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BLACK SWAN
AND MARKETS

APRIL 2020

Black Swan and Markets

- The renowned author Naseem Taleb defined a **Black Swan** event as a highly improbable event with three principle characteristics :
  - Pre facto considered to be a highly improbable event
  - Outcome of the event has a massive impact
  - Post facto an explanation concocted to make it less random & more predictable

- Events in the past few weeks can be potentially be seen as a series of Black Swans rather than just a Black Swan :
  - The coronavirus spreading at unprecedented scale like never before impacting over 190 countries world wide
  - Disruptions & economic shut downs at global scale caused by outbreak of a pandemic
  - Global markets collapsing by more than 30% in less than 20 trading days
  - Leading world economies at brink of recession when interest rates are already at all time lows and Debt to GDP ratio is at all time highs

As we look at history of market cycles & crashes, believe it is worthwhile to remember experiences of one of world renowned physicist Sir Isaac Newton investing in markets. He had reportedly exclaimed, when asked about the direction of stock markets, **"I can calculate the motions of the heavenly bodies, but not the madness of the people in markets "**

Sources: www.Fooledbyrandomness.com, Bloomberg, Britannica, Plato, Stanford

History of Bear Markets - India

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- Ever since recorded history of markets almost every decade brings a market cycle, and while reasons of each cycle could be varying, underlying operating principles seems to be the same - Greed, Fear, Liquidity, Leverage & Speculation.

- Some notable bubbles In India pre dating inception of formal stock markets include Cotton Price crashes & Back Bay Reclamation crash post American Civil War (1865) when stock prices slumped up to 90% dwindling financial fortunes of many wealth & powerful merchants in India at that time

- We looked at bear markets with falls **greater than - 35%** on benchmark indices in the past three decades in India

BSE Sensex	Magnitude of Decline	Peak to Trough (Months)	Recovery Time (Months)	Reason for Market Crash
1992	- 45%	12	18	▪ Harshad Mehta Scam, Market Manipulation
1997	- 38%	15	8	▪ Asian Currency Crisis
2000	- 57%	14	26	▪ Dot Com Tech Bubble
2008	- 58%	14	20	▪ US Mortgage & Credit Crisis
2020	**- 30%**	**1 so far**	**?**	▪ Disruption due to Coronavirus
Average	**- 50%**	**14**	**18**	

On average the peak to trough fall is 50%, it usually takes 14 months for markets to fully bottom out & takes 18 months on an average to fully recover to previous peak

Sources: Bloomberg, Britannica. Business-Standard

History of Bear Markets - BSE Sensex

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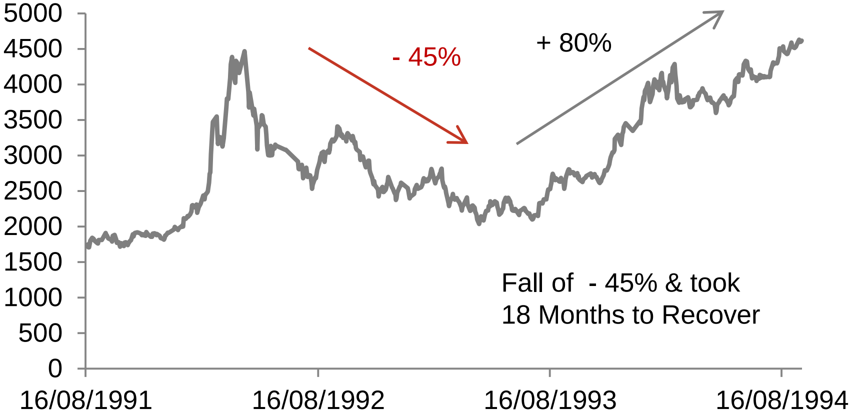
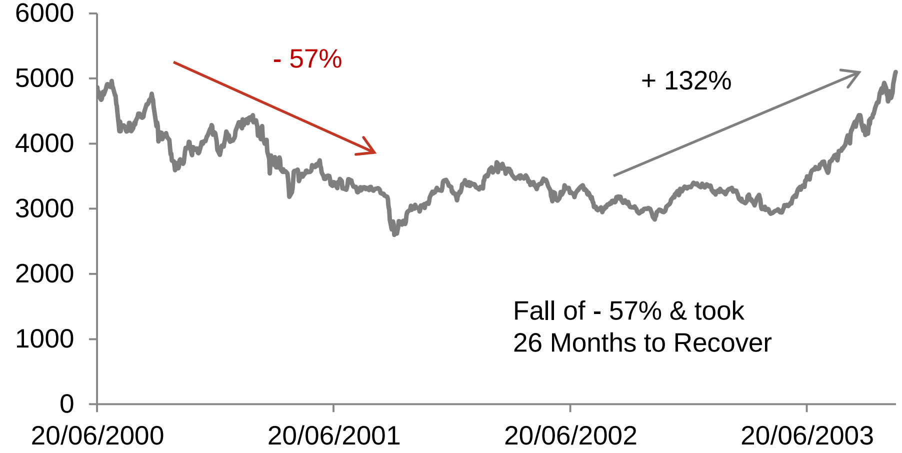
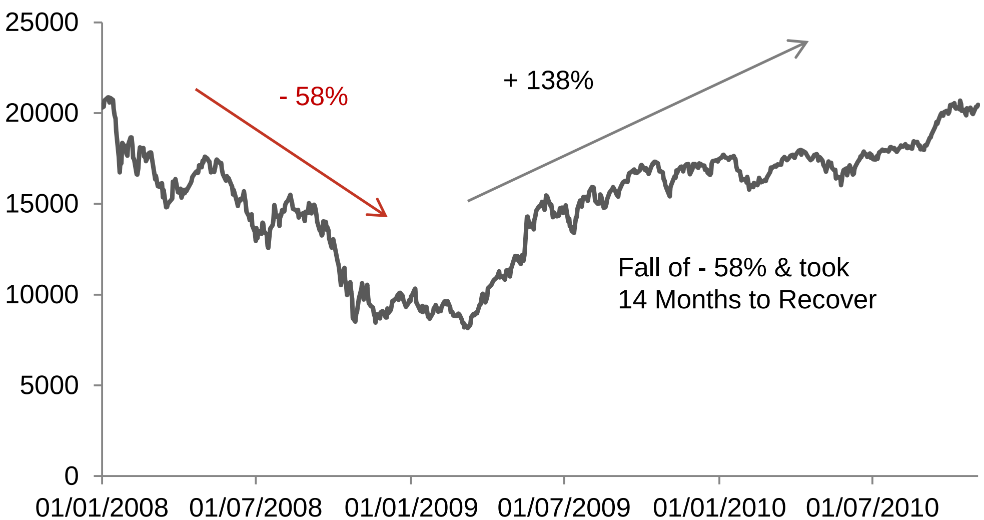
1992 - 93



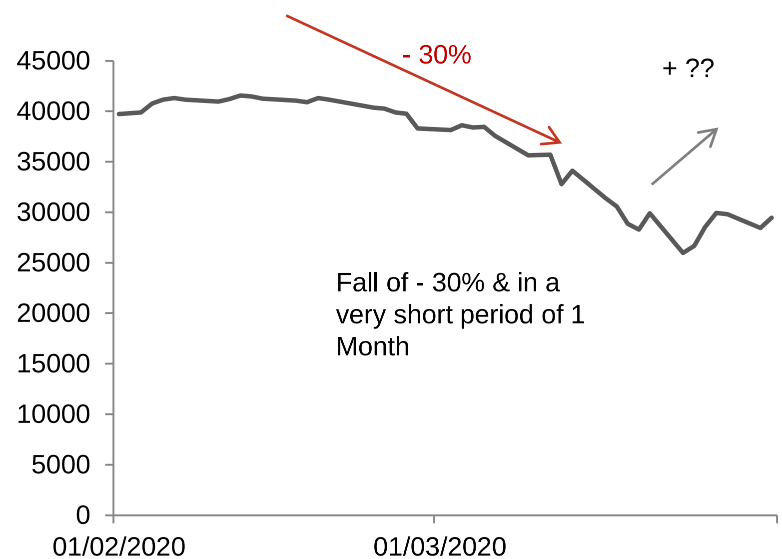
2000 - 03



2008 - 09



2020 - ?



Sources: Bloomberg, Britannica, Business-Standard

History of Bear Markets - US

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US has notably a longer history of market cycles going back to 1800's, observations for last 100 yrs.' are as below

S&P 500 Decline	Magnitude of Decline	Peak to Trough (Months)	Recovery Time (Months)	Reason for Market Crash
1929	- 86%	32	267	▪ Roaring 20's & **Great Depression** – Excessive speculation, leverage & eventually leading to market crash, recession & failure of almost 50% of US banks
1937	-54%	12	94	▪ Govt. Policies – Anti Trust, Policies viewed unfavourable by industry and commerce
1946	-26%	24	27	▪ Spike in Inflation & speculation post World War II economic growth
1961	-26%	10	10	▪ Cuban Missile Crisis & Kennedy Slide
1968	-36%	17	21	▪ Rising Inflation & Vietnam War
1973	-48%	20	69	▪ Oil Embargo, Rising Oil Prices, Watergate Sandal
1987	-34%	3	19	▪ Driven by system driven hedging strategies, Fears of US devaluation
2000	-49%	30	55	▪ Dot Com Tech bubble
2007	-57%	17	48	▪ US Mortgage & Credit Crisis
2020	**-30%**	**1 so far**	**?**	▪ **Outbreak of Coronavirus**
Average	**-45%**	**17**	**68**	

Sources: Qatalyst Partners, Bloomberg, Britanica

Summary : History of Bear Markets in India & US

Market Cycles & Crashes are realities of stock markets in India & globally for the last 100+ years

Observations :

- At least one event in a decade which leads to crash in benchmark indices by > 35%
- Such falls in markets are generally followed by economic recessions with possible job loss and wage cuts
- Historically in India average time taken for markets fully bottom out in such events is 12 to 14 months
- Average time taken for indices to recover their peaks is 16 to 18 months
- Indian markets tend to recover faster than US or other developed markets
- It is important to consider that markets & market participants evolved over last 100 yrs. & observations may not be applicable linearly, it is possible that cycles could have got shorter & sharper both on the way down & way up

Usually markets tend to move in non linear fashion with false signals – bull & bear traps and in most cases forming double bottoms

Sources: Qatalyst Partners, Bloomberg, Britannica

Valuations across Market Cycles

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Price to Earnings (Trailing 12 Months) & Price to Book (Trailing 12 Months) across Market Cycles - India & US

		At the Peak	At the Bottom	At the Peak	At the Bottom
BSE SENSEX	**Magnitude of Decline**	**PE Ratio**	**PE Ratio**	**P/B Ratio**	**P/B Ratio**
2000	-57%	23	10	4.0	1.7
2007	-58%	24	10	6.2	1.9
2020	**-30%**	29	**17 (?)**	3.3	**2.2 (?)**
Average	**-50%**	**25**	**10**	**4.5**	**1.8**

		At the Peak	At the Bottom
Dow Jones / S&P 500	**Magnitude of Decline**	**PE Ratio**	**PE Ratio**
*1929	-86%	24	6
1968	-36%	20	13
1973	-48%	20	8
1987	-35%	22	14
2000	-49%	30	16
2007	-57%	19	12
2020	**-30%**	22	**16 (?)**
Average	**-45%**	**22**	**12**

Observation:

Markets Historically peak at PE ratios of > 20 and bottom at PE ratios of 10 to 15

*1929 - Dow Jones, Rest S&P 500, Benchmark PE ratios may not be true representative of markets, Source: Bloomberg

Recent Volatility in US markets highest in history

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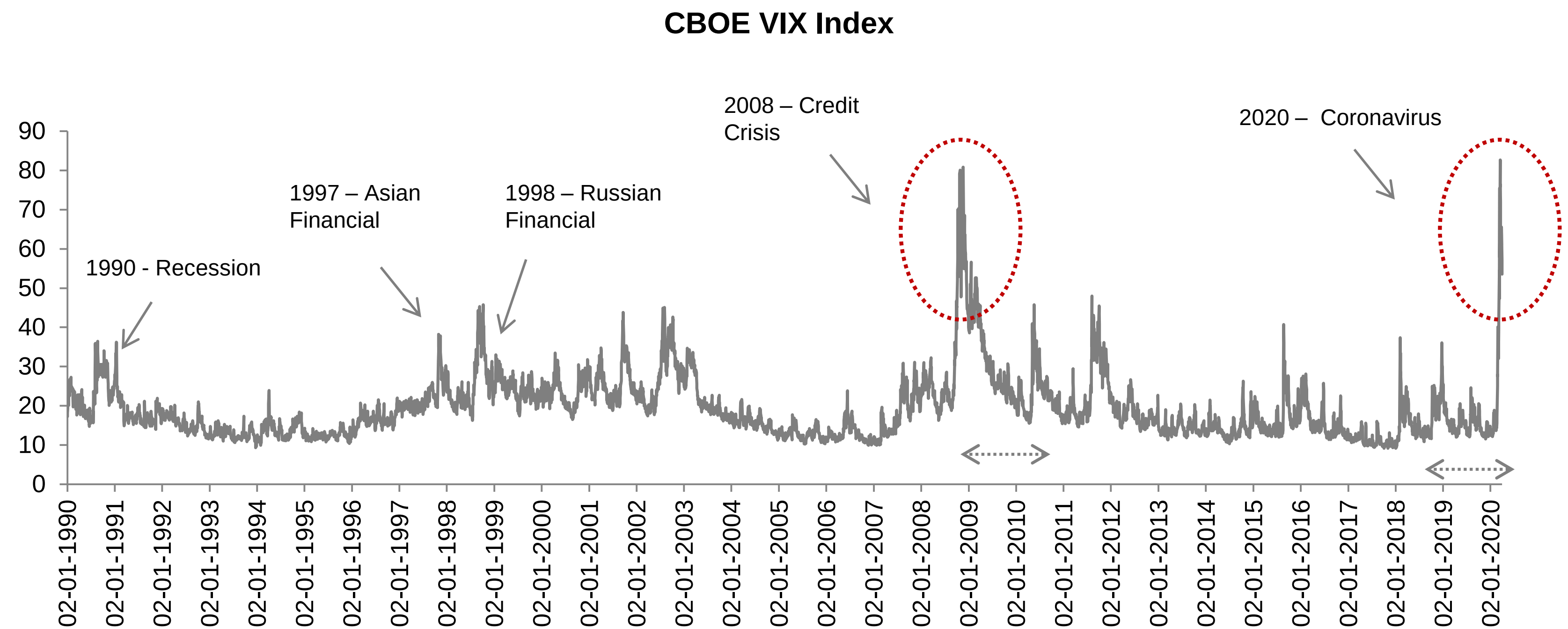
Current spike in volatility can be compared only to 2008 mortgage and financial crisis



- **Observations**
  - VIX reached all time highs in the recent corrections
  - Markets rarely bottom at elevated levels of VIX

Historically markets bottoms coincide with fall in VIX to levels of 15 – 25

Source: Bloomberg

Credit spreads in the US spike dramatically

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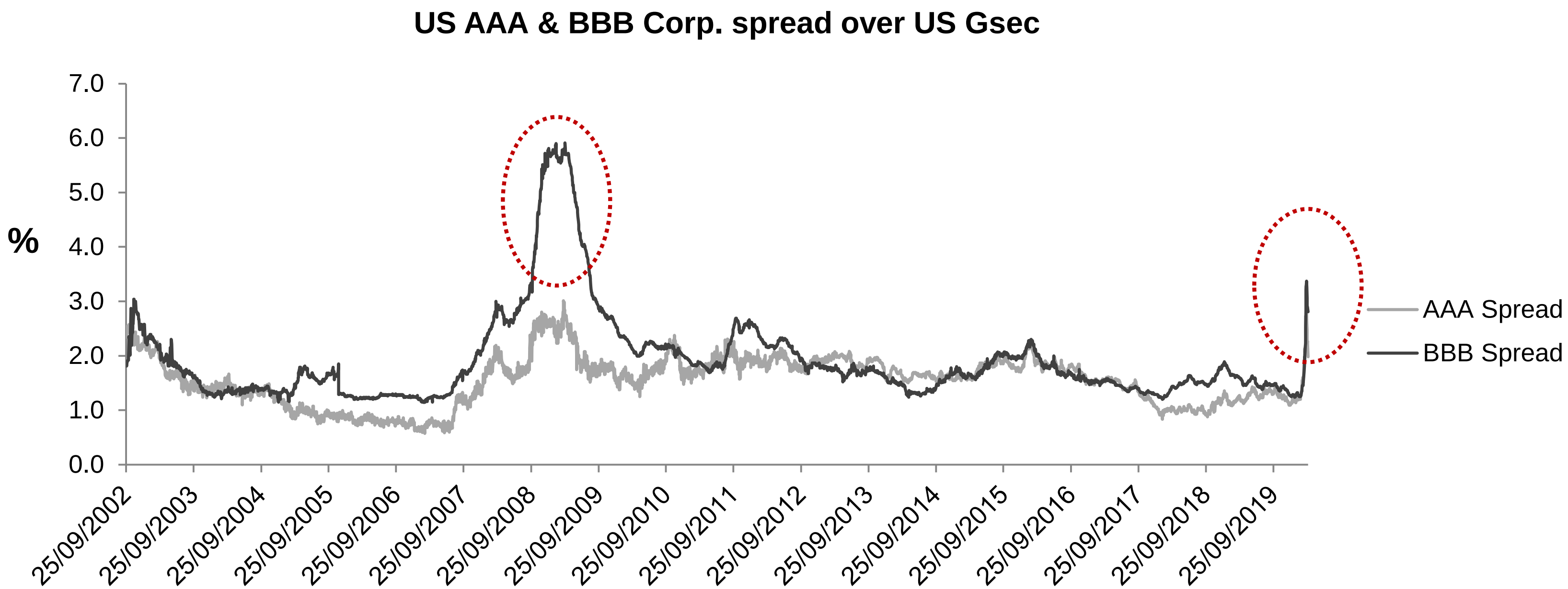
Elevated levels in Corporate spreads (US) highest since 2008 financial crisis



- Sharp spike in corporate spreads and yields however lower than spreads at peak of 2008 crisis

Normalizing in yields and spreads a necessary pre – condition for markets and economy to stabilize

Source: Bloomberg

India : GDP to Market Cap Ratio's

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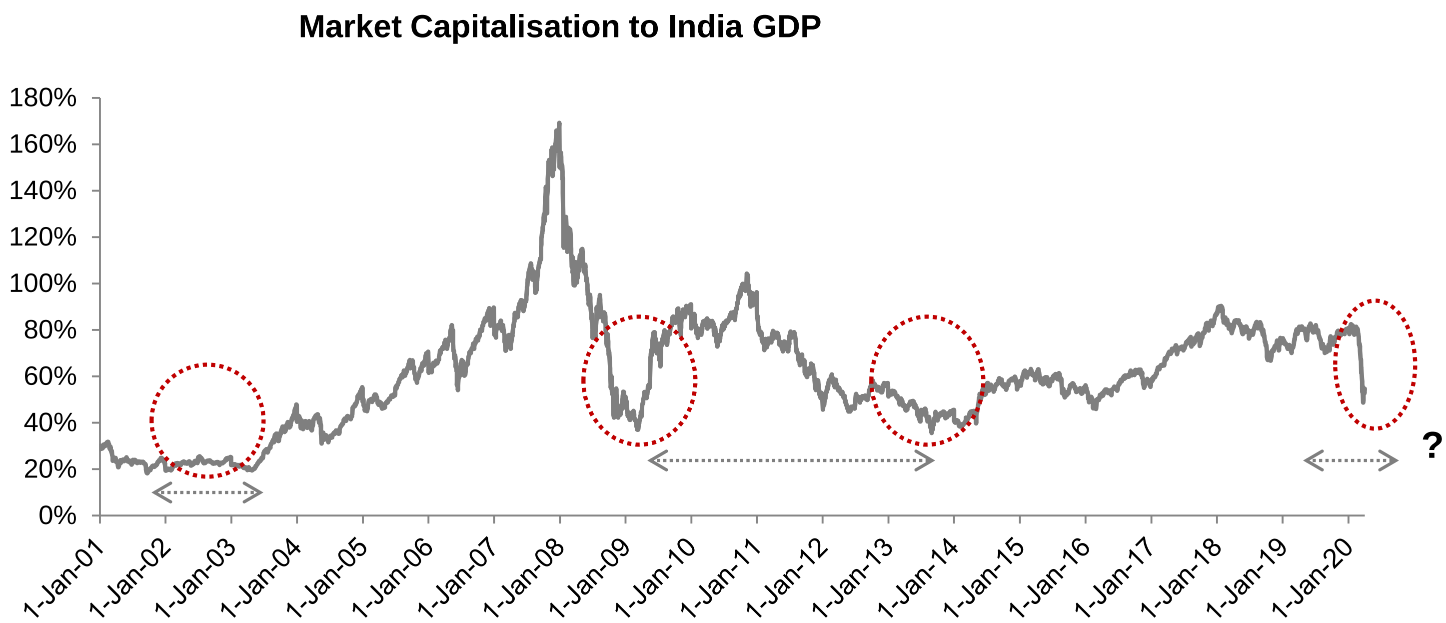
Sharp drop in Market Cap to GDP



Market Cap (BSE 500) to GDP ratio fell sharply to **54%**, however historically markets bottom out at ratio of **30%** to **40%**

Generally post sharp market corrections GDP tends to contract (recession) before stabilizing

Source: Bloomberg

India : Yield Gap Analysis

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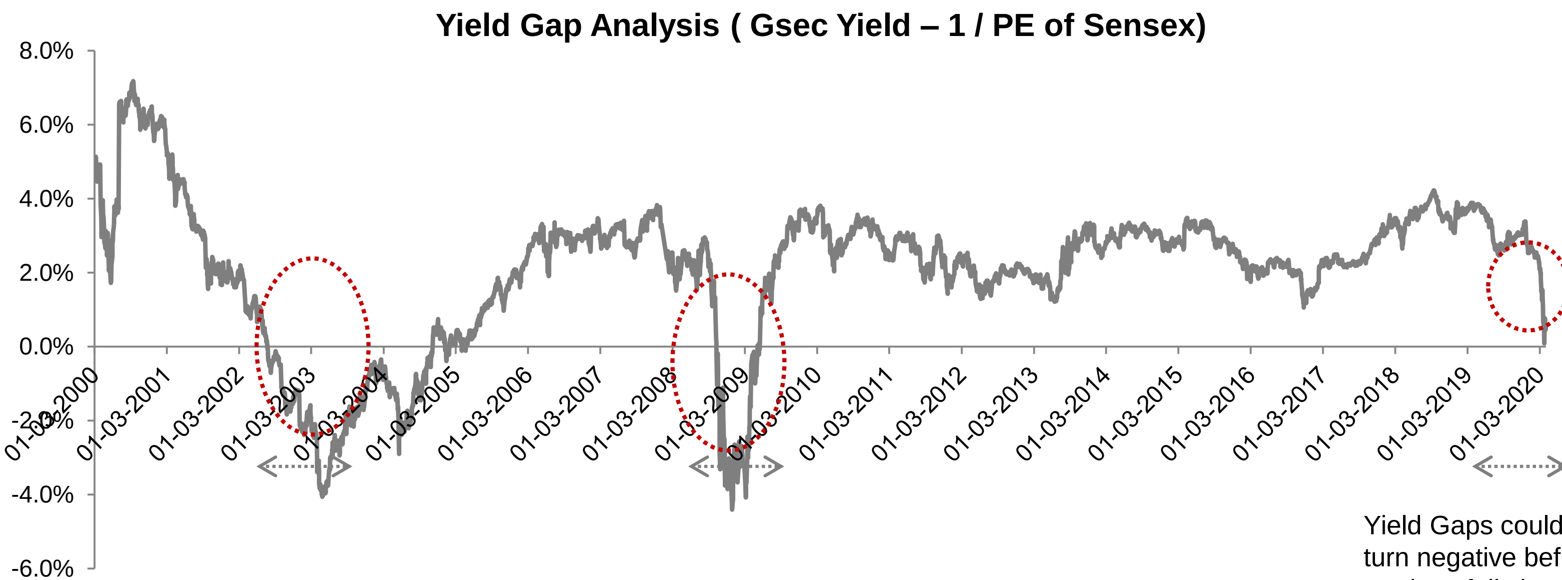
- **Yield Gap helps to analyze relative attractiveness of Equities over Fixed Income**
- Yield Gap is calculated as = 10 Yr. Gsec yield – 1 / (Price to Earning ratio on Equity Index)

  eg : if 10 Yr. Gsec is at 6% and Nifty PE ratio is at 20, then Yield Gap = 6% - 1/20 (5%) = 1%

- **Lower the value the better for equities as it indicates higher potential to deliver superior returns over fixed income**



Yield Gaps could potentially turn negative before markets fully bottoming out

Historically Yield Gap turns negative before markets stabilized for sustainable upside

Source: Bloomberg

Where are we in the current cycle - Did we bottom out?

- Markets bottoming out post a crash is generally a **process** rather than an **event**
- Every cycle has its own triggers for recovery but generally markets tend to take time (12 – 18 Months) for full recovery
- Bottoming of markets generally coincides with Event triggering crash playing out fully, Low trading volumes & Markets ignoring positive news flows for sometime till there is sustainable up tick in sentiments

Parameters	**Value at Market Bottoms**	**Long Term Avg. Value**	**Current Value**	**Where are we currently vs. Worst Case Scenarios**
Valuations - PE Ratio	10 to 12	18	17	Potential further downside up to 20% or more
Valuations - PB Ratio	1.8 to 2	3.1	2.2	Almost pricing in worst case scenarios
Market Cap to GDP	30% to 40%	60%	54%	Potential down side of up to 15% or more
Yield Gap Analysis	-3% to -4%	2.0%	0.0%	Potential down side up to 20% or more
Corp. Bond Spreads	4% to 5%	1.5%	2%	Potential down side up to 15% or more
VIX Index	20% to 25%	20%	80%	Potential down side up to 20% or more

Most macro indicators suggest a CAUTIOUS probably wait & watch or staggered approach towards equities

Source: Bloomberg, Long term avg. is for last 20 – 25 years depending on availability of data, Corp Bond Spreads : US AAA – Govt, VIX:CBOE

Pandemics and Markets

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- Epidemics & pandemics have been a regular occurrence in human history, here we examine their impact on markets
  - Black Death (1300's) with estimated deaths of 50 Mn to 70 Mn wiping out upto 25%of European population
  - London Bubonic Plague (1600's) with estimated deaths of 100,000

		Dow Jones Index Performance		
Event	**Measured From**	**1-Month**	**6-Month**	**12-Month**
Polio Epidemic (1916)	Jun-1916	- 6%	6%	4%
Spanish Influenza (1918-1920)	Apr- 1918	3%	11%	18%
Asian Flu (H2N2)	Feb-1957	-1%	6%	-5%
Hong Kong Flu	Jul-1968	-4%	3%	-11%
Pneumonic Plague	Sep-1994	-1%	2%	18%
SARS	Nov-2002	3%	1%	16%
Avian Flu (H5N1)	Jan-2006	-1%	2%	14%
Swine Flu (H1N1)	Mar-2009	19%	44%	61%
MERS	Sep-2012	4%	10%	14%
Ebola	Mar-2014	1%	6%	11%
Zika	May-2015	0%	-1%	-1%
Measles	Jan-2019	7%	16%	24%
Coronavirus (Covid-19)	**Dec-2019 - ?**	**- 30%**	**?**	**?**

Sources: Qatalyst Partners, Bloomberg, Britannica

Pandemics and Markets

Observations

- While epidemics and out breaks have been a regular occurrence there has never been a virus outbreak with transmission rates as rapid as Coronavirus (Covid-19)

- Historically all outbreaks resulted in human loss and economic disruptions in the short term, however humans evolve & adjust to new normal – Development of immunity, Vaccines, Change in lifestyles, Personal Hygiene, Public Hygiene, Safety, Awareness etc.

- In some instances once the outbreak recedes some regions have seen periods of **economic prosperity** as they innovate to cope up with the disruptions and new realities leading to higher efficiency of capital and resource distribution (Black Death 1300's & economic prosperity in Europe post that)

- Outbreak of Coronavirus (Covid-19) can be termed as a true black swan event (as called in our "Markets at its Wits End but It's Advantage India report " – March 2020) as there is no precedence of such outbreaks in the last 100 years !

Source: Bloomberg, www.history.com, wiki

Asset Class Views

EQUITIES

One may argue attractiveness of current valuations of equities which are in-line with long term averages however,

- Uncertainties of events continue to prevail over any arguments about attractiveness of markets in the short term
- Markets will continue to react to news flow
- Most macro indicators suggest cautious probably wait and watch for most investors

Recommendation for Investors

- Capital preservation is key, and we would recommend to review portfolios and to weed out under performing managers and sensitive stocks with fragile balance sheets and re-allocate to managers with proven long term track records & into high quality stocks with strong balance sheet
- If one is under invested in equities & has an aggressive risk profile then can look at staggering investments into high quality stocks once the uncertainty settles. Recommended deployment period 3 – 6 months +

FIXED INCOME

- Continue to be Risk Off and Cautious on Credit portfolios & sensitive borrowers with fragile balance sheets
- Opportunities at shorter end of the curve especially in High Quality AAA names to lock in yields
- Depending on client Risk profile can selectively look at duration play through – Gilts, Dynamic Bond Funds & IRF’s

Asset Class Views

GOLD

Historically gold as a safe heaven and store of value has done well during **Risk Off** scenarios globally

- It could benefit from low interest rates and globally ample liquidity is looking for safe assets
- Supply chain disruptions could either reduce supply of gold or increase cost of production or both
- Investors in India could also benefit from any potential INR depreciation vs US Dollar
- Suggest staggered investment approach with less than 10% portfolio allocation & with at least 12 to 18 months holding view

ALTERNATES

- We believe one needs to be cautious on their alternate allocations across illiquid (Non MTM) & liquid (MTM) categories (AIF I,II & III)
- As economic environment could turn difficult with potential slow down, Venture Funds & Early Stage start ups could see substantial head winds in the short term
- However we believe there could be select opportunities in companies which are well positioned for this disruption and could gain disproportionate market share like E-wallet and Payment gates during demonetization, only once dust settles down
- Opportunities in select non cyclical late stage high quality, debt free, monopolistic businesses which could be available at attractive pricings

Thank You

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