive how much you want to pay NOW
  - E.g. 5 year g-sec: FV = 100, Coupon = 0%

Years		1	2	3	4	5
Capital		100.00	110.00	121.00	133.10	146.41
Interest (coupon unpaid)	10%	10.00	11.00	12.10	13.31	14.64
Principal + Interest Paidback						146.41
Reinvest	100%	10.00	11.00	12.10	13.31	-
Payout		-	-	-	-	161.05
Expected Return	10%	0.91	0.83	0.75	0.68	0.62
		-	-	-	-	100.00
Present Value	**100.00**					

Simple fundamentals of valuation

- Value changes with change in expected yield/return or coupon

Years		1	2	3	4	5
Coupon	10%	10.00	10.00	10.00	10.00	110.00
Expected Return	15%	0.87	0.76	0.66	0.57	0.50
		8.70	7.56	6.58	5.72	54.69
Present Value	83.24					

Years		1	2	3	4	5
Coupon	10%	10.00	10.00	10.00	10.00	110.00
Expected Return	8%	0.93	0.86	0.79	0.74	0.68
		9.26	8.57	7.94	7.35	74.86
Present Value	107.99					

- You can always get your expected returns by paying a price over or under its face value

Simple fundamentals of valuation

- Let's replace g-sec example with a business
  - Business returns 10% on its capital
  - No leverage; Hence ROCE = ROE

Years		1	2	3	4	5
Capital		100.00	100.00	100.00	100.00	100.00
PAT	10%	10.00	10.00	10.00	10.00	10.00
Return on Capital (ROE)		*10%*	*10%*	*10%*	*10%*	*10%*
Reinvest	0%	-	-	-	-	-
Payout		10.00	10.00	10.00	10.00	10.00
Expected Return	15%	0.87	0.76	0.66	0.57	0.50
		8.70	7.56	6.58	5.72	4.97
Present Value	67					

∞

- Value destruction by starting this business

Simple fundamentals of valuation

- When expectations and return match, value doesn't change with duration

Years		1	2	3	4	5
Capital		100.00	107.50	115.56	124.23	133.55
PAT	15%	15.00	16.13	17.33	18.63	20.03
Return on Capital (ROE)		*15%*	*15%*	*15%*	*15%*	*15%*
Reinvest	50%	7.50	8.06	8.67	9.32	10.02
Payout		7.50	8.06	8.67	9.32	10.02
Expected Return	15%	0.87	0.76	0.66	0.57	0.50
		6.52	6.10	5.70	5.33	4.98
Present Value	**100**					

∞

Money invested at returns > expected return generates value (i.e. MV > BV)

Money invested at returns < expected returns destroys value (i.e. MV < BV)

Does earnings growth create value?

How To Create Growth

Growth in Earnings   = ROE x Reinvestment Rate

= ROE x (1 – Payout ratio)

Simple fundamentals of valuation

Years		1	2	3	4	5
Capital		100.00	100.00	100.00	100.00	100.00
PAT	10%	10.00	10.00	10.00	10.00	10.00
Return on Capital (ROE)		*10%*	*10%*	*10%*	*10%*	*10%*
Reinvest	0%	-	-	-	-	-
Payout		10.00	10.00	10.00	10.00	10.00
Expected Return	15%	0.87	0.76	0.66	0.57	0.50
		8.70	7.56	6.58	5.72	4.97
Present Value	**67**					

∞

- **PAT CAGR = 0**
- **fwd PE x = 67/10 = 6.7**
- **ttm P/B x = 67/100 = 0.67**

Simple fundamentals of valuation

Years		1	2	3	4	5
Capital		100.00	105.00	110.25	115.76	121.55
PAT	10%	10.00	10.50	11.03	11.58	12.16
Return on Capital (ROE)		*10%*	*10%*	*10%*	*10%*	*10%*
Reinvest	50%	5.00	5.25	5.51	5.79	6.08
Payout		5.00	5.25	5.51	5.79	6.08
Expected Return	15%	0.87	0.76	0.66	0.57	0.50
		4.35	3.97	3.62	3.31	3.02
Present Value	**50**					

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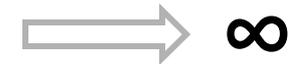
- **PAT CAGR = 5%**
- **fwd PE x = 50/10 = 5**
- **ttm P/B x = 50/100 = 0.5**

-**e.g. Bajaj Electricals**

Simple fundamentals of valuation

Years		1	2	3	4	5
Capital		100.00	100.00	100.00	100.00	100.00
PAT	15%	15.00	15.00	15.00	15.00	15.00
Return on Capital (ROE)		*15%*	*15%*	*15%*	*15%*	*15%*
Reinvest	0%	-	-	-	-	-
Payout		15.00	15.00	15.00	15.00	15.00
Expected Return	15%	0.87	0.76	0.66	0.57	0.50
		13.04	11.34	9.86	8.58	7.46
Present Value	**100**					

∞
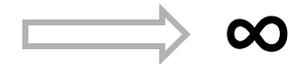
- **PAT CAGR = 0%**
- **fwd PE x = 100/15 = 6.7**
- **ttm P/B x = 100/100 = 1**

Simple fundamentals of valuation

Years		1	2	3	4	5
Capital		100.00	107.50	115.56	124.23	133.55
PAT	15%	15.00	16.13	17.33	18.63	20.03
Return on Capital (ROE)		*15%*	*15%*	*15%*	*15%*	*15%*
Reinvest	50%	7.50	8.06	8.67	9.32	10.02
Payout		7.50	8.06	8.67	9.32	10.02
Expected Return	15%	0.87	0.76	0.66	0.57	0.50
		6.52	6.10	5.70	5.33	4.98
Present Value	**100**					

∞

- **PAT CAGR = 7.5%**
- **fwd PE x = 100/15 = 6.7**
- **ttm P/B x = 100/100 = 1**

Simple fundamentals of valuation

Years		1	2	3	4	5
Capital		100.00	100.00	100.00	100.00	100.00
PAT	20%	20.00	20.00	20.00	20.00	20.00
Return on Capital (ROE)		*20%*	*20%*	*20%*	*20%*	*20%*
Reinvest	0%	-	-	-	-	-
Payout		20.00	20.00	20.00	20.00	20.00
Expected Return	15%	0.87	0.76	0.66	0.57	0.50
		17.39	15.12	13.15	11.44	9.94
Present Value	**133**					

∞

- **PAT CAGR = 0%**
- **fwd PE x = 133/20 = 6.7**
- **ttm P/B x = 133/100 = 1.33**

-Higher ROE doesn't change the PEx but does change the absolute value

Simple fundamentals of valuation

Years		1	2	3	4	5
Capital		100.00	110.00	121.00	133.10	146.41
PAT	20%	20.00	22.00	24.20	26.62	29.28
Return on Capital (ROE)		*20%*	*20%*	*20%*	*20%*	*20%*
Reinvest	50%	10.00	11.00	12.10	13.31	14.64
Payout		10.00	11.00	12.10	13.31	14.64
Expected Return	15%	0.87	0.76	0.66	0.57	0.50
		8.70	8.32	7.96	7.61	7.28
Present Value	**200**					

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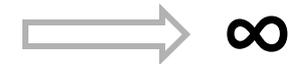
- **PAT CAGR = 10%**
- **fwd PE x = 200/20 = 10**
- **ttm P/B x = 200/100 = 2**

Simple fundamentals of valuation

Years		1	2	3	4	5
Capital		100.00	120.00	144.00	172.80	207.36
PAT	20%	20.00	24.00	28.80	34.56	41.47
Return on Capital (ROE)		*20%*	*20%*	*20%*	*20%*	*20%*
Reinvest	100%	20.00	24.00	28.80	34.56	41.47
Payout		-	-	-	-	-
Expected Return	15%	0.87	0.76	0.66	0.57	0.50
		-	-	-	-	-
Present Value	**Infinity**					

∞

- PAT CAGR = 20%
- fwd PE x = Infinity
- ttm P/B x = Infinity

-This is impossible in reality as the value would surpass that of our entire world

Growth can be increased by increasing investments

Growth will increase value ONLY IF the returns earned on the new investments exceed expected return

Simple fundamentals of valuation

- Demonstration of what happens to value over time

Years		1	2	3	4	5
Starting Capital		**100.00**	**110.00**	**121.00**	**139.15**	**160.02**
ROCE		10%	10%	15%	15%	10%
Incremental Cash Flow		10.00	11.00	18.15	20.87	16.00
Ending Capital		**110.00**	**121.00**	**139.15**	**160.02**	**176.02**
Expected Return	10%	0.91	0.83	0.75	0.68	0.62
Present Value		**100.00**	**100.00**	**104.55**	**109.30**	**109.30**

- **Valuation of all businesses peak at some finite time. That's when you calculate the "Terminal Value"**

Simple fundamentals of valuation

- Graph of Present Value over Time
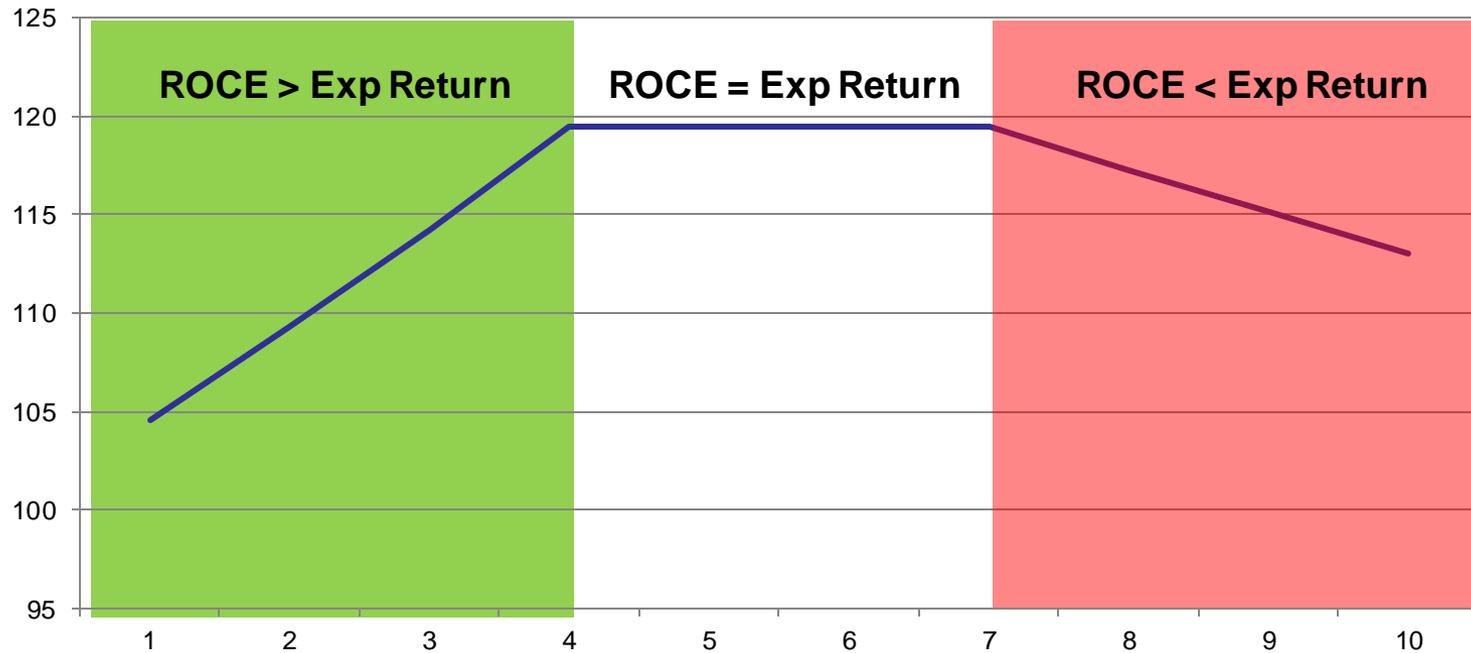
- **Valuation of all businesses peak at some finite time**

Sensitivity of Valuations
(PE x and PB x)

Same Growth but Different ROCE

20% growth for 25 years and 10% post that in both cases

Years			1	2	3	4	5
Capital			100.00	120.00	144.00	172.80	207.36
PAT			50.00	60.00	72.00	86.40	103.68
Return on Capital (ROCE)			*50%*	*50%*	*50%*	*50%*	*50%*
Reinvest			*40%*	*40%*	*40%*	*40%*	*40%*
	growth	20%	20.00	24.00	28.80	34.56	41.47
Payout			30.00	36.00	43.20	51.84	62.21
Extected Return		15%	0.87	0.76	0.66	0.57	0.50
			26.09	27.22	28.40	29.64	30.93
Present Value		3,456.99					
	fwdPE	**69.1**	ttmPB	**34.57**			

Years			1	2	3	4	5
Capital			100.00	120.00	144.00	172.80	207.36
PAT			25.00	30.00	36.00	43.20	51.84
Return on Capital (ROCE)			*25%*	*25%*	*25%*	*25%*	*25%*
Reinvest			*80%*	*80%*	*80%*	*80%*	*80%*
	growth	20%	20.00	24.00	28.80	34.56	41.47
Payout			5.00	6.00	7.20	8.64	10.37
Extected Return		15%	0.87	0.76	0.66	0.57	0.50
			4.35	4.54	4.73	4.94	5.15
Present Value		1,059.13					
	fwdPE	**42.4**	ttmPB	**10.59**			

Different Duration of Growth

20% growth for 5 years in 1ˢᵗ case and for 25 years in the 2ⁿᵈ case

Years				1	2	3	4	5
Capital				100.00	120.00	144.00	172.80	207.36
PAT				25.00	30.00	36.00	43.20	51.84
Return on Capital (ROCE)				*25%*	*25%*	*25%*	*25%*	*25%*
Reinvest				*80%*	*80%*	*80%*	*80%*	*80%*
	growth	20%		20.00	24.00	28.80	34.56	41.47
Payout				5.00	6.00	7.20	8.64	10.37
Extected Return		15%		0.87	0.76	0.66	0.57	0.50
				4.35	4.54	4.73	4.94	5.15
Present Value		**416.36**						
	fwdPE	**16.7**	ttmPB	**4.16**				

Years				1	2	3	4	5
Capital				100.00	120.00	144.00	172.80	207.36
PAT				25.00	30.00	36.00	43.20	51.84
Return on Capital (ROCE)				*25%*	*25%*	*25%*	*25%*	*25%*
Reinvest				*80%*	*80%*	*80%*	*80%*	*80%*
	growth	20%		20.00	24.00	28.80	34.56	41.47
Payout				5.00	6.00	7.20	8.64	10.37
Extected Return		15%		0.87	0.76	0.66	0.57	0.50
				4.35	4.54	4.73	4.94	5.15
Present Value		**1,059.13**						
	fwdPE	**42.4**	ttmPB	**10.59**				

Different Expected Return

20% growth for 10 years and 10% post that in both cases

Years			1	2	3	4	5
Capital			100.00	120.00	144.00	172.80	207.36
PAT			25.00	30.00	36.00	43.20	51.84
Return on Capital (ROCE)			*25%*	*25%*	*25%*	*25%*	*25%*
Reinvest			*80%*	*80%*	*80%*	*80%*	*80%*
	growth	20%	20.00	24.00	28.80	34.56	41.47
Payout			5.00	6.00	7.20	8.64	10.37
Extected Return		12%	0.89	0.80	0.71	0.64	0.57
			4.46	4.78	5.12	5.49	5.88
Present Value		1,538.75					
	fwdPE	**61.5** ttmPB	**15.39**				

Years			1	2	3	4	5
Capital			100.00	120.00	144.00	172.80	207.36
PAT			25.00	30.00	36.00	43.20	51.84
Return on Capital (ROCE)			*25%*	*25%*	*25%*	*25%*	*25%*
Reinvest			*80%*	*80%*	*80%*	*80%*	*80%*
	growth	20%	20.00	24.00	28.80	34.56	41.47
Payout			5.00	6.00	7.20	8.64	10.37
Extected Return		18%	0.85	0.72	0.61	0.52	0.44
			4.24	4.31	4.38	4.46	4.53
Present Value		267.57					
	fwdPE	**10.7** ttmPB	**2.68**				

Gresham's Law says "bad money drives out good." When paper money appeared, gold disappeared. It works in investing too: bad investors drive out good.

When undemanding investors appear, they'll buy anything.

- Howard Marks

Example of Re-rating: LaOpala

	FY2016	FY2015	FY2014	FY2013	FY2012	Growth x
Sales	250.75	224.49	178.94	155.07	115.39	**2.17**
PAT	58.71	41.74	29.95	22.88	12.60	**4.66**
ROCE	34.06	37.08	40.82	39.74	28.81	
ROE	25.30	29.48	34.85	35.30	24.97	
Debt/Equity	-	0.04	0.14	0.40	0.45	
PEx	**52.48**	**50.16**	**25.07**	**14.58**	**9.04**	
PBx	13.28	11.29	7.68	4.50	2.05	
Mcap	**3,081.00**	**2,093.46**	**750.84**	**333.61**	**113.98**	**27.03**

What caused such a re-rating? What attracted investors with Lower "r" to enter the stock?

LaOpala – Why did the Valuation Re-rate

- Competition reduced due to anti-dumping duty

- Strong growth continued during slow growth phase for the country with sustainable profitability

- Promoter improved from un-professional sounding to very sophisticated and understood what investors look for in a company

- DII came in first and FIIs followed thereby further reducing expected returns "r"

Factors for Expected Return ("r")

Predictability and Consistency of earnings	• How predictable • Probability of loss • Probability of negative growth
Size (Mcap/Sales) of the company	• Regional or national • Promoter driven or professional
Liquidity of the shares	• Impact cost for funds • Illiquidity discount or scarcity premium (e.g. Gruh, Page, LaOpala)
Who are the investors	• What's their opportunity cost
Investment horizon	• Are the investors investing for a short term profit making trade or long term

- Investors with lowest expected return "r" drive valuations higher
- Company profile attracts the matching kind of investors.
- Would short term investors have same "r" as long term?

Expected growth and return pattern

	Year 1	Year 2	Year 3	Year 4	Year 5	CAGR
Nifty	25%	25%	25%	25%	-25%	**12.9%**
Company 1	40%	40%	40%	40%	-49%	**14.3%**
Company 2	25%	25%	25%	25%	-20%	**14.3%**

Which should have lowest expected return "r" by an investor?

What drives long-term growth "g" and its duration?

Factors for Sustainable Growth ("g")

Industry Level		
Inherent growth of the industry	•	How does it relate to GDP growth of the country or some other driver
Size of unorganized market/ PSUs	•	Can organized players capture the unorganized market share and grow faster than the industry
Untapped potential	•	Are there new customers adapting to the products or services
	•	Are there applications in new segments
	•	Exports
Consumable/Capex driven	•	Is the company product a consumable or capex driven

Company Level		
Entry Barriers	•	Licenses, Brand, Land, Resources, Technology, Patent, Process, etc.
Market share gain	•	Is the company taking market share from competitors
	•	Are there inefficient PSUs?
Competitive Scenario	•	Yahoo, Amazon

Examples as of Sept'14

11 Year History	03 - '14 PAT CAGR	PAT Growth range	Avg ROCE	ROCE Range	Average Payout %
Asian Paints Ltd.	22%	-2% to 111%; **1 negative year**	49.22	40 - 75	44.14
ACC Ltd.	22%	-31% to 140%; **3 negative years**	26.49	11 - 47	36.34
Voltas Ltd.	21%	-54% to 174%; **2 negative years**	32.17	16 - 56	23.99
Apollo Tyres Ltd.	21%	-48% to 307%; **5 negative years**	20.72	11 -33	12.84

Who should get the highest and lowest valuation?

Examples as of Sept'14

11 Year History	03 - '14 PAT CAGR	PAT Growth range	Avg ROCE	ROCE Range	Average Payout %	P/B	P/E
Asian Paints Ltd.	22%	-2% to 111%; **1 negative year**	49.22	40 - 75	44.14	12.98	50.44
ACC Ltd.	22%	-31% to 140%; **3 negative years**	26.49	11 - 47	36.34	2.66	28.02
Voltas Ltd.	21%	-54% to 174%; **2 negative years**	32.17	16 - 56	23.99	2.93	27.74
Apollo Tyres Ltd.	21%	-48% to 307%; **5 negative years**	20.72	11 -33	12.84	1.76	10.00

Sustainable PE multiple

Sustainable PE x of a stock

= payout ratio / (r - g)

    where,
    r = **market** expected return at stable growth
    g = **market** expected constant growth rate

Let's do examples for the following companies:

1. HDFC Bank

2. Magalam Cement

Is reinvestment creating value?

	FY12	FY11	FY10	FY9	FY8
Bajaj Electricals Ltd.					
ROCE (EBIT/Cap Emp)	13.5%	17.5%	20.8%	20.5%	20.3%
Incr ROCE (Incr EBIT/Incr CE)	-10.5%	5.7%	18.6%	17.7%	41.3%
5 Yr Incr ROCE	12%				

Creating Growth vs. Creating Value

- Growth in Net Operating Income = ROCE x Reinvestment Rate

  – Reinvestment Rate = (Capex – Depr + Δ WC)/EBIT (1-t)

  – Value created if ROCE > Cost of Capital (WACC)

- Growth in net Income = ROE x Equity Reinvestment Rate

  – Eq. Reinvestment rate = (Capex – Depr + Δ WC - Δ Debt)/Net Income

  – Value created if ROE > Cost of Equity

Bottomline: Simple fundamentals of valuation

- Value of perpetual (to infinity) growth above expected return results in INFINITE value

- Any company who is capable of doing that will itself become the entire economy and hence impossible

- Question is how long does the higher returning growth sustain

- After this, the return (from the business) falls below or at expected returns level

- That's the time to end forecast and calculate **"Terminal Value"**

DCF and Our Bond Examples

- Interest Paid: EBIT (1-t)

- Reinvestment: (Capex – Depr) + Δ WC

- Payout: FCFF (Free Cash Flow to Firm) = EBIT (1-t) - Reinvestment

- Expected Return: WACC: Weighted Avg Cost of Capital (Debt, Equity, etc..)

- Principal Paidback: Terminal Value

- Present Value: Enterprise Value (EV): Value of Debt, Common Equity and other stakeholder ownership

Years		1	2	3	4	5
Capital		100.00	100.00	100.00	100.00	100.00
Coupon (interest paid)	10%	10.00	10.00	10.00	10.00	10.00
Principal Paidback						100.00
Reinvestment	0%	-	-	-	-	-
Payout		10.00	10.00	10.00	10.00	110.00
Expected Return	10%	0.91	0.83	0.75	0.68	0.62
		9.09	8.26	7.51	6.83	68.30
Present Value	**100.00**					

Valuation Case Studies

Jubilant Foodworks – What's wrong with this?

	FY12E	FY13E	FY14E	FY15E	FY16E	FY17E	FY18E	FY19E	FY20E
Sales growth (%)	50.9	46.5	42.8	36.1	31.5	21.3	19.9	18.8	18.1
SSS growth (%)	29.8	29.1	27.9	24.0	20.7	11.5	11.6	11.1	11.0
EBIDTA margin (%)	18.2	18.3	18.6	18.7	18.7	18.4	18.0	17.6	17.2
EBIT	1,490	2,283	3,415	4,774	6,357	7,613	8,984	10,468	12,014
Less: Depreciation	378	467	574	679	796	923	1,058	1,204	1,445
Add: Working capital	31	277	222	198	154	13	(63)	289	339
Less: Capex	(876)	(894)	(1,068)	(1,044)	(1,178)	(1,271)	(1,348)	(1,453)	(2,418)
Less: Taxes	492	753	1,127	1,576	2,098	2,512	2,965	3,454	3,965
Free cash flow (FCF)	531	1,380	2,016	3,032	4,032	4,766	5,666	7,053	7,416
Terminal Value									97,336
Discounted cash flow	531	1,221	1,579	2,101	2,473	2,587	2,722	2,998	2,790
DCF of Terminal value									36,614
Sum of DCF	55,085								
Add: Cash	770								
Less: Debt	-								
Equity value	55,854								
Equity shares o/s	65								
Value per share	854								

Jubilant Foodworks – What's wrong with this?

	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20
NOPLAT	170	420	720	998	1,530	2,288	3,198	4,259	5,101	6,019	7,014	8,049
Reinvestment	(361)	(260)	(398)	(467)	(150)	(272)	(167)	(228)	(335)	(353)	40	(634)
FCF	(191)	160	322	531	1,380	2,016	3,031	4,031	4,766	5,666	7,054	7,415
Reinvestment Rate	212%	62%	55%	47%	10%	12%	5%	5%	7%	6%	-1%	8%
NOPLAT Growth		147%	71%	39%	53%	50%	40%	33%	20%	18%	17%	15%
Implied ROCE		69%	115%	70%	114%	505%	335%	635%	369%	274%	282%	

Jubilant Foodworks – Constraints to Growth?

- Termination of master franchise agreement or higher franchise fee. Agreement until 2024 and renewable by 10 years. Royalty fees could increase from 3%. Can we assume this to be perpetual?

- Competition could get aggressive. Pizza Hut has announced opening up 270 new stores by 2015.

- Slowdown in store expansion rate. Estimate to reach 700 from 400 currently in the next 8 years. i.e. growth CAGR of 7.2%

- "Same store sales growth" could slow. Long-term trend should be < Nominal GDP

- Increasing density of stores could cannibalize sales? Can new stores be as profitable?

- Can margins be sustained with increasing raw material prices and increasing salaries?

- Historical ROCE does not incorporate normalized expenses
  - ESOPs calculated at intrinsic value
  - Lease expenses not capitalized. Typically this reduces the ROCE
  - Tax break expired

Jubilant Foodworks – Positives for Growth

- Dunkin' Donuts store growth rate higher than estimated. Current expectation of 80 stores in 5 years.

- Management able to sign more big master franchisee agreements.

- EBITDA margins expand above 19% currently (which management indicated are not sustainable) driving ROCE higher.

- Smaller towns respond well and higher growth rate sustain over longer duration.

Can do Reverse Calculation of PEx and PBx

|	Year 0	……….	…………..	Year 10
PEx	?			20x
Growth		20%	20%	20%
Expected Return	15%			
Earnings	X			X * (1+g)^n

This is Tricky
Avoid Common Mistake.

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View on Current Market Valuations

Most Parameters are Cyclical

PAT as a % of Net Sales by Sectors

Row Labels	FY16	FY15	FY14	FY13	FY12	FY11	FY10	FY09	FY08	FY07	FY06	FY05	FY04	FY03	FY02	Avg
Agriculture	4.0%	3.9%	2.9%	5.4%	5.7%	7.1%	6.6%	6.3%	7.3%	7.2%	7.7%	7.4%	5.9%	2.4%	3.2%	**5.5%**
Consumption	6.4%	7.7%	7.9%	8.3%	7.9%	8.2%	8.5%	7.4%	10.1%	9.2%	8.6%	8.0%	8.2%	7.6%	7.5%	**8.1%**
Energy	6.2%	4.1%	4.5%	4.2%	4.8%	6.4%	8.2%	5.8%	8.4%	7.9%	7.6%	9.3%	9.7%	8.9%	6.7%	**6.8%**
Finance																
Industrial/Engg	3.9%	1.9%	2.9%	4.0%	6.0%	8.0%	8.0%	7.4%	11.6%	10.6%	8.8%	7.7%	6.8%	5.6%	4.3%	**6.5%**
Materials	-0.4%	1.5%	6.8%	4.6%	8.5%	11.4%	9.6%	7.8%	12.6%	17.6%	15.2%	16.8%	11.5%	4.3%	-0.6%	**8.5%**
Pharma/Chemicals/Life Sciences	11.6%	12.0%	9.6%	10.3%	9.9%	25.0%	10.3%	6.4%	12.8%	12.0%	10.7%	10.1%	9.9%	9.0%	8.8%	**11.2%**
Technology/Telecom/Media	10.9%	10.0%	9.7%	7.7%	8.8%	11.0%	14.2%	13.6%	15.3%	14.0%	10.2%	11.7%	7.6%	6.9%	11.6%	**10.9%**
Transportation/Logistics/Supplyc	4.4%	4.4%	4.2%	4.2%	4.9%	5.9%	4.5%	2.3%	5.9%	6.4%	8.3%	7.4%	6.3%	4.3%	3.6%	**5.1%**
Grand Total	**5.4%**	**4.6%**	**5.4%**	**5.0%**	**6.1%**	**8.3%**	**8.4%**	**6.6%**	**9.9%**	**9.8%**	**9.0%**	**9.7%**	**8.9%**	**7.3%**	**5.8%**	**7.3%**

Weighted PEx by Sectors

Row Labels	TTM (11/2/16)	FY16	FY15	FY14	FY13	FY12	FY11	FY10	FY09	FY08	Jan 8, '08	FY07	FY06	FY05	FY04	FY03	FY02	Avg
Agriculture	22.6	17.4	21.6	17.9	9.1	12.9	11.5	12.6	4.6	9.9	**19.8**	9.4	11.9	9.2	10.2	12.3	8.6	**11.9**
Consumption	33.6	31.2	32.5	27.6	24.3	23.2	22.6	19.9	16.2	17.6	**21.6**	19.6	27.3	19.0	19.0	16.9	21.1	**22.5**
Energy	12.9	11.1	14.1	10.9	12.0	12.0	14.0	13.7	13.2	15.1	**21.8**	11.5	13.4	9.2	9.1	4.4	6.0	**11.3**
Finance																		
Industrial/Engg	36.7	33.4	84.1	33.4	22.0	16.7	18.6	22.6	12.1	22.9	**51.5**	20.3	26.5	14.0	12.4	8.0	10.2	**23.8**
Materials	-VE	-VE	49.4	10.3	14.9	10.5	12.2	19.1	7.5	11.3	**17.0**	7.9	11.0	7.0	8.0	9.6	(73.4)	**7.5**
Pharma/Chemicals/Life Sciences	31.2	25.9	28.7	23.7	19.9	21.1	9.7	21.8	18.4	15.9	**20.9**	18.6	27.3	20.7	17.0	11.0	14.5	**19.6**
Technology/Telecom/Media	19.5	20.4	23.5	20.1	24.1	23.9	23.5	19.7	13.5	21.9	**28.4**	34.4	44.0	30.2	42.9	34.6	28.0	**27.0**
Transportation/Logistics/Supplyc	23.6	19.9	24.3	17.0	14.2	15.2	17.7	27.9	27.5	22.0	**34.2**	13.6	13.9	9.6	12.7	7.1	10.3	**16.9**
Grand Total	**24.6**	**21.8**	**26.3**	**16.9**	**17.0**	**15.5**	**15.8**	**18.2**	**12.7**	**16.7**	**25.5**	**15.1**	**18.1**	**11.5**	**12.0**	**7.9**	**11.7**	**15.8**

Asset Turns (Sales/Capital Employed) x by Sectors

| Row Labels	FY16	FY15	FY14	FY13	FY12	FY11	FY10	FY09	FY08	FY07	FY06	FY05	FY04	FY03	FY02	Avg
Agriculture	1.35	1.33	1.26	1.18	1.40	1.45	1.36	1.82	1.35	1.34	1.43	1.50	1.30	1.20	1.13	**1.36**
Consumption	2.11	1.89	1.85	1.92	1.98	1.77	1.60	1.60	1.60	1.57	1.75	1.77	1.85	1.77	1.80	**1.79**
Energy	0.88	1.16	1.32	1.39	1.40	1.27	1.17	1.32	1.37	1.48	1.46	1.45	1.34	1.41	1.32	**1.32**
Finance																
Industrial/Engg	0.87	0.92	0.91	0.94	0.97	0.97	0.96	1.05	1.07	1.21	1.36	1.48	1.43	1.27	1.14	**1.10**
Materials	0.70	0.76	0.72	0.82	0.90	0.91	0.97	1.20	1.18	0.99	1.12	1.27	1.11	0.95	0.83	**0.96**
Pharma/Chemicals/Life Sciences	0.91	0.98	0.98	0.93	0.90	0.89	0.96	0.98	0.98	1.05	1.01	1.20	1.30	1.30	1.24	**1.04**
Technology/Telecom/Media	0.88	0.98	0.96	0.95	0.90	0.85	1.02	1.05	1.10	1.24	1.17	1.02	0.87	0.74	0.74	**0.97**
Transportation/Logistics/Supplyc	1.71	1.46	1.45	1.50	1.59	1.70	1.62	1.54	1.68	1.91	1.87	2.29	2.19	1.74	1.61	**1.73**
Grand Total	**1.00**	**1.10**	**1.14**	**1.20**	**1.23**	**1.17**	**1.15**	**1.27**	**1.29**	**1.37**	**1.41**	**1.47**	**1.38**	**1.31**	**1.23**	**1.25**

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Net Profit Margins and PEx

Net Margins and PEx History
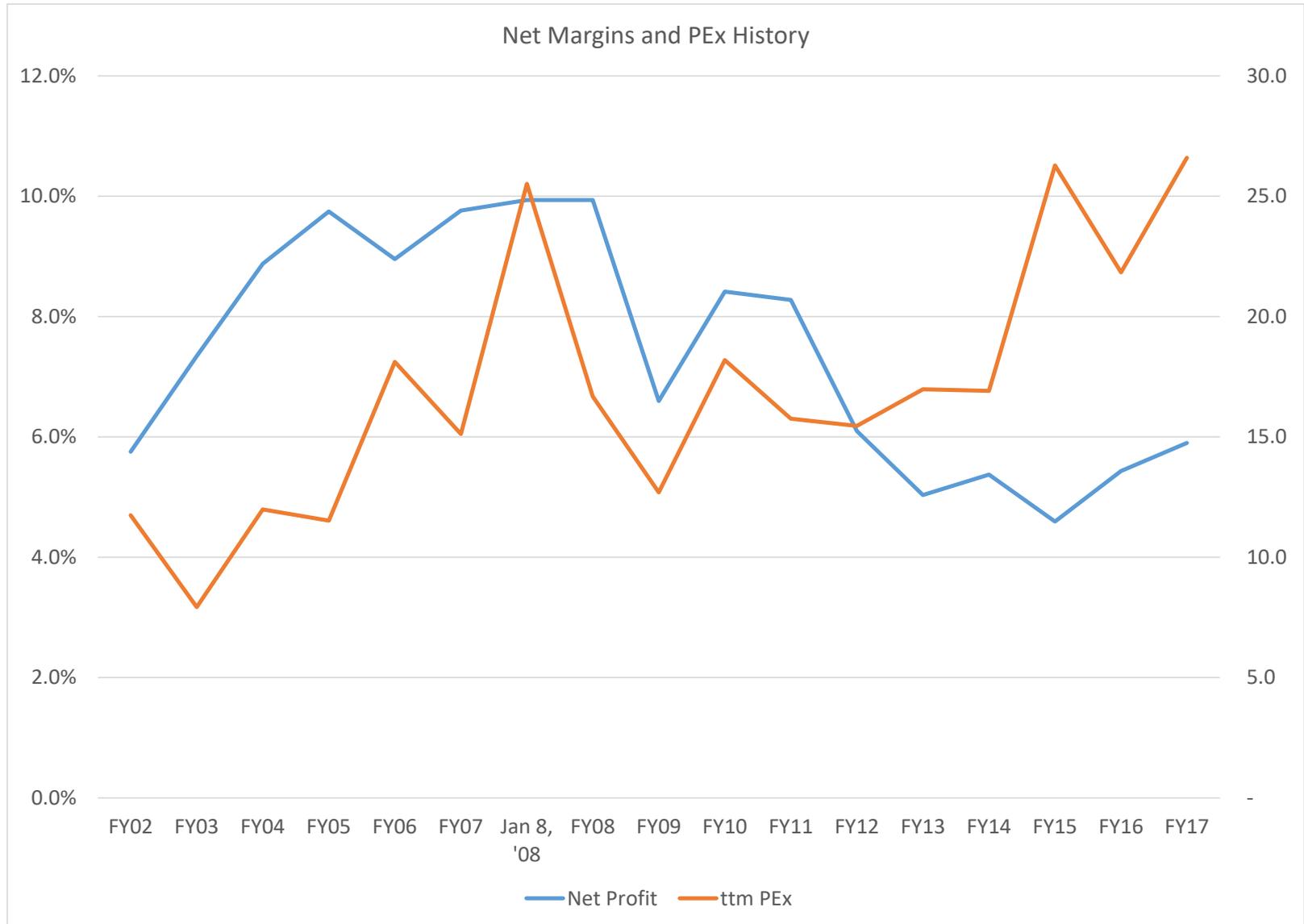
Cyclically Adjusted PE (CAPE) Ratio - Sensex

PEx Normalized for Net Margins and PBx
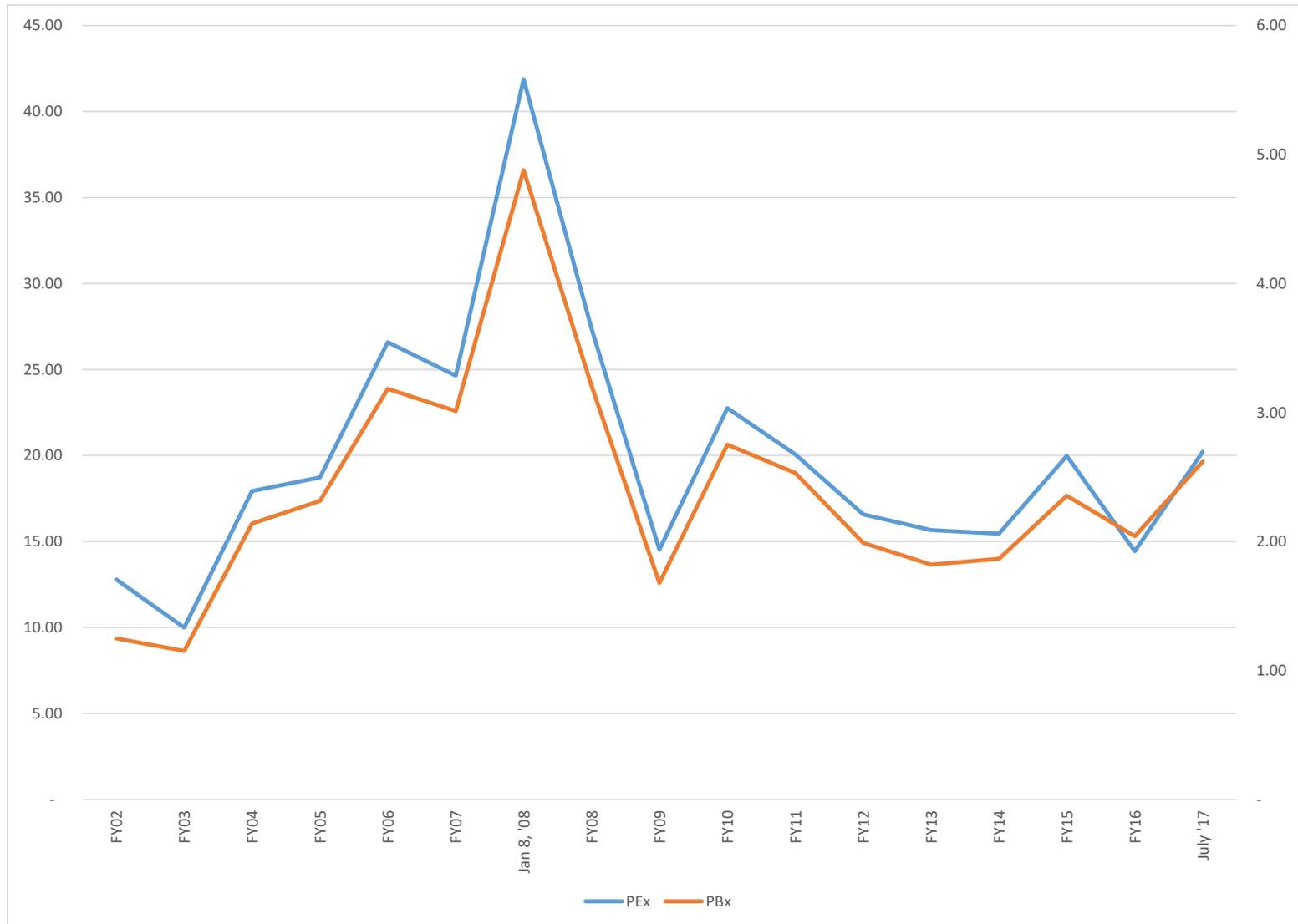
Normalized Valuation and Pockets of Undervaluation

Normalized PEx by Sectors

Row Labels	TTM (11/2/16)	FY16	FY15	FY14	FY13	FY12	FY11	FY10	FY09	FY08	Jan 8, '08	FY07	FY06	FY05	FY04	FY03	Avg
Agriculture	15.6	12.9	14.9	9.1	8.7	14.5	14.5	14.3	7.3	13.0	26.2	11.5	15.4	11.5	9.9	4.5	11.6
Consumption	33.1	29.1	32.0	27.9	27.7	25.7	22.9	19.0	13.8	21.9	26.9	23.1	29.8	19.4	19.5	15.0	23.4
Energy	9.6	9.6	10.5	10.5	10.8	11.9	15.8	18.0	14.2	24.1	34.6	18.0	19.1	15.3	15.2	7.2	14.3
Finance																	
Industrial/Engg	13.1	24.9	30.1	18.8	16.9	19.3	27.1	32.8	18.2	58.6	132.0	53.3	57.0	26.8	19.1	9.3	29.4
Materials	-VE	-VE	9.8	10.0	9.5	13.1	21.7	30.2	12.3	33.0	49.4	23.5	29.0	25.0	20.2	8.7	18.9
Pharma/Chemicals/Life Sciences	31.6	24.5	29.1	19.3	17.5	16.5	19.1	21.0	11.6	19.8	26.1	24.5	30.5	22.6	19.1	11.8	20.5
Technology/Telecom/Media	18.5	21.4	22.3	19.4	17.6	19.2	22.3	24.0	18.0	34.4	44.6	53.3	46.3	33.2	23.5	14.4	26.4
Transportation/Logistics/Supplyc	21.3	17.3	21.9	15.4	13.5	19.0	26.0	30.6	15.3	27.7	43.0	19.7	24.0	17.9	19.1	5.8	19.5
Grand Total	**18.7**	**14.4**	**20.0**	**15.5**	**15.7**	**16.6**	**20.1**	**22.8**	**14.5**	**27.4**	**41.9**	**24.6**	**26.6**	**18.7**	**17.9**	**10.0**	**18.9**

Weighted PBx by Sectors

Row Labels	TTM (11/2/16)	FY16	FY15	FY14	FY13	FY12	FY11	FY10	FY09	FY08	Jan 8, '08	FY07	FY06	FY05	FY04	FY03	FY02	Avg
Agriculture	2.7	1.9	2.2	1.3	1.2	2.0	2.0	2.0	1.0	1.8	3.0	1.6	2.2	1.6	1.4	0.7	0.6	1.6
Consumption	7.5	6.6	7.2	6.3	6.2	5.6	5.6	4.2	3.0	4.6	5.9	5.0	6.3	4.3	4.6	3.4	4.3	5.1
Energy	1.5	1.2	1.3	1.3	1.3	1.5	1.9	2.2	1.7	2.8	3.9	2.2	2.3	1.8	1.8	0.9	0.9	1.7
Finance	1.7	1.4	1.7	1.4	1.4	1.5	2.0	1.9	1.0	1.9	3.3	1.9	1.9	1.5	1.4	0.7	0.6	1.5
Industrial/Engg	3.0	2.6	3.2	1.9	1.7	1.9	2.7	3.2	1.8	5.0	8.7	4.9	5.2	2.6	1.9	0.9	0.9	2.7
Materials	1.6	1.1	1.2	1.1	1.1	1.5	2.3	3.3	1.4	3.3	5.1	2.4	3.0	2.5	2.1	1.0	0.9	1.9
Pharma/Chemicals/Life Sciences	5.1	4.4	5.2	3.5	3.1	3.0	3.2	3.6	2.1	3.4	4.6	4.2	5.2	4.0	3.4	2.1	2.7	3.5
Technology/Telecom/Media	3.3	3.6	3.8	3.2	3.1	3.3	3.7	3.9	2.8	5.4	7.3	8.1	7.4	5.5	4.4	2.6	3.3	4.3
Transportation/Logistics/Supplyc	3.4	2.7	3.6	2.3	2.1	2.9	3.9	4.7	2.4	4.2	6.7	3.0	3.6	2.6	2.9	0.9	1.1	2.9
Grand Total	**2.4**	**2.0**	**2.4**	**1.9**	**1.8**	**2.0**	**2.5**	**2.8**	**1.7**	**3.2**	**4.9**	**3.0**	**3.2**	**2.3**	**2.1**	**1.2**	**1.2**	**2.2**

Can we Create Superior Returns

by Market Timing?

Sensex Since 1979 – 38+ years of History

- Total returns: 251x (15.5% annualized)

- Total months: 460

- Months required to generate 251x returns: 33

- % time during which the returns were generated: 7.2%

- If an investor misses few of these months, his returns will drop drastically

- Total negative months: 196 (43%)

- If you sat out just 10 worst months, returns: 1600x (21.3%)

- If you sat out just 5 worst months, returns: 760x (18.9%)

Sensex last 10 years of History

- Total returns: 2.1x (7.5% annualized)

- Total months: 120

- Months required to generate 2.1x returns: 5

- % time during which the returns were generated: 4.1%

- Total negative months: 55 (46%)

- If you sat out just 5 worst months, returns: 4.8x (17%)

- If you sat out just 2 worst months, returns: 3.3x (12.7%)

But can you time such months?

Valuation During Biggest Gains and Falls since 1991

Best Months

Top Gains	% Gain	PE of Preceding Month	PB of Preceding Month
Mar-92	42%	31.07	5.55
Feb-92	31%	26.56	4.74
Jul-91	29%	21.49	3.30
May-09	28%	15.23	2.95
Feb-91	24%	16.79	2.55
Nov-93	21%	32.81	4.23
Jan-92	21%	23.96	4.28
Jan-94	19%	39.65	5.11
May-99	19%	13.77	2.55
Apr-09	17%	12.68	2.47
Avg	**25%**	**23.40**	**3.77**

Worst Months

Top Losses	% Loss	PE of Preceding Month	PB of Preceding Month
Oct-08	-24%	17.36	3.62
May-92	-23%	52.60	9.42
Mar-93	-18%	32.88	5.64
Jun-08	-18%	20.66	4.82
May-04	-16%	19.31	3.64
Mar-01	-15%	22.30	3.18
Oct-92	-14%	38.76	6.65
May-06	-14%	21.35	5.29
Sep-01	-13%	16.69	2.36
Jan-08	-13%	26.94	6.54
Avg	**-17%**	**26.88**	**5.12**

Valuations During Biggest Gains and Falls – Last 10 years

Best Months

Top Gains	% Gain	PE of Preceding Month	PB of Preceding Month
May-09	28%	15.23	2.95
Apr-09	17%	12.68	2.47
Dec-03	16%	16.28	2.99
Oct-07	15%	21.69	5.16
Jun-03	13%	13.21	2.06
Sep-07	13%	19.99	4.80
Aug-03	12%	14.73	2.36
Sep-10	12%	21.61	3.45
Nov-05	11%	16.77	3.93
Jan-12	11%	16.92	3.22
Avg	**15%**	**16.91**	**3.34**

Worst Months

Top Losses	% Loss	PE of Preceding Month	PB of Preceding Month
Oct-08	-24%	17.36	3.62
Jun-08	-18%	20.66	4.82
May-04	-16%	19.31	3.64
May-06	-14%	21.35	5.29
Jan-08	-13%	26.94	6.54
Sep-08	-12%	18.25	3.81
Mar-08	-11%	22.23	5.71
Jan-11	-11%	22.93	3.73
Nov-11	-9%	18.20	3.36
Oct-05	-9%	17.11	4.12
Avg	**-14%**	**20.43**	**4.46**

Big Losses & Gains vs Valuation

124% Gain in 3 mos

Earnings Trippled. PEx corrected but markets not as much
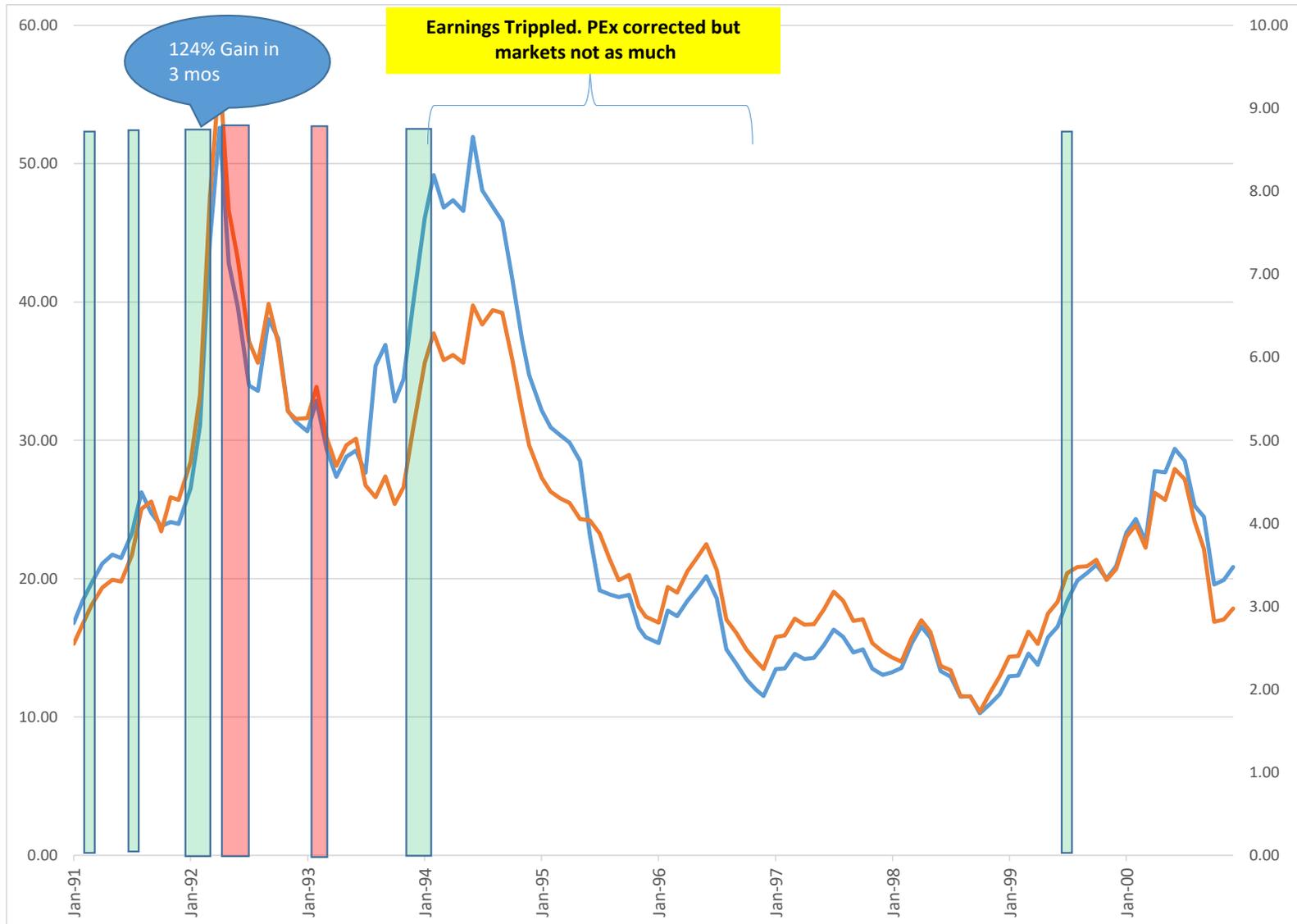
Big Losses & Gains vs Valuation
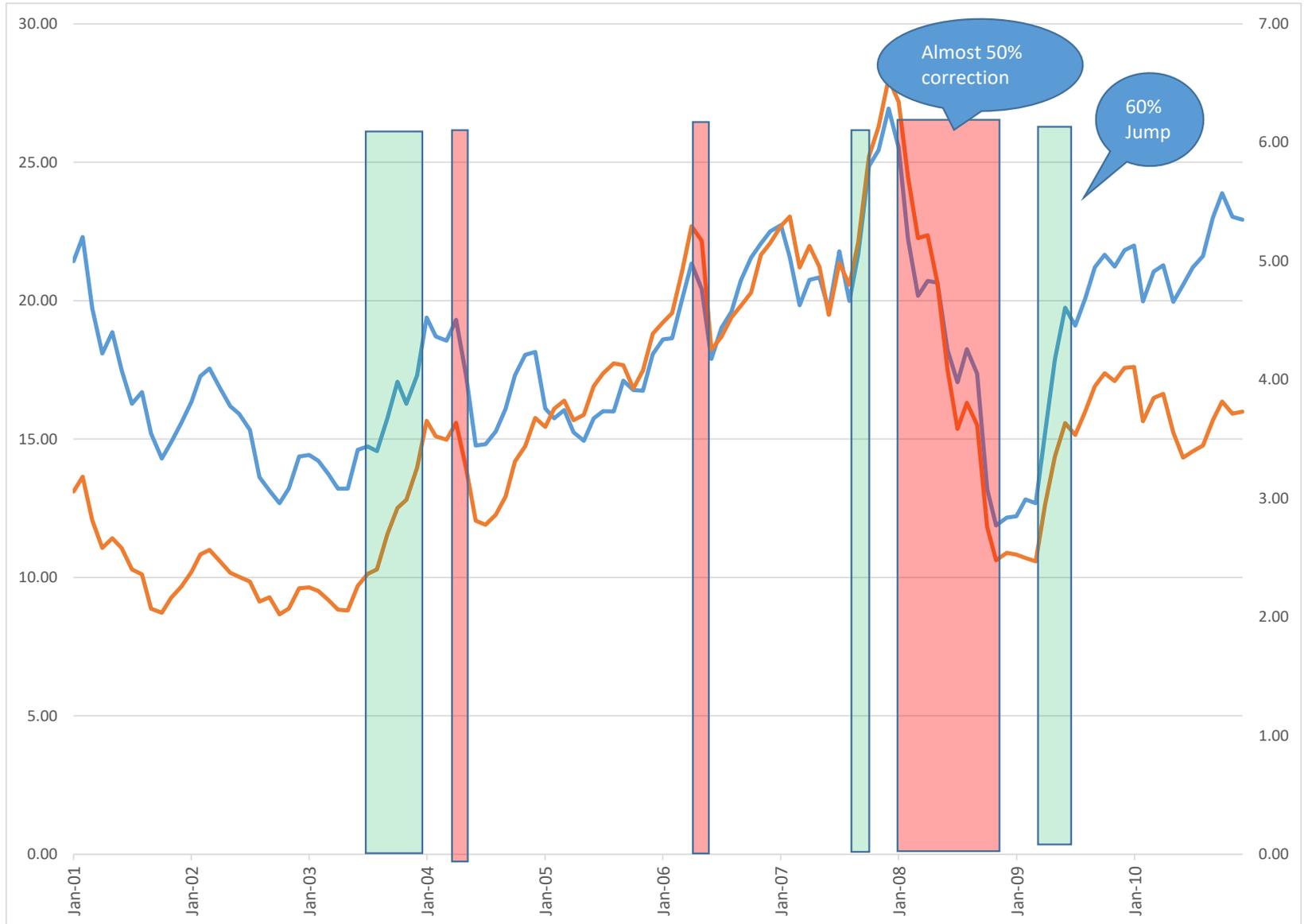
Some Thoughts on Timing

- Big gains and losses occur near peak valuations

- Difficult to device a formula to go in cash or go all in (including with leverage)

- At most times, stay invested

- Some statistical relationship with PBx. Markets don't stay above 5.0x multiple for too long and probability of large corrections is high

  - PB has stayed above 5x for less than 6% of the time since 1994. Can employ a strategy to increase cash levels at PB >5

We are nowhere close to such levels

Access detailed analysis (under "Newsletters & Presentation") @ www.SageOneInvestments.com

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