

UK Equity Turnarounds – Volatility in historical context www.aozorastep.com david@aozorastep.com

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VOLATILITY IN HISTORICAL CONTEXT



- VIX vs. other metrics
- VIX vs. Oil States International
- 29 Differences to historical comparisons

August 2024

VOLATILITY IN HISTORICAL CONTEXT: THE VIX

VOLATILITY IN HISTORICAL CONTEXT DOES HISTORY REPEAT ITSELF?

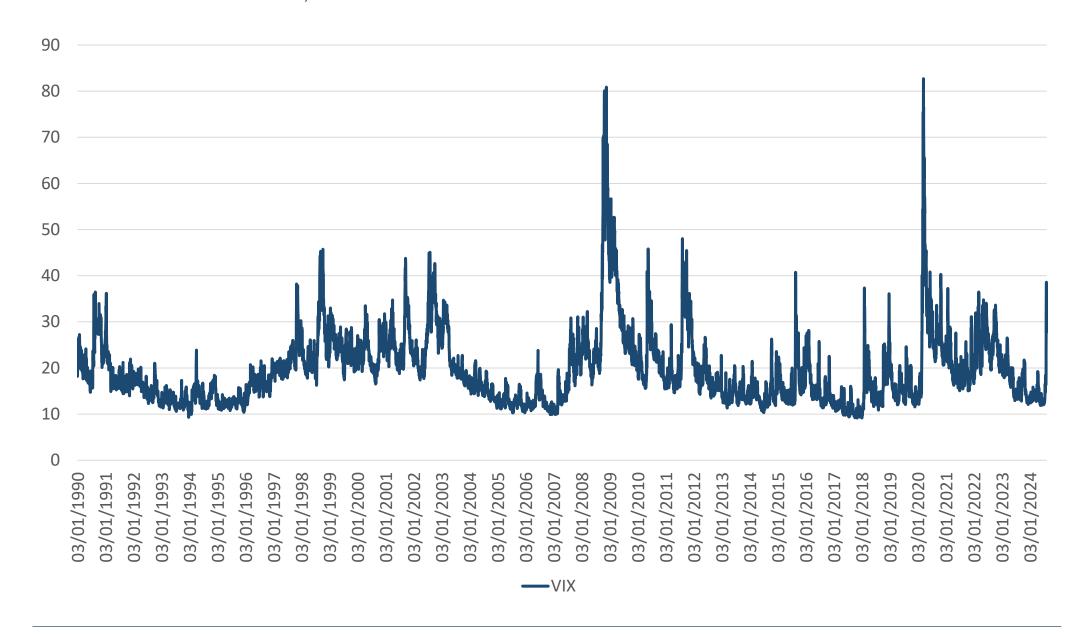
On 5th August 2024, the VIX closed at its highest level in nearly 4 years. The VIX's intraday high was only higher twice over the last 35 years: During the Global Financial Crisis (GFC) and the Covid Pandemic. The daily change of the VIX was the 2nd highest in percentage terms since February 2018. And over the last 35 years we have never seen a larger intraday reversal of over 27 points in the VIX as we have witnessed on 5th August 2024. The Japanese stock market had its largest single day drop since 1987 and the largest 5 day drop ever. 2yr UST yields rallied by 40bps in two days. However, just 3 days later, the VIX dropped back below 25. What has caused the VIX to rise and what does this mean for the months ahead? While the BOJ's interest rate hike is one of the main reasons, the fundamental reasons in the US economy are as follows, and hence development of rates and unemployment will be key:

- Rates: Near longest time on record where Fed has held interest rates at elevated level without cutting (or hiking)
 & near longest time on record for yield curve inversion
- <u>Employment:</u> Sahm's rule of 3-month unemployment rate average at 50bps above 12-month unemployment average triggered. Headcount of major recruiters is now mostly below pre-pandemic levels
- Valuations: Equity indices just off record levels
- → <u>Trigger:</u> The combination of higher interest rates, rising unemployment & weak manufacturing activity



VOLATILITY IN HISTORICAL CONTEXT: VIX

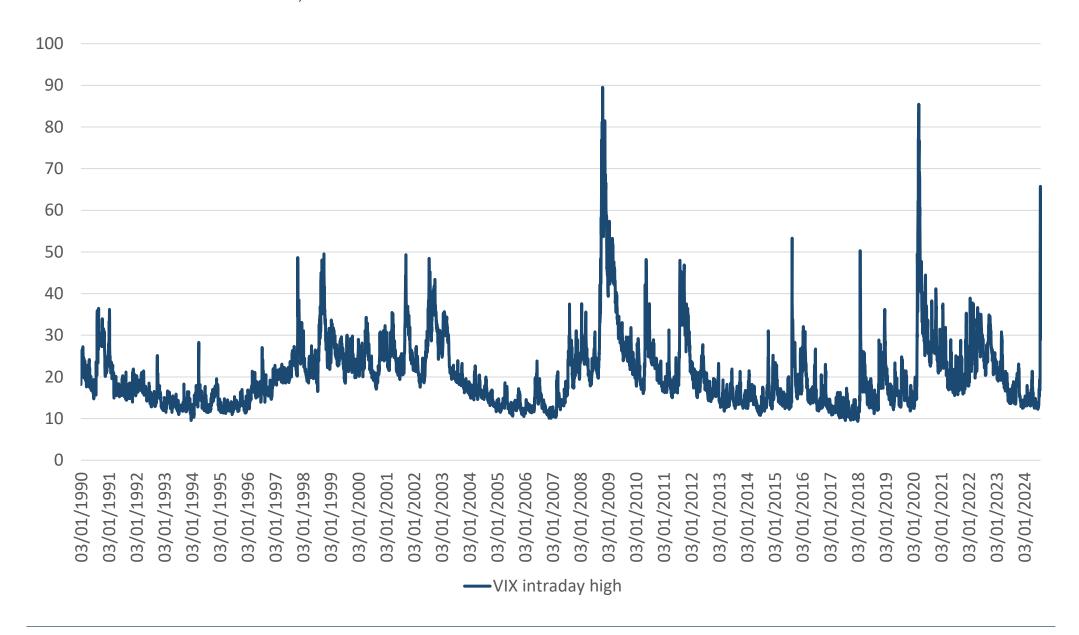
ON 5TH AUGUST 2024, THE VIX CLOSED AT A LEVEL SIMILAR TO FEB 2018





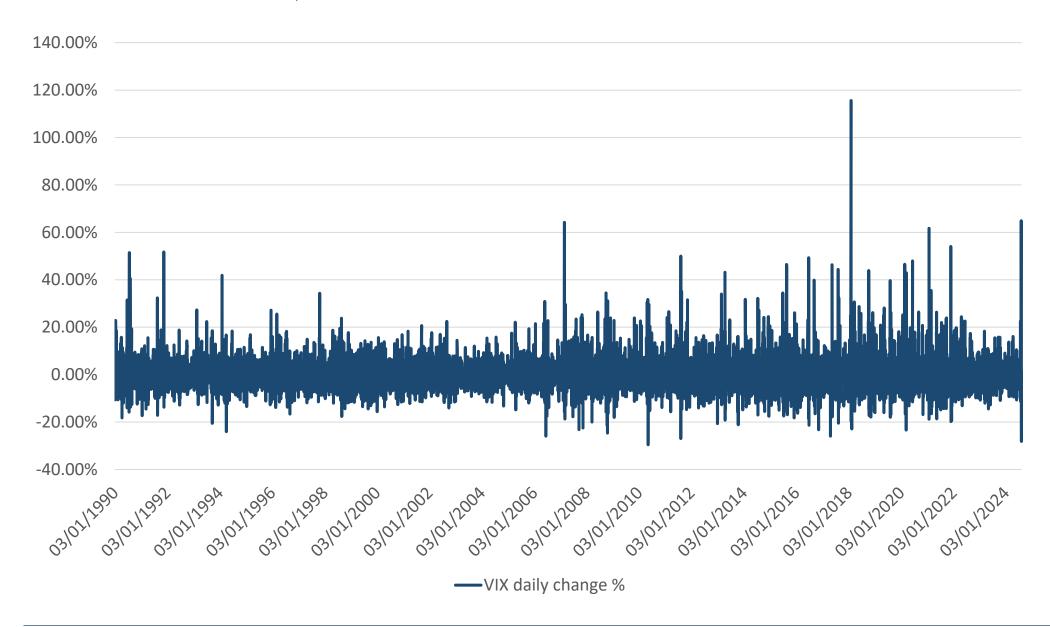
VOLATILITY IN HISTORICAL CONTEXT: INTRADAY HIGH

ON 5TH AUGUST 2024, VIX INTRADAY HIGH WAS ONLY HIGHER TWICE BEFORE



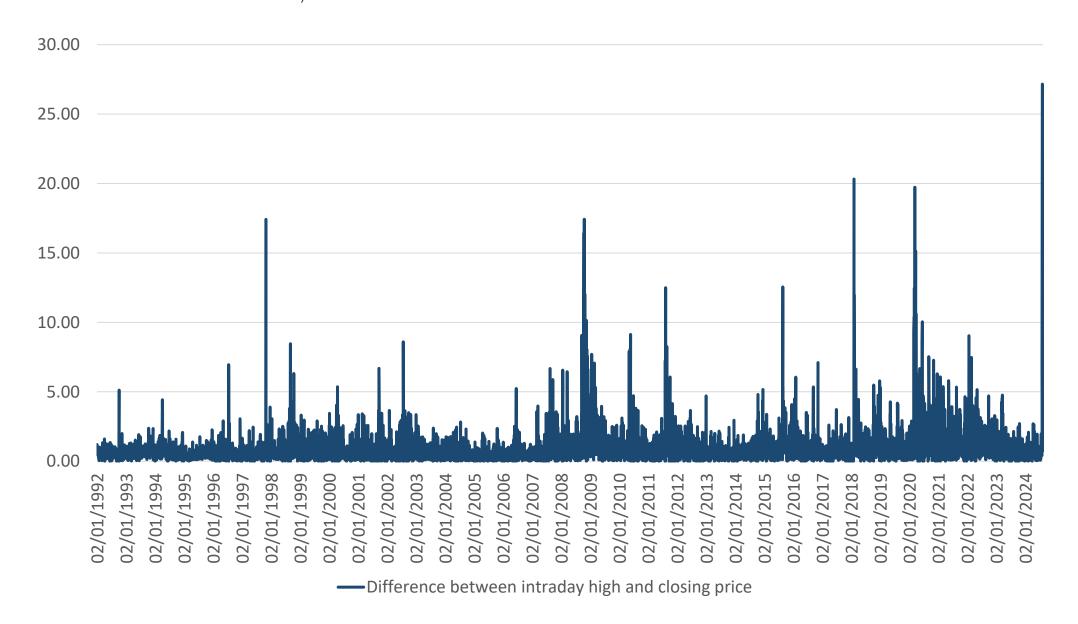


VOLATILITY IN HISTORICAL CONTEXT: DAILY CHANGE ON 5TH AUGUST 2024, VIX DAILY CHANGE WAS ONLY HIGHER TWICE BEFORE





VOLATILITY IN HISTORICAL CONTEXT: INTRADAY MOVE ON 5TH AUGUST 2024, THE VIX HAD ITS LARGEST INTRADAY REVERSAL EVER





VOLATILITY IN HISTORICAL CONTEXT

WHERE DOES THE 5TH AUG 24 VIX SPIKE FIT IN?

The table on the following slide shows all VIX spikes above 30 over the last 35 years. As the VIX has now dropped back below 25, this volatility cycle was the fastest to achieve its peak and the shortest in terms of days to stay at a VIX reading of above 25 on record. When comparing this to prior short-lived VIX spikes over the last 25 years (table below), it becomes clear that the prior periods signalled the top of the equity market twice (in 2000 and 2007). The February 2018 is the most similar comparative VIX spike, as it was also very short-lived and had a relatively long period of low volatility in the months before. Purely based on the VIX historical data, this indicates to me that this was a "buy-the-dip" opportunity. If this turns out to be wrong, chances are high for a major recession with large losses to come.

Periods of short-lived VIX spikes

Period	VIX peaks above 30	VIX intraday peak	VIX intraday decline	Days for VIX to peak from below 25	Days for VIX to stay above 25 level	Days for VIX to drop below 25 from peak
Aug-24	38.57	65.73	27.16	1	3	3
Jan-22	31.96	31.96	0	5	7	3
Nov-21	31.12	32.61	1.49	2	5	4
Jan-21	37.21	37.21	0	1	5	5
Dec-18	36.07	36.1	0.03	5	9	5
Feb-18	37.32	38.8	1.48	1	6	6
Nov-07	31.09	31.09	0	4	4	1
Aug-07	30.83	37.5	6.67	6	9	4
Oct-00	30.51	30.55	0.04	2	7	6



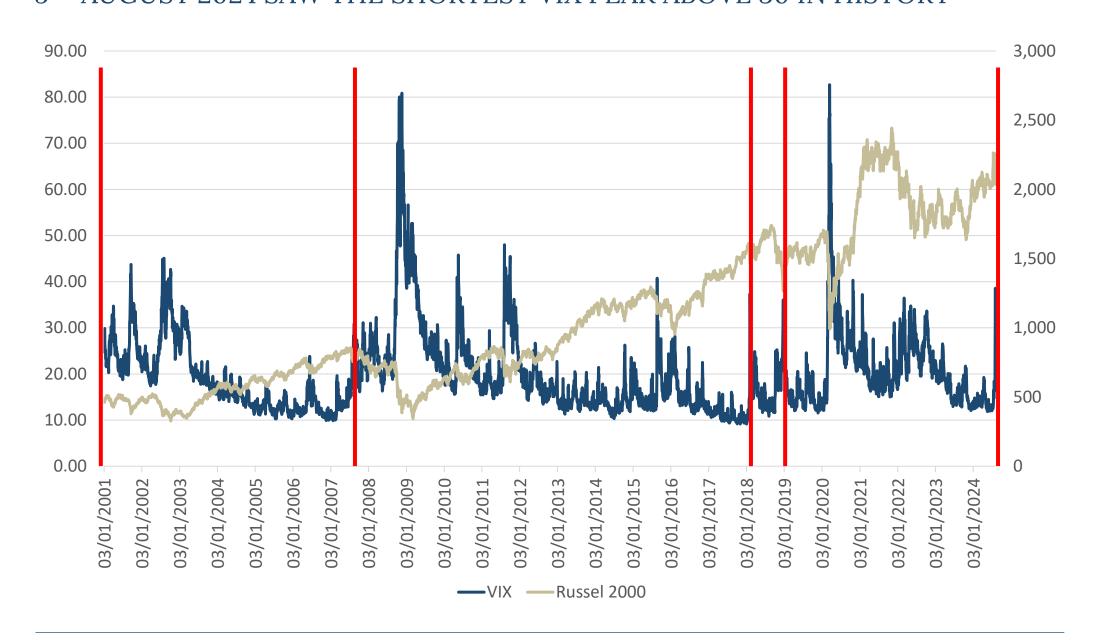
VOLATILITY IN HISTORICAL CONTEXT: INTRADAY MOVE

5TH AUGUST 2024 SAW THE SHORTEST VIX PEAK ABOVE 30 IN HISTORY

Period	VIX peaks above 30	VIX intraday peak	VIX intraday decline	Days for VIX to peak from below 25	Days for VIX to stay above 25 level	Days for VIX to drop below 25 from peak
Aug-24	38.57	65.73	27.16	1	3	3
Oct-22	33.63	34.43	0.8	21	38	18
Jun-22	34.02	35.05	1.03	3	42	40
Apr/May-22	34.75	35.48	0.73	12	58	47
Mar-22	36.45	36.55	0.1	12	20	9
Jan-22	31.96	33.04	1.08	5	7	3
Nov-21	31.12	32.61	1.49	2	5	4
Jan-21	37.21	37.21	0	1	5	5
Oct-20	40.28	40.77	0.49	14	19	6
Sep-20	33.6	35.94	2.34	4	28	25
Jun-/Jul-20	40.79	42.58	1.79	4	30	27
Feb/Mar-20	82.69	83.56	0.87	16	72	57
Dec-18	36.07	36.1	0.03	5	9	5
Feb-18	37.32	38.8	1.48	1	6	6
Aug-15	40.74	53.29	12.55	2	13	12
Aug-Oct-11	48	48	0	3	95	93
May-10	45.79	46.37	0.58	2	30	29
Sep-08-Jul-09	80.86	81.48	0.62	50	212	163
Nov-07	31.09	31.09	0	4	4	1
Aug-07	30.83	37.5	6.67	6	9	4
Jan-Apr-03	34.01	34.31	0.3	17	60	44
Dec-02	30.78	31.2	0.42	9	25	17
Jun-Nov-02	45.08	45.21	0.13	37	113	77
Sep-Nov-01	43.74	43.76	0.02	10	51	42
Mar-Apr-01	34.72	35.2	0.48	18	27	10
Dec-00/Jan-01	31.74	32.02	0.28	4	18	15
Oct-00	30.51	30.55	0.04	2	7	6
Apr/May-00	33.49	33.79	0.3	5	28	24



VOLATILITY IN HISTORICAL CONTEXT: INTRADAY MOVE 5TH AUGUST 2024 SAW THE SHORTEST VIX PEAK ABOVE 30 IN HISTORY





VOLATILITY IN HISTORICAL CONTEXT: VIX VS. OTHER METRICS

VOLATILITY IN HISTORICAL CONTEXT VIX VS. OTHER METRICS

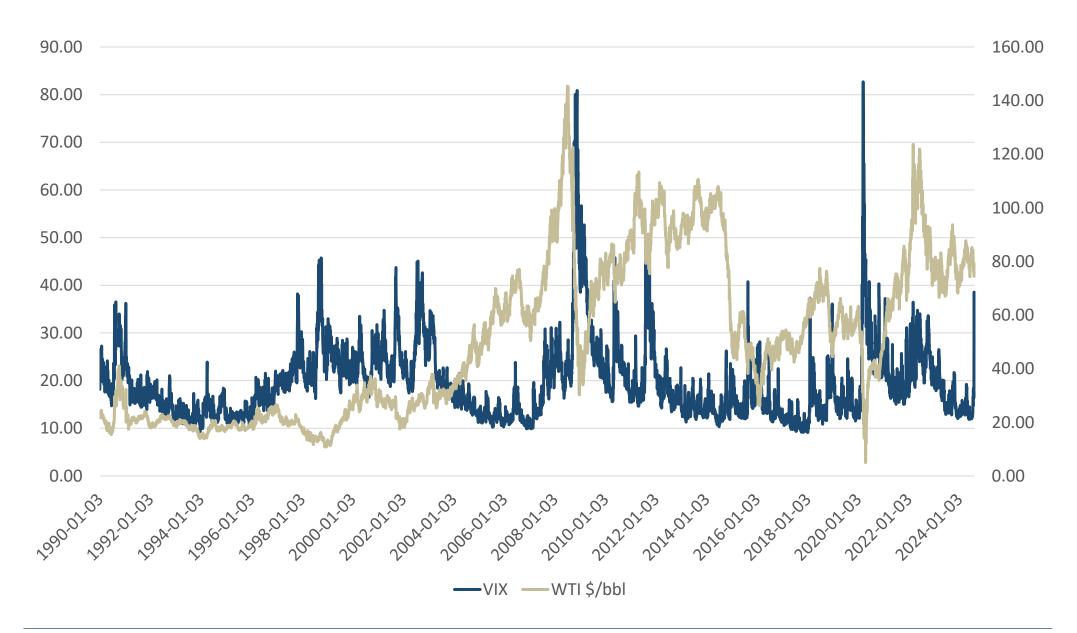
The following chart deck compares the VIX with multiple prices and economic indicators. One can conclude the following:

- <u>Oil prices</u>: Dropped before the VIX spiked. Oil prices remained relatively stable during the VIX spike (small losses, quickly recovered). This also occurred in Dec-21 and Dec-18
- Interest rates: Have never been kept stable at such high levels during a VIX spike. Most other periods
 saw the VIX spike partly as a result of rate hikes or in turn led to rate cuts. If no cut/hike occurred,
 entire yield curve generally rallied
- <u>Equity prices</u>: have declined and historically would not recover for many months or years, although
 VIX peaks often offers good buying opportunity when the VIX peak is short-lived, at least on a two-week horizon
- <u>USD</u>: Usually, VIX spikes come with USD strength, but this hasn't happened this time
- <u>Unemployment</u>: Slowly rising initial claims and unemployment rate with a rise in VIX has mainly only occurred once before, in 2007. The market stayed volatile for months and ended up in a GFC



VIX IN HISTORICAL CONTEXT: OIL PRICES

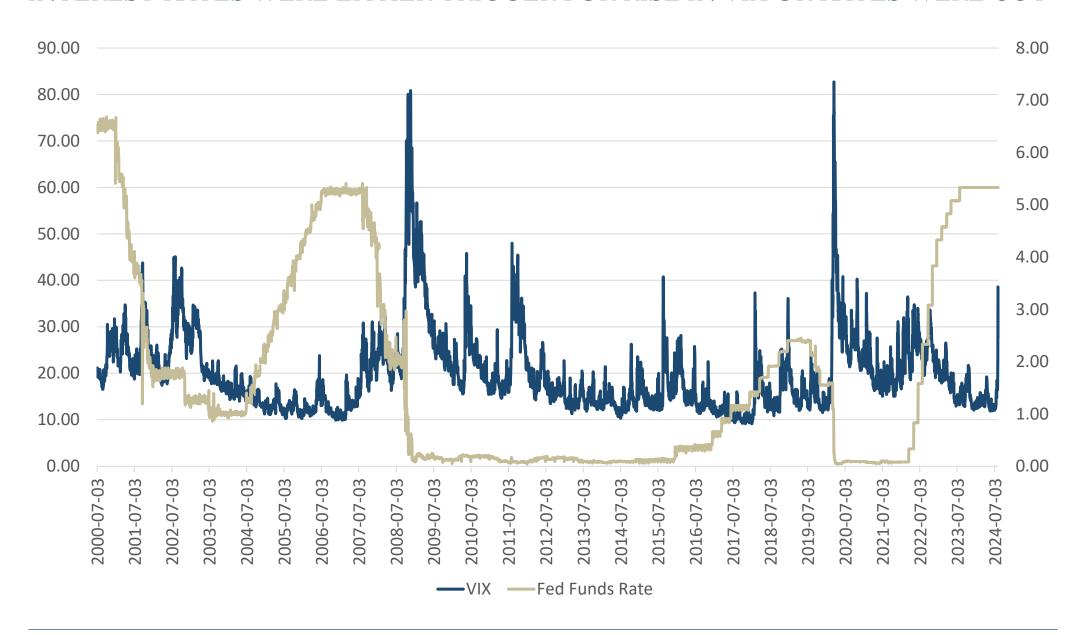
OIL GENERALLY ALWAYS SOLD OFF WHEN VIX ROSE EXCEPT IN FEB 2018 & 2021





VIX IN HISTORICAL CONTEXT: FED FUNDS RATE

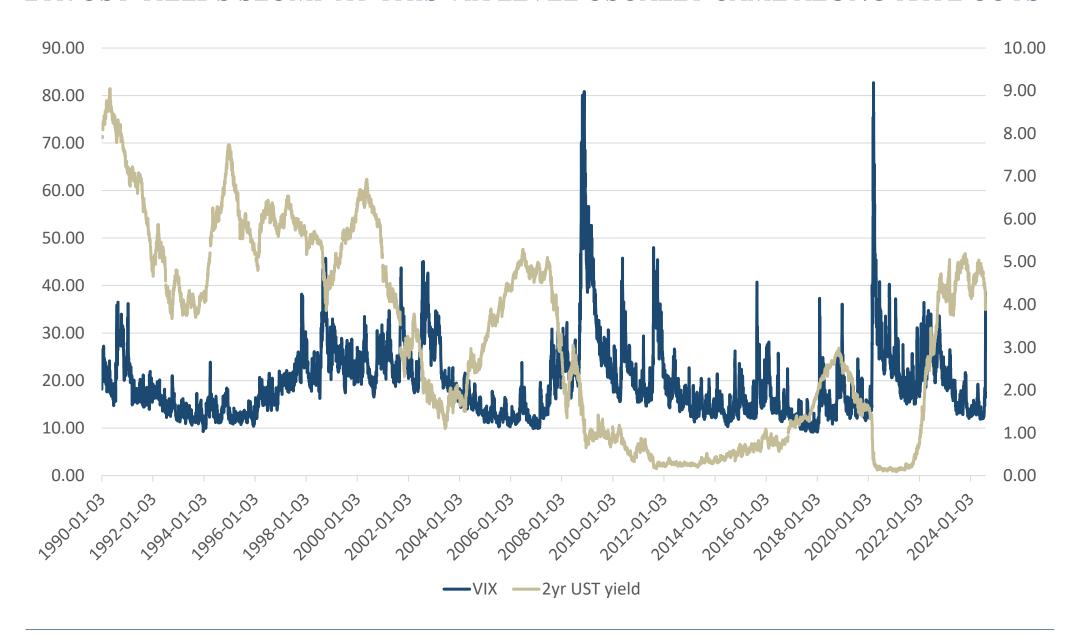
INTEREST RATES WERE EITHER TRIGGER FOR RISE IN VIX OR RATES WERE CUT





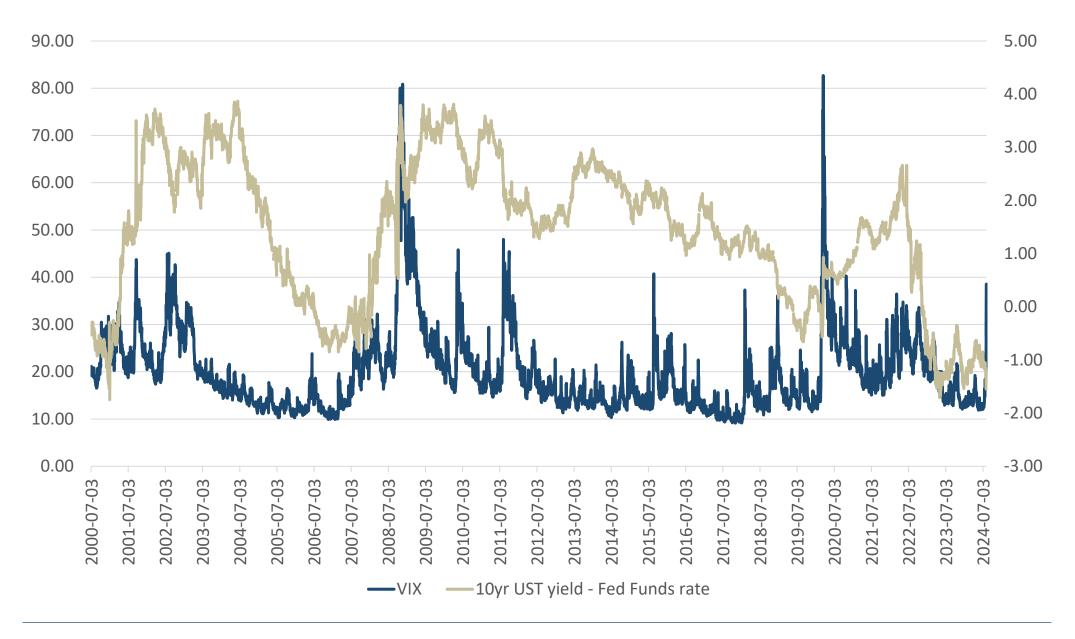
VIX IN HISTORICAL CONTEXT: 2YR UST YIELD

2YR UST YIELDS SLUMP AT THIS VIX LEVEL USUALLY CAME ALONG RATE CUTS





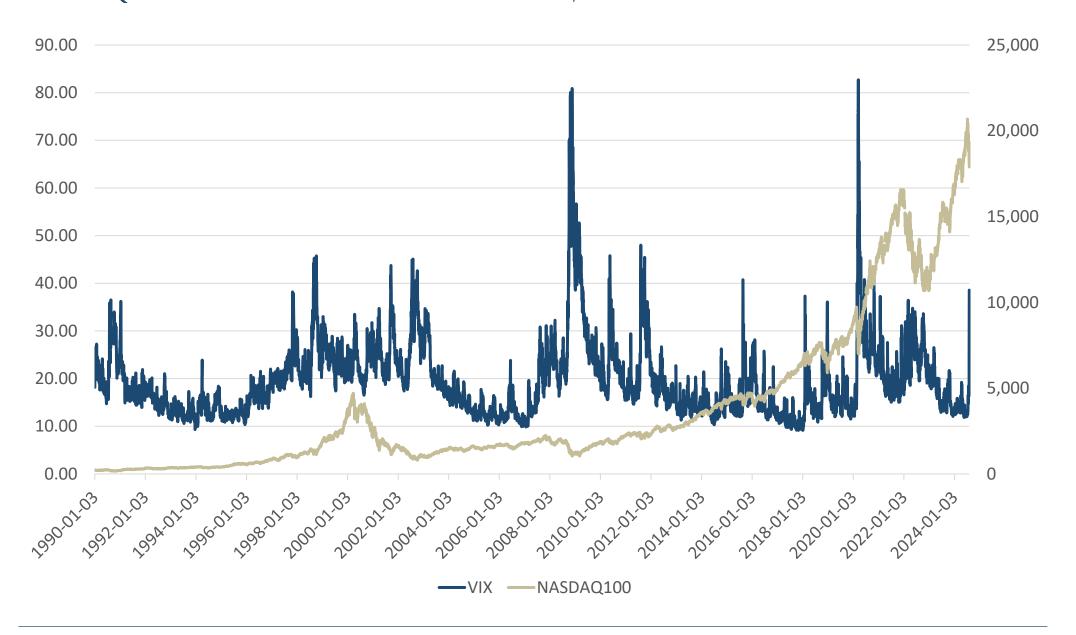
VIX IN HISTORICAL CONTEXT: 10YR UST YIELD INVERSION YIELD CURVE HAS NEVER BEEN AS INVERTED AS NOW AT CURRENT VIX LEVELS





VIX IN HISTORICAL CONTEXT: NASDAQ 100

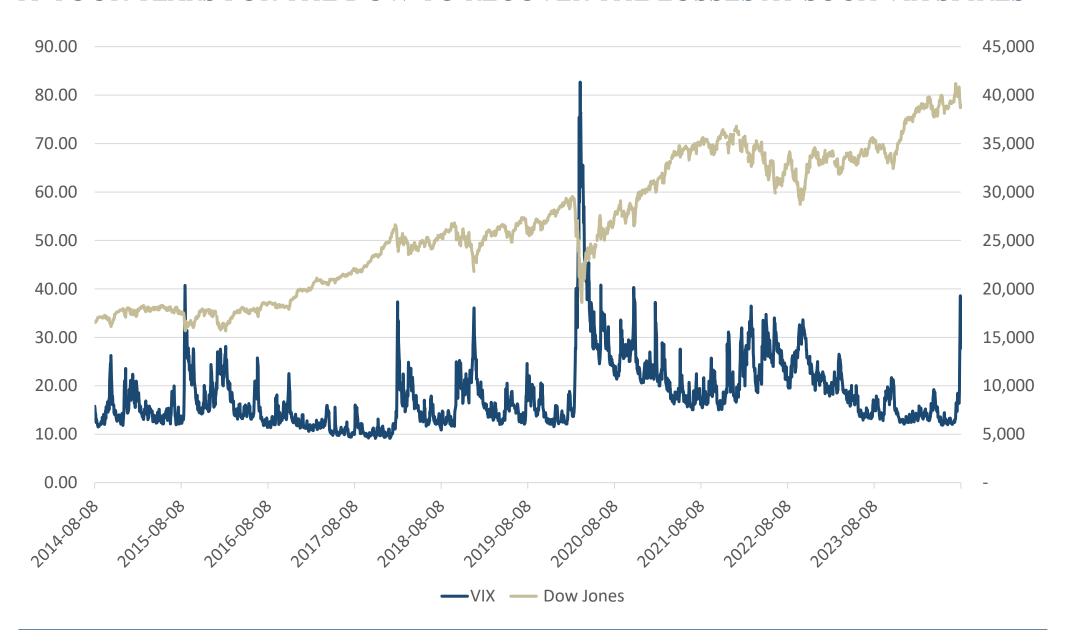
NASDAQ ALWAYS DROPPED WITH VIX RISE, GENERALLY SHORT-TERM





VIX IN HISTORICAL CONTEXT: DOW JONES

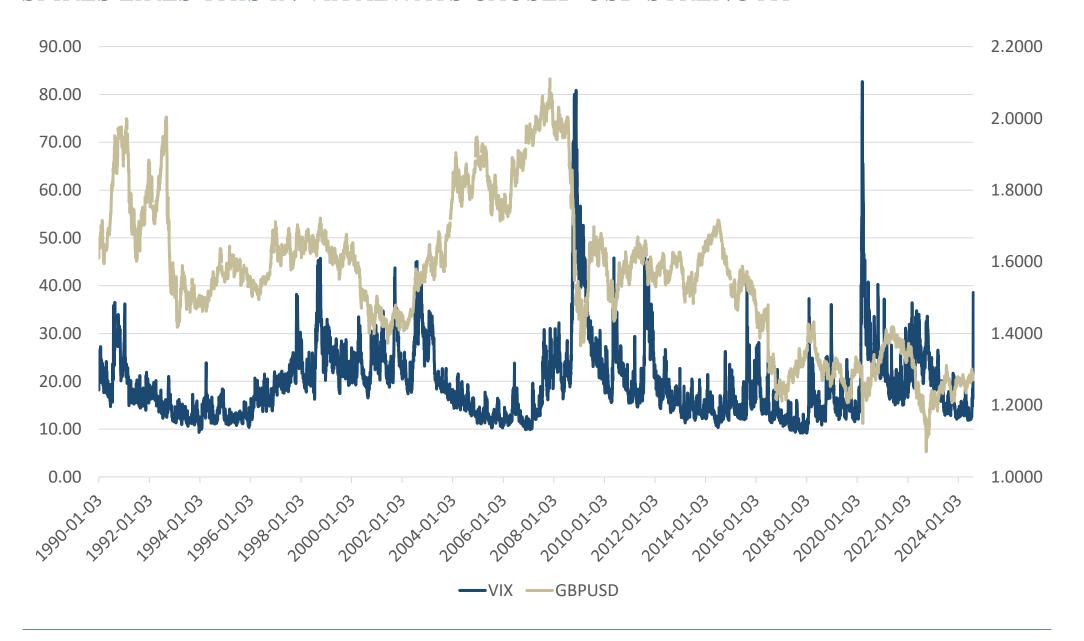
IT TOOK YEARS FOR THE DOW TO RECOVER THE LOSSES AT SUCH VIX SPIKES





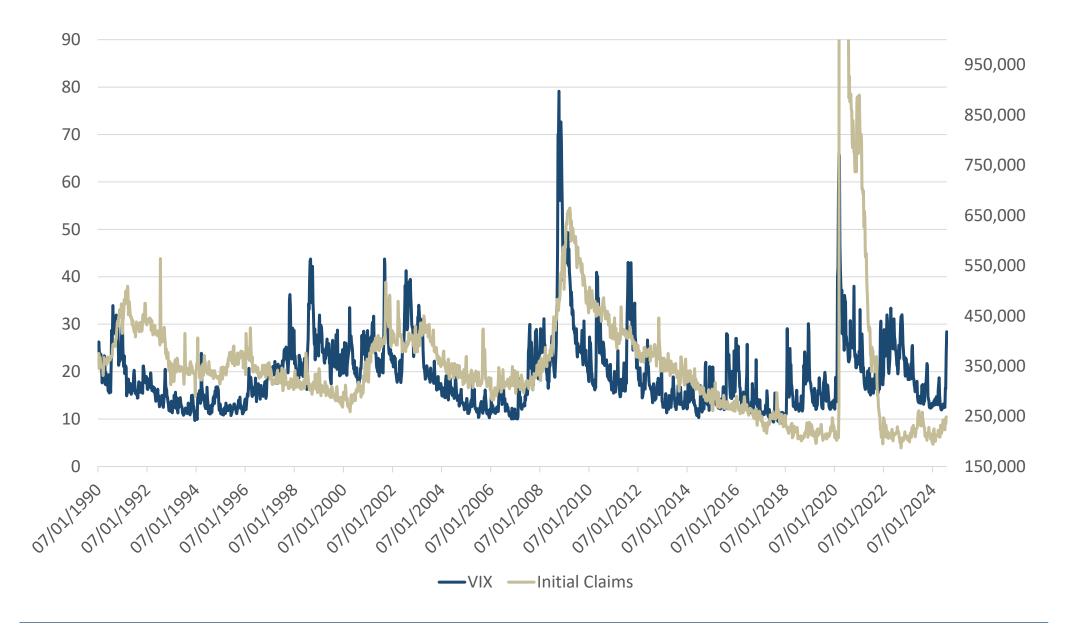
VIX IN HISTORICAL CONTEXT: GBPUSD

SPIKES LIKES THIS IN VIX ALWAYS CAUSED USD STRENGTH





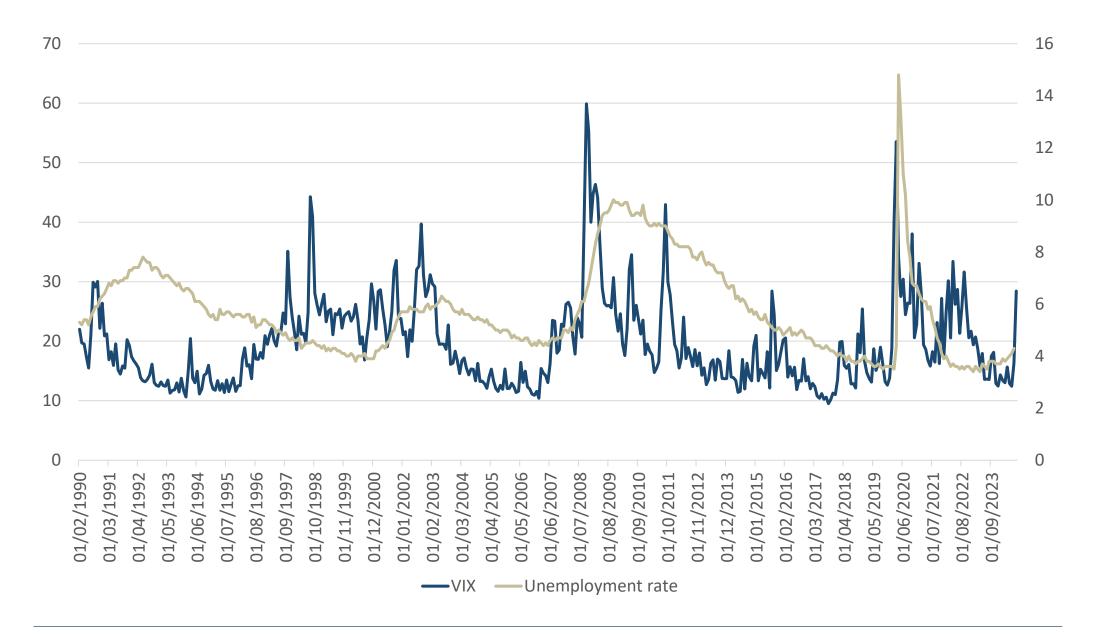
VIX IN HISTORICAL CONTEXT: INITIAL CLAIMS AT LOW INITIAL CLAIMS, A SPIKE IN VIX LED TO CONTINUED VOLATILITY





VIX IN HISTORICAL CONTEXT: UNEMPLOYMENT RATE

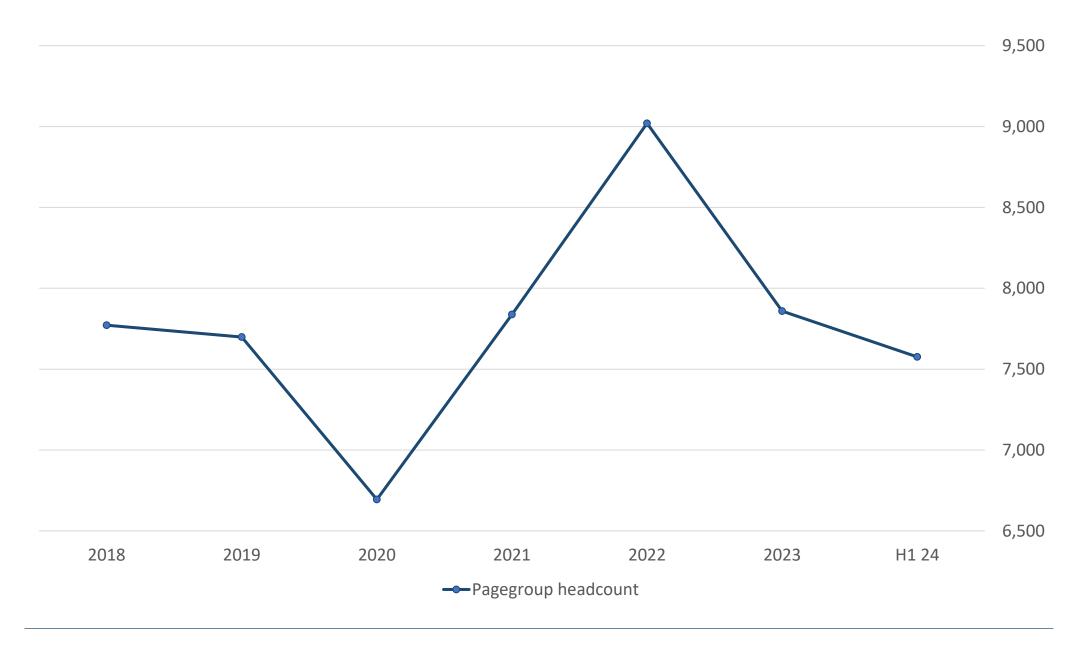
RISING UNEMPLOYMENT AND A SPIKE IN VIX ALWAYS LED TO CRISIS





VIX IN HISTORICAL CONTEXT: JOB MARKET

SOME OF THE LARGEST RECRUITERS SEE HEADCOUNT BELOW 2019 LEVELS





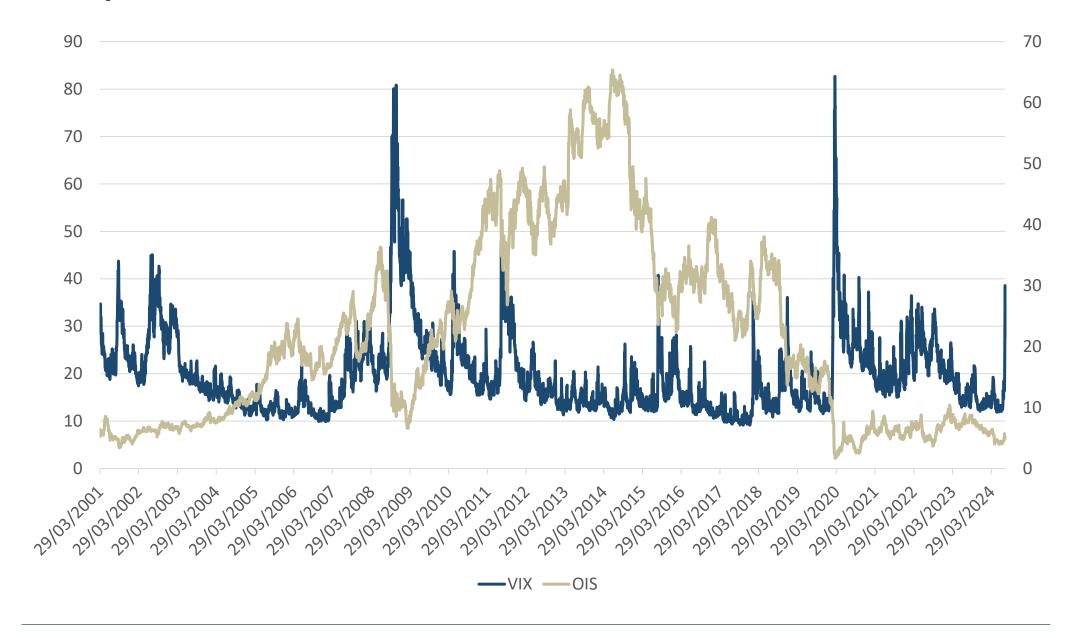
VOLATILITY IN HISTORICAL CONTEXT: VIX VS. OIL STATES INTERNATIONAL

VIX VS. OIL STATES INTERNATIONAL HOW OUR MAIN EQUITY HOLDING FARED HISTORICALLY

Oil field services experience one of the most volatile valuation changes due to the volatility in oil prices and the sudden slump in capital expenditures by the producers when oil prices decline. The question is whether oil prices will drop further? Whilst the US is currently buying back oil for its Strategic Petroleum Reserve when oil drops below \$80/bbl and potential disruption in the Middle East could lead to a spike in oil prices, US oil production is hitting new records, Venezuela is increasing its production rapidly with the sanction relief and there are demand concerns out of China, especially as the country moves rapidly towards electric vehicles while being in a manufacturing downturn. Overall, despite a very attractive valuation, a high VIX has often led to a valuation decline of mid/high double digits in percentage terms – sometimes short-lived, sometimes sustained losses occurred.

VIX VS. OIL STATES INTERNATIONAL (OIS)

OIS EQUITY VALUATION ROSE ONLY TWICE WHEN VIX SPIKED: 2007 & 2018



VIX VS. OIL STATES INTERNATIONAL (OIS) OIS SHARE PRICE WAS HIGHER IN 12 OUT OF 19 CASES 1 MONTH AFTER VIX SPIKE

Importantly: The 1 week OIS price change after peak VIX needs to be significantly positive, otherwise in all cases where this was not the case, the share price of OIS would fall further in 1 month

Period	VIX peaks above 30	VIX intraday peak	VIX intraday decline	Days for VIX to peak from below 25	Days for VIX to stay above 25 level	Days for VIX to drop below 25 from peak	OIS at VIX below 25	OIS at peak	OIS 1 week after	OIS 1 month after	OIS at end of VIX above 25
Aug-24	38.57	65.73	27.16	1	3	3	5.33	5.05	4.91		
Oct-22	33.63	34.43	8.0	21	38	18	4.91	4.33	5.16	7.2	
Jun-22	34.02	35.05	1.03	3	42	40	8.61	7.26	5.78	4.55	
Apr/May-22	34.75	35.48	0.73	12	58	47	7.28	6.49	7.29	8.19	7.92
Mar-22	36.45	36.55	0.1	12	20	9	6.53	7.11	6.88	6.8	
Jan-22	31.96	33.04	1.08	5	7	3	6.37	6.54	6.62	5.15	
Nov-21	31.12	32.61	1.49	2	5	4	5.26	4.8	5.3	5.51	
Jan-21	37.21	37.21	0	1	5	5	5.87	5.68	6.05	7.33	
Oct-20	40.28	40.77	0.49	14	19	6	2.86	2.52	2.82	4.77	
Sep-20	33.6	35.94	2.34	4	28	25	4.65	4.27	3.46	2.82	
Jun-/Jul-20	40.79	42.58	1.79	4	30	27	7.57	4.73	5.23	4.19	
Feb/Mar-20	82.69	83.56	0.87	16	72	57	9.5	2.11	1.84	2.24	5.03
Dec-18	36.07	36.1	0.03	5	9	5	15.86	13.63	15.22	16.78	
Feb-18	37.32	38.8	1.48	1	6	6	31	29.6	28.1	25.35	
Aug-15	40.74	53.29	12.55	2	13	12	26.03	23.6	26.85	27.9	
Aug-Oct-11	48	48	0	3	95	93	47.59	35.87	40.68	36.12	41.12
May-10	45.79	46.37	0.58	2	30	29	26.42	22.19	23.45	25.37	
Sep-08-Jul-09	80.86	81.48	0.62	50	212	163	23.07	8.53	12.24	10.33	15.01
Nov-07	31.09	31.09	0	4	4	1	20.36	18.72	18.77	18.28	
Aug-07	30.83	37.5	6.67	6	9	4	23.08	21.98	23.06	24.77	



VOLATILITY IN HISTORICAL CONTEXT: DIFFERENCES TO HISTORICAL COMPARISONS

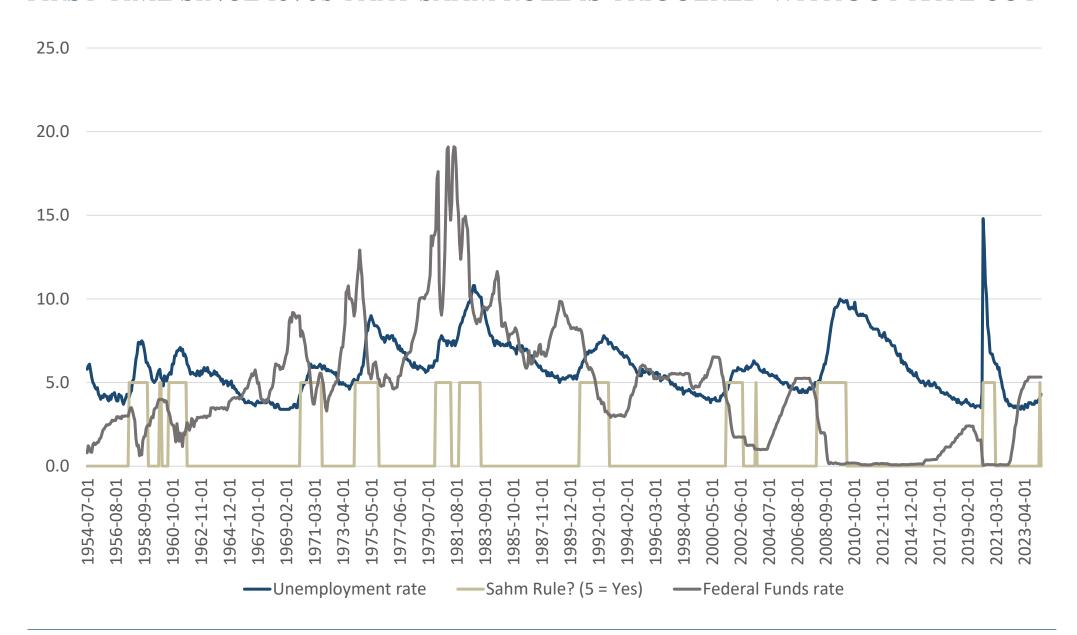


DIFFERENCES TO HISTORICAL COMPARISONS ARE WE HEADING INTO A GLOBAL FINANCIAL CRISIS?

The VIX on 5th August 2024 was most similar to August 2015 (flash crash) and February & December 2018 (US-China trade war, climbing interest rates). Interest rates and yield curve are most similar to 2007/2008 (US housing market crash), while Nasdaq 100 is most similar to September 2000 (Dotcom bubble) or October 2018 (rising interest rates, US-China trade war), while the Dow Jones is more aligned with February 2018 (US-China trade war). Initial claims and the unemployment rate, including Sahm's rule is most similar to February 2008 (ahead of Bear Stearns bankruptcy). Equity markets are not a very reliable indicator of what's ahead. However, rates markets and the Sahm rule are. Both point towards the early days of a global financial crisis. Specifically, this is the first time since the 1970s that the Sahm rule gets triggered without having seen interest rates cut before hand.

DIFFERENCES TO HISTORICAL COMPARISONS

FIRST TIME SINCE 1970s THAT SAHM RULE IS TRIGGERED WITHOUT RATE CUT





DIFFERENCES TO HISTORICAL COMPARISONS

IN ONLY VERY FEW INSTANCES 2YR UST YIELDS DECLINED >20BPS AND OIL >-4%

Date	WTI \$/bbl	Change in %	UST 2yr yield in %	Change in bps
1991-12-20	18.28	-4.4%	4.80	-25
2001-11-29	18.55	-4.2%	2.87	-25
2008-09-15	95.52	-5.6%	1.78	-45
2008-09-29	96.29	-9.8%	1.70	-41
2008-10-02	93.84	-4.5%	1.62	-20
2020-02-28	44.83	-5.0%	0.86	-25
2023-03-15	67.38	-5.3%	3.93	-27
2024-08-02	74.30	-4.0%	3.87	-28

DIFFERENCES TO HISTORICAL COMPARISONS

THE FED HAS BEEN AS RESTRICTIVE AS DURING THE 2006-08 PERIOD

Period	# of weeks UST 10yr - Fed Funds inversion	Weeks between last hik and first cut	e Weeks between last hike and end of inversion
1973-74	99	1	26
1978-80	92	1	7
1982	17	1	16
1989	52	9	39
1998	29	12	16
2000-01	46	33	46
2006-09	81	58	77
2019	23	32	44
2020 Covid	4	-	-
Now	91 (so far)	54 (so far)	54 (so far)

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