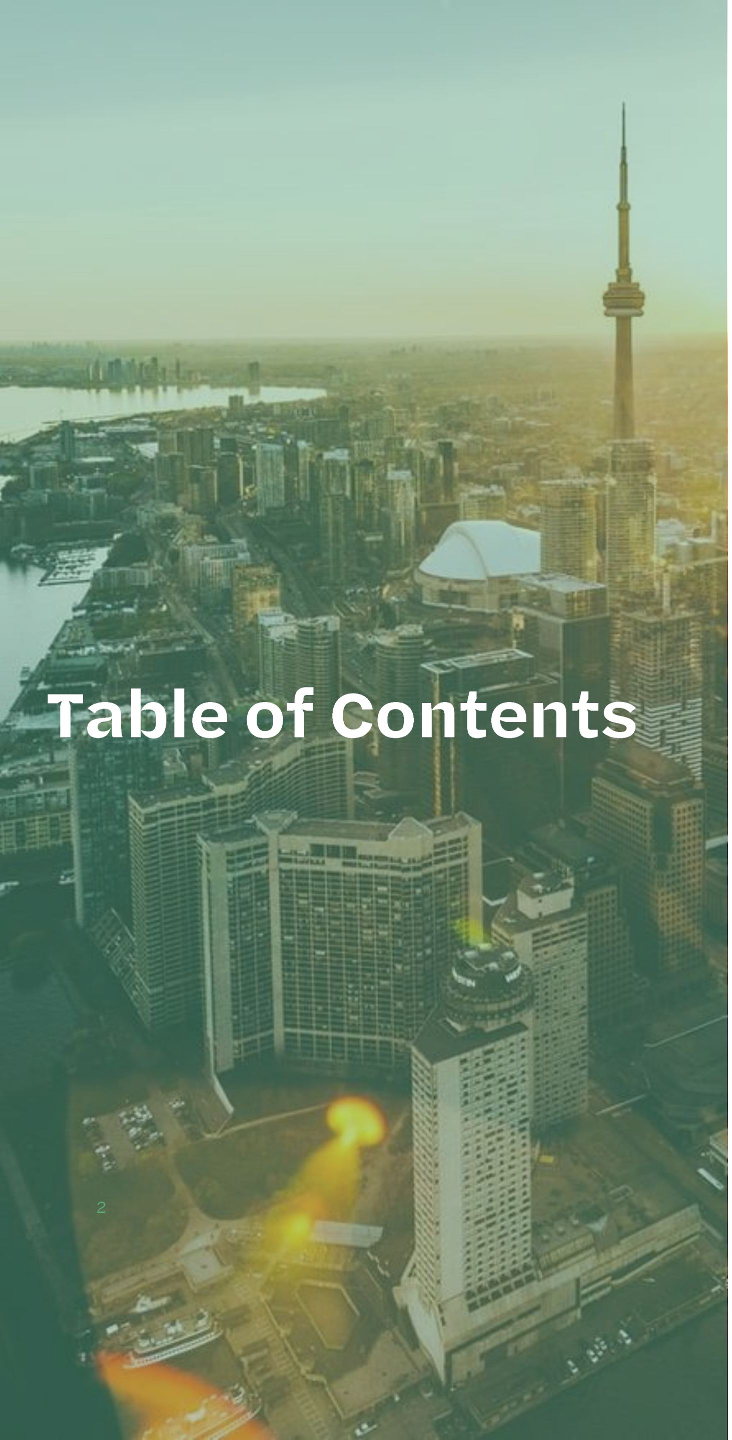
hazelview
INVESTMENTS

June 2022

Recessions and Inflations – Historical Lessons



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Past recessions

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06 Great Financial Crisis – December 2007

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The Typical Experience

Pre-80s Recession

		Gap	To Next Milestone		
Pre 80s Event	Order	(Mth)	Equities (%)	REITs (%)	NCREIF (%)
Partial Inversion	1.3	2.7	-2.6	-5.4	2.1
Full Inversion	2.3	7.1	10.3	19.6	14.0
Market Top	2.7	3.0	-6.0	-5.4	4.6
Recession	4.3	3.4	-4.3	-4.1	2.8
End of QT	4.7	1.3	-1.5	2.7	1.1
QE	5.7	-	4.0	7.4	1.9
Recession + 3M	-	-	4.2	7.2	4.3
Recession + 6M	-	-	5.3	2.1	3.4
Recession + 9M	-	-	-0.1	1.7	2.6
Recession + 12M	-	-	8.8	6.6	2.9
Recession + 15M	-	-	2.2	2.3	3.2
Recession + 18M	-	-	-	-	-

1. A typical recession starts with a partially inverted curve
2. Full inversion shortly follows
3. Market tends to top after full inversion
4. Recession follows market top
5. Fed end Quotative Tightening (QT) once recession is confirmed and switches from fighting inflation to rescuing economy

Post-80s Recessions

		Gap	To Next Milestone		
Post 80s Event	Order	(Mth)	Equities (%)	REITs (%)	NCREIF (%)
Partial Inversion	1.3	5.1	6.5	1.3	4.8
End of QT	2.3	2.5	6.4	9.1	1.9
Full Inversion	3.0	5.8	5.8	5.4	6.5
QE	4.3	5.1	3.1	-1.4	2.9
Market Top	4.3	1.8	-4.8	-4.2	1.3
Recession	6.0	-	-3.2	-5.9	0.9
Recession + 3M	-	-	2.7	3.2	0.3
Recession + 6M	-	-	4.1	7.4	0.4
Recession + 9M	-	-	-3.1	-6.3	-1.4
Recession + 12M	-	-	-2.9	-5.0	-1.2
Recession + 15M	-	-	2.7	9.7	-0.6
Recession + 18M	-	-	-	-	-

1. A typical recession starts with a partially inverted curve
2. Fed respond by ending QT
3. Full inversion shortly follows
4. Fed responds by re-starting Quotative Easing (QE)
5. Market tops around the same time, and eventually recessions starts

Source: Bloomberg

Where are we today?

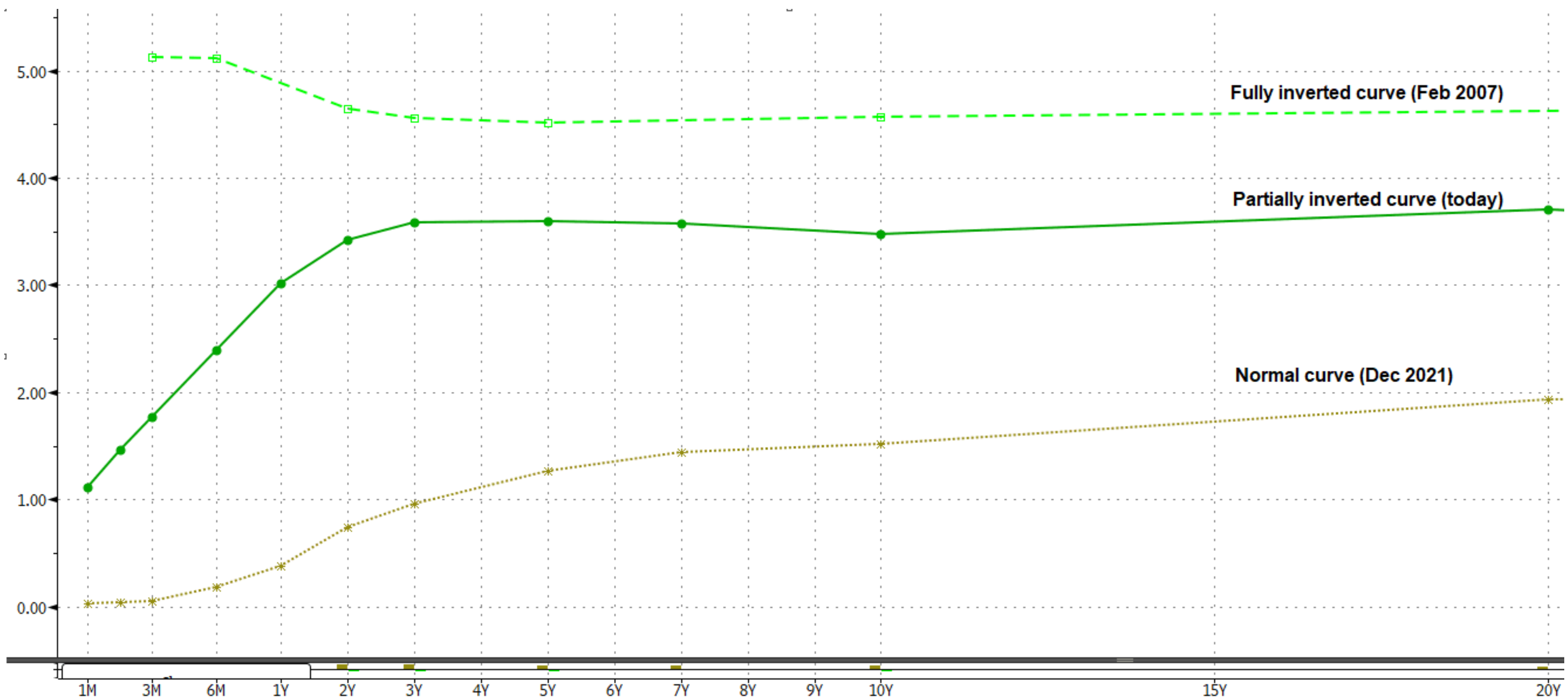
- Yield curve is partially inverted
- Negative real GDP print in Q1
- The left side of the yield curve hasn't flattened yet
- Policy rate at 1.75%, but pricing in 3.5-4.0% by this time next year

Current Environment	6/30/21	7/31/21	8/31/21	9/30/21	10/31/21	11/30/21	12/31/21	1/31/22	2/28/22	3/31/22	4/30/22	5/31/22	6/13/22
Macro													
US Real GDP QoQ	6.7%			2.3%			6.9%			-1.5%			
US CPI YoY	5.4%	5.4%	5.3%	5.4%	6.2%	6.8%	7.0%	7.5%	7.9%	8.5%	8.3%	8.6%	
10Y vs 3M	1.42	1.18	1.26	1.45	1.49	1.39	1.45	1.58	1.50	1.83	2.09	1.77	1.69
10Y vs 6M	1.41	1.17	1.25	1.44	1.49	1.34	1.32	1.31	1.16	1.31	1.52	1.27	1.05
10Y vs 1Y	1.40	1.16	1.24	1.41	1.42	1.21	1.12	0.99	0.82	0.72	0.85	0.76	0.36
10Y vs 2Y	1.22	1.03	1.10	1.21	1.05	0.87	0.77	0.60	0.39	(0.00)	0.21	0.28	(0.00)
10y vs 5Y	0.58	0.53	0.53	0.52	0.37	0.28	0.25	0.17	0.11	(0.13)	(0.02)	0.02	(0.12)
Fed Fund Rate	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.50%	0.50%	1.00%	1.00%

Source: Bloomberg

Yield Curve Inversion

- Normal curve
- Partially inverted curve
- Fully inverted curve



Source: Bloomberg

Is Recession Coming?

- We have a partially inverted curve
- 12 partial inversions -> 8 full inversions -> 7 recessions
- Scenario #1 – no recession (5/12 times): 15-20% return for equities and 10-15% return for REITs for each of the next 3 years, equities to outperform
- Scenario #2 – recession (7/12 times): double digit return in the following 12 months, flat return in year 2 with possible drawdowns, and back on track in year 3. REITs outperform
- Historically, in the event of a recession vs. no recession, equity returns have varied significantly. However, for REITs, in either scenario, the 3-year returns are more consistent

Scenario 1 & 2		U.S. Equities								U.S. REITs							
Start	Event	T-6M (%)	T-3M (%)	T+3M (%)	T+6M (%)	T+9M (%)	T+12 M (%)	T+24 M (%)	T+36 M (%)	T-6M (%)	T-3M (%)	T+3M (%)	T+6M (%)	T+9M (%)	T+12 M (%)	T+24 M (%)	T+36M (%)
2/28/1973	Partial → Full → Recession	2.2	-3.6	-5.4	-5.1	-11.8	-10.6	-18.5	7.2	-5.3	-5.5	-5.2	-4.2	-10.8	-2.1	-17.1	4.2
8/31/1978	Partial → Full → Recession	20.3	7.5	-6.9	-3.7	0.7	12.2	30.5	36.8	20.8	9.9	-10.9	-0.7	17.1	39.2	62.4	80.7
8/31/1980	Partial → Full → Recession	11.2	11.1	15.6	10.2	12.5	6.3	10.4	48.2	18.6	20.1	9.3	7.5	12.5	18.3	18.1	62.0
9/30/1984	Partial → Nothing	7.4	9.8	1.9	11.0	18.2	14.1	43.5	81.0	9.4	8.9	8.2	14.3	16.0	13.2	30.8	38.1
3/31/1986	Partial → Nothing	29.9	13.6	5.9	-0.6	5.1	25.4	20.6	37.9	12.5	11.0	4.3	5.1	7.6	15.3	13.3	19.8
11/30/1988	Partial → Full → Recession	6.4	5.6	6.6	18.1	28.5	27.9	25.8	45.1	4.4	-1.4	1.6	5.8	9.2	4.8	-16.1	20.5
12/31/1994	Partial → Nothing	5.0	0.1	9.4	18.7	26.5	32.4	53.8	84.1	0.9	0.3	3.2	8.6	15.3	20.6	57.2	79.4
11/30/1995	Partial → Nothing	14.1	8.2	6.2	11.3	9.3	25.3	51.8	75.4	8.3	2.1	10.4	13.3	20.2	32.1	62.4	49.2
11/30/1997	Partial → Full → Nothing	13.6	6.8	10.0	14.4	3.0	23.6	43.5	40.7	16.6	8.1	0.6	-1.4	-18.7	-13.2	-22.7	1.4
9/30/1999	Partial → Full → Recession	0.7	-6.4	14.2	17.1	14.5	13.9	-15.1	-36.2	0.3	-10.1	0.3	1.6	13.1	22.7	33.3	40.8
8/31/2005	Partial → Full → Recession	2.5	2.9	2.9	5.9	5.6	8.7	23.2	12.4	15.3	8.3	2.7	11.8	11.3	23.9	28.5	21.3
12/31/2018	Partial → Full → Recession	-6.3	-13.8	13.2	17.9	19.6	28.4	48.5	74.6	-5.0	-5.7	15.4	16.1	23.5	22.6	17.4	54.6
3/31/2022	Partial → ?	6.3	-4.5	-17.7	-	-	-	-	-	12.0	-3.7	-22.0	-	-	-	-	-
Average	All	8.9	3.5	6.1	9.6	11.0	17.3	26.5	42.3	8.1	3.8	3.3	6.5	9.7	16.5	22.3	39.3
	Partial → No Recession	**14.0**	**7.7**	**6.7**	**11.0**	**12.4**	**24.2**	**42.6**	**63.8**	**9.5**	**6.1**	**5.3**	**8.0**	**8.1**	**13.6**	**28.2**	**37.6**
	Partial → Recession	**5.3**	**0.5**	**5.8**	**8.6**	**10.0**	**12.4**	**15.0**	**26.9**	**7.0**	**2.2**	**1.9**	**5.4**	**10.8**	**18.5**	**18.1**	**40.6**

Source: Bloomberg

Is Recession Coming?

- When we have had a partial inversion, the Fed's response has dictated whether we have a recession or not
- Historically when the curve partially inverted
  - If the Fed continued to hike -> recession
  - If the Fed ended QT and stayed put -> postpone recession
  - If the Fed ended QT and soon started QE-> avoid recession
- Where we are today?
  - Partial inversion + hawkish Fed
  - Odds of recession: 7/12 -> 7/7
- High likelihood a recession in coming in the next 18 months, if not sooner or already

	Scenario #1 & #2	
Start	Event	Partial Inversion
2/28/1973	Partial → Full → Recession	Continue to hike
8/31/1978	Partial → Full → Recession	Continue to hike
8/31/1980	Partial → Full → Recession	Continue to hike
9/30/1984	Partial → Nothing	Stop hiking and start cutting
3/31/1986	Partial → Nothing	Stop hiking and start cutting
11/30/1988	Partial → Full → Recession	Continue to hike
12/31/1994	Partial → Nothing	Continue to hike for 2 more months then stopped
11/30/1995	Partial → Nothing	Done hiking, start to cut
11/30/1997	Partial → Full → Nothing	Flat
9/30/1999	Partial → Full → Recession	Continue to hike
8/31/2005	Partial → Full → Recession	Continue to hike
12/31/2018	Partial → Full → Recession	Flat
3/31/2022	Partial → ?	Likely to continue to hike

Source: Bloomberg

Are We Already in a Recession?

- Scenario 3 – recession is coming sooner, or we are already in one
- Start from a quarterly negative real GDP print
- 10 initial negative GDP prints -> 7 recessions
- Equity and REITs are expected to be flat with potential drawdowns over the next 12 months. However, year 2 and year 3 are expected to deliver strong positive returns
- There are two negative outliers, especially for REITs
  - First oil crisis in 1973
  - Subprime crisis in 2008
- Outlook improves if we deem the GFC as unlikely/irrelevant to the challenges facing us today

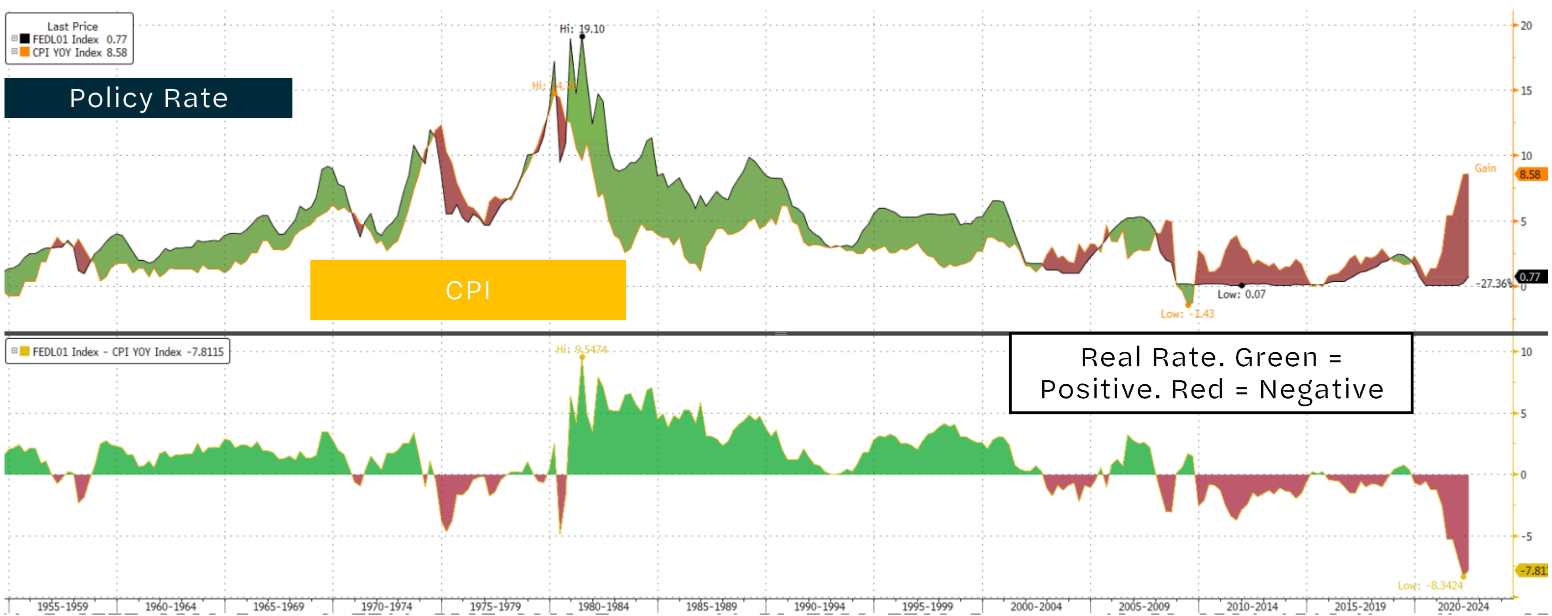
Scenario 3		U.S. Equities								U.S. REITs							
Start	Event	T-6M (%)	T-3M (%)	T+3M (%)	T+6M (%)	T+9M (%)	T+12 M (%)	T+24 M (%)	T+36 M (%)	T-6M (%)	T-3M (%)	T+3M (%)	T+6M (%)	T+9M (%)	T+12 M (%)	T+24 M (%)	T+36M (%)
09/30/1973	Neg. GDP -> Recession	-0.9	4.9	-8.9	-11.8	-19.5	-47.1	-11.8	15.9	-0.1	5.3	-13.3	-6.6	-17.6	-33.2	-18.3	12.5
06/30/1980	Neg. GDP -> Recession	9.4	12.9	10.9	20.6	22.1	19.8	8.0	57.7	11.7	18.8	13.0	20.5	29.0	36.3	29.3	78.2
06/30/1981	Neg. GDP -> Recession	-0.8	-2.3	-10.5	-3.5	-11.0	-11.9	37.8	33.4	15.8	7.3	-12.8	2.3	-5.2	-7.1	41.9	54.9
12/31/1990	Neg. GDP -> Recession	-5.4	8.8	13.9	13.9	19.2	28.0	35.6	45.4	-10.3	8.7	22.0	24.9	34.6	48.4	70.4	91.4
03/31/2001	Neg. GDP -> Recession	-19.7	-11.9	6.0	-9.3	1.1	1.5	-24.8	6.2	5.0	-0.6	11.7	5.7	11.2	19.9	14.5	58.2
03/31/2008	**Neg. GDP -> Recession**	**-12.9**	**-9.7**	**-2.3**	**-10.6**	**-33.5**	**-43.8**	**-1.9**	**14.2**	**-11.6**	**1.6**	**-4.8**	**-0.3**	**-39.4**	**-75.0**	**6.8**	**29.9**
03/31/2011	Neg. GDP-> No Recession	16.3	5.8	0.2	-14.3	-2.6	9.5	23.1	43.5	13.9	6.2	3.7	-11.6	3.6	14.3	28.6	34.3
09/30/2011	Neg. GDP-> No Recession	-14.3	-14.5	11.7	23.8	21.3	27.5	45.7	64.2	-11.6	-15.3	15.2	25.9	29.7	29.9	36.5	49.7
03/31/2014	Neg. GDP-> No Recession	12.1	2.0	5.2	6.4	11.2	12.4	15.1	31.2	9.4	9.9	6.8	3.8	17.7	22.6	27.9	30.8
03/31/2020	Neg. GDP -> Recession	-11.8	-20.6	19.6	28.6	40.7	46.8	62.3	-	-31.5	-30.6	11.4	12.4	25.4	34.8	58.9	-
03/31/2022	Neg. GDP -> ?	6.3	-4.5	-17.7	-	-	-	-	-	12.0	-3.7	-22.0	-	-	-	-	-
Average	All	-2.0	-2.6	2.5	4.4	4.9	4.3	18.9	34.6	0.3	0.7	2.8	7.7	8.9	9.1	29.6	48.9
	Neg. GDP-> No Recession	4.7	-2.2	5.7	5.3	10.0	16.5	28.0	46.3	3.9	**0.3**	**8.6**	**6.0**	**17.0**	**22.3**	**31.0**	**38.2**
	Neg. GDP -> Recession	-6.0	-2.5	4.1	4.0	2.8	-0.9	15.0	28.8	-3.0	1.5	3.9	8.4	5.4	3.4	29.1	54.2
	Neg. GDP -> Recession (ex-GFC)	-4.9	-1.4	5.2	6.4	8.8	6.2	17.9	31.7	-1.6	1.5	5.4	9.9	12.9	16.5	32.8	59.0

Source: Bloomberg

Thoughts on Inflation

Real Policy Rate

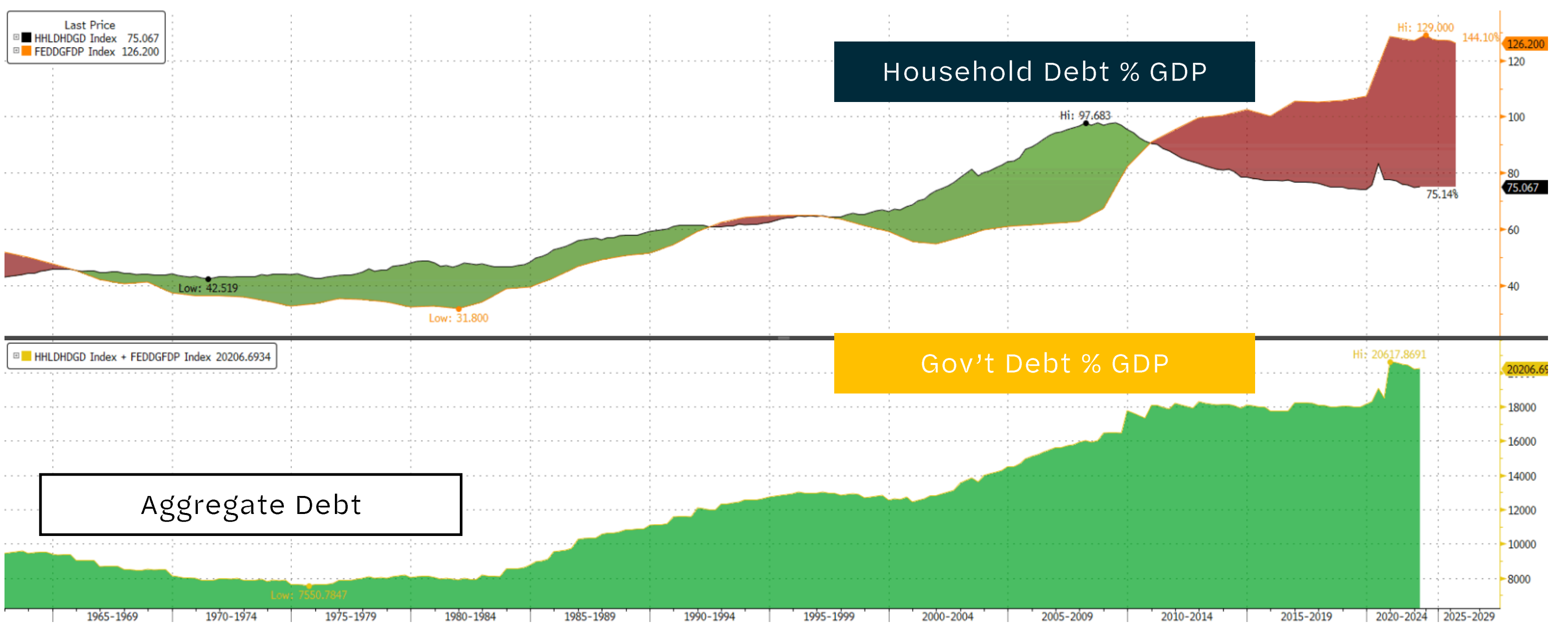
- Pre-80s: monetary policy was predominately driven by inflation risk. Each cycle saw higher peak interest rate as the Fed tried to contain inflation
- Post-80s: monetary policy was predominately driven by unemployment risk. Lower rates were needed to stimulate the economy. Subsequent rising rates were a result of normalization, not to fight inflation
- Pre-80s: saw greater extremes between peak and trough interest rates and inflation vs. post-80s, which suggests the economy had become more sensitive to interest rate hikes



Source: Bloomberg

Saving Effect vs. Consumption Effect

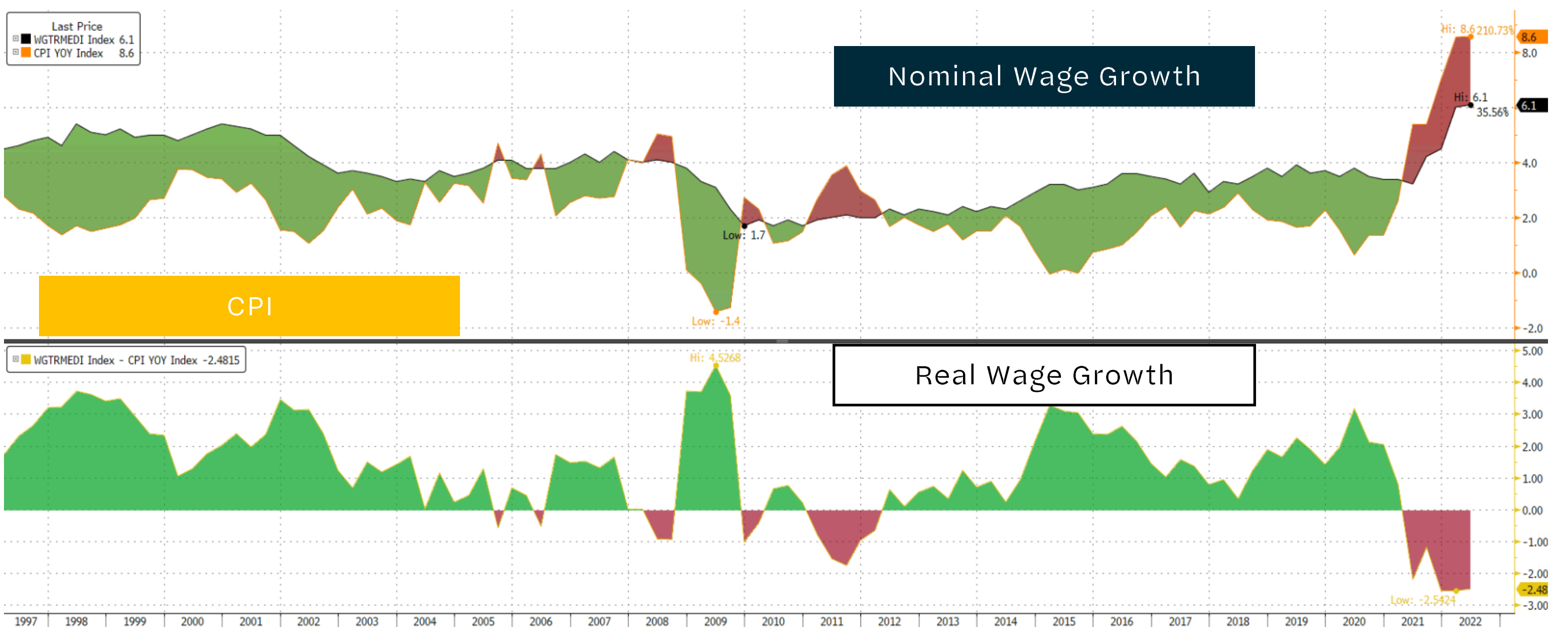
- Pre-80s: aggregate debt in the economy was declining post WWII, which meant that raising the cost of borrowing had minimal impact on disposable income. Therefore, interest rates needed to exceed inflation in order to encourage people to save rather than spend to curb inflation
- Post-80s: aggregate debt in the economy grew tremendously. Disposable income became more sensitive to small increases in borrowing costs. Therefore, QT tended to hurt consumption quicker, encouraging de-leveraging (instead of saving), which cooled down the economy and/or CPI
- Today, we are combating high inflation like the pre-80s. However, high aggregate debt levels make consumers' discretionary income more impacted by small changes in interest rates



Source: Bloomberg

Median Wage Growth vs. CPI

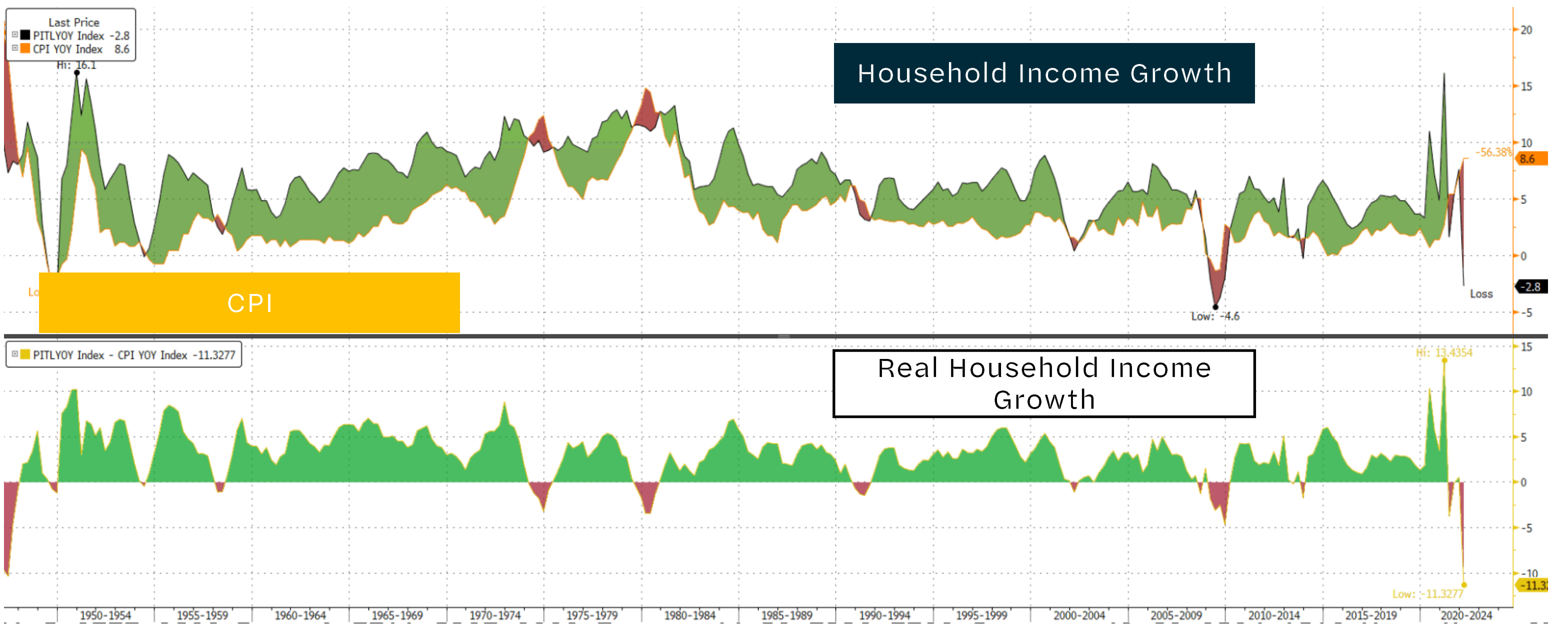
- Good news: wage growth is at a two-decade high.
- Bad news: wage growth is falling behind inflation
- Positive real wage growth is needed to support nominal price growth and improve standard of living over time



Source: Bloomberg

Household Income vs. CPI

- Household income captures all forms of incomes, including wage, and has longer history
- Purchasing power erosion is worse if you are out of the labor force, unemployed, working part-time or retired
- Historically, real household income growth were almost always positive
- Periods of negative real household income growth almost perfectly coincided with recessions and decline in CPI



Source: Bloomberg

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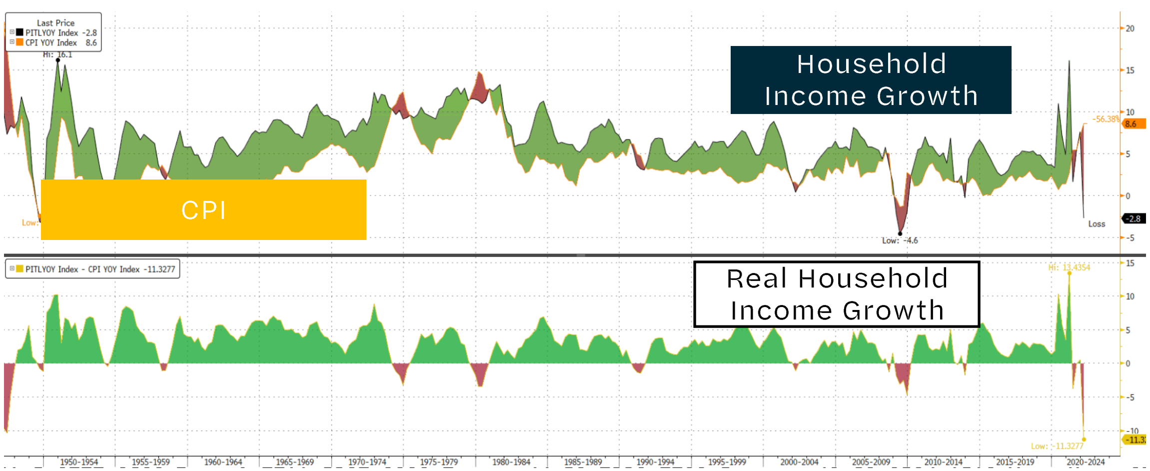
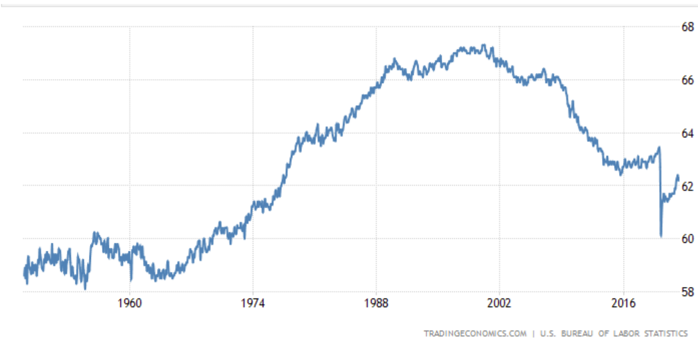
US Labor Force Participation Rate

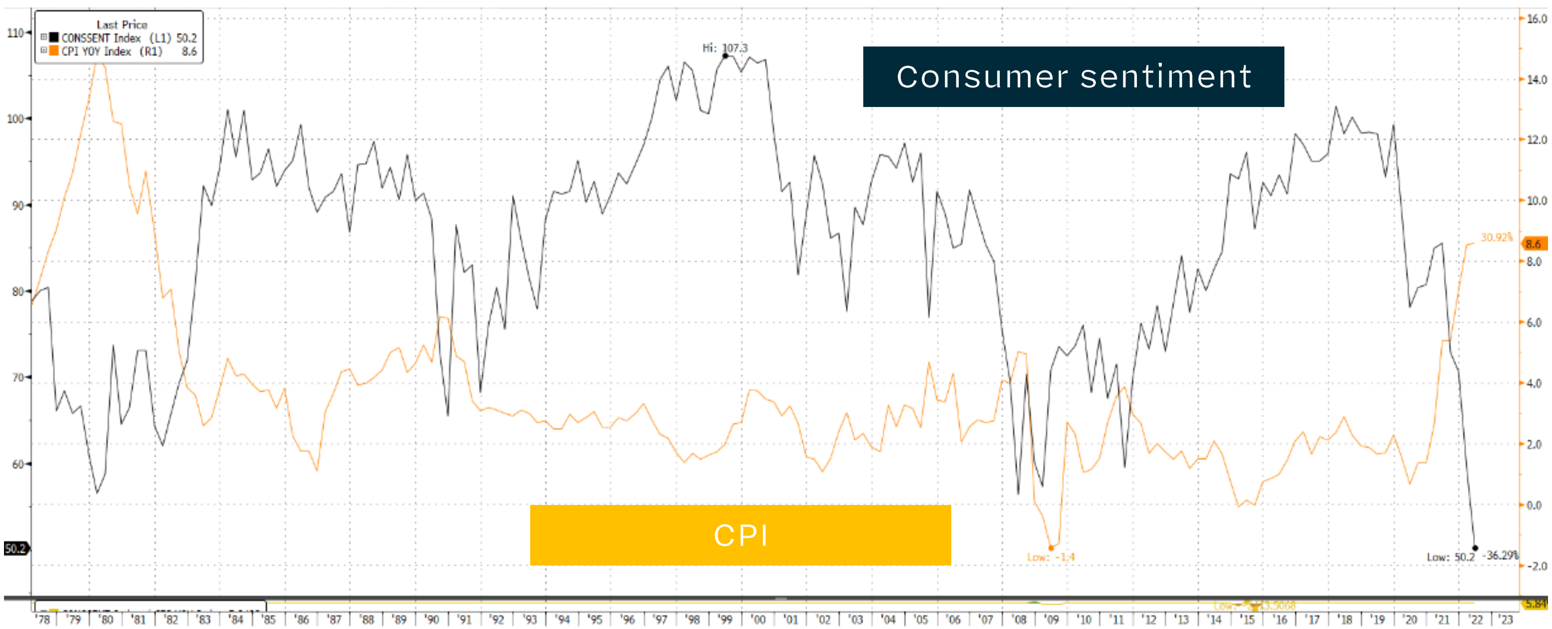




Source: Bloomberg

Consumer Sentiment vs. CPI

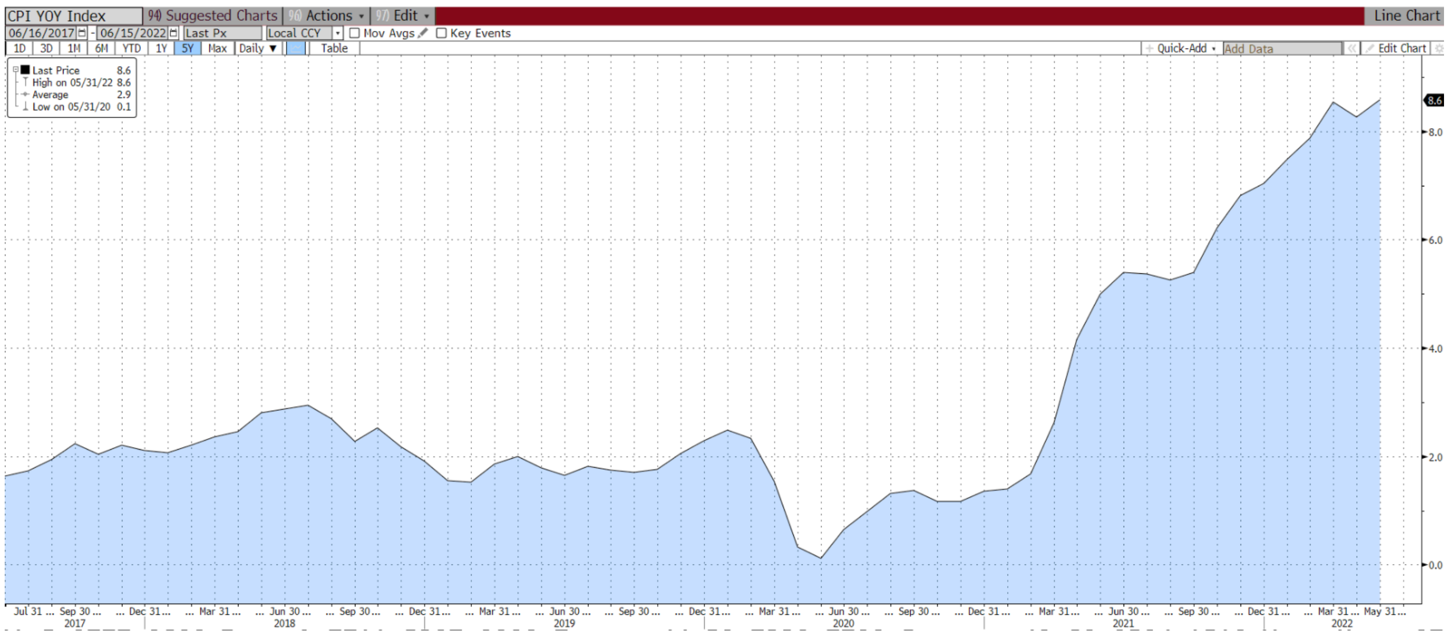
- CPI is at a 40-year high
- Consumer sentiment is at 40-year low
- The last time sentiment was at this level (May 1980), it coincided with peak CPI at 14%, policy rate was fluctuating 10-20% on a monthly basis, the QoQ was -8%



Source: Bloomberg

Tougher Comps on CPI Starting H2 2022

Month	CPI YOY
5/31/2002	8.6%
4/30/2022	8.3%
3/31/2022	8.5%
2/28/202	7.9%
1/31/2022	7.5%
12/31/2021	7.0%
11/30/2021	6.8%
10/31/2021	6.2%
9/30/2021	5.4%
8/31/2021	5.3%
7/31/2021	5.4%
6/30/2021	5.4%



Source: Bloomberg

Furthermore

01 Household discretionary income is much more sensitive to interest rate moves today

02 Wage growth and household income is not keeping in pace with inflation, which will lead to reduced demand

03 Consumer sentiment is the worst it has been in 40 years

04 Inflation is about to face tougher comps in the second half of the year

05 Historically, this data suggests that inflation has likely peaked and is set to come down

Conclusion

Recap

- While there are similar elements, the current situation doesn't fully resemble any of the past episodes of inflationary or recessionary environments
- Today, we are combating high inflation like the pre-80s, however, high aggregate debt levels make consumers' discretionary income more impacted by small changes in interest rates
- Current data around wage inflation/household income/consumer sentiment suggests that inflation has likely peaked and is set to come down
- A recession is highly likely given the partial yield curve inversion, the negative GDP print, and a hawkish Fed
- We have two playbooks on how a recession might play out (scenario 2 or 3)
- **Argument for scenario 2**
  - No recession has ever happened without a fully inverted curve
  - Q1 negative GDP print could be an anomaly
  - Corporate earnings (and expected earnings) are still holding strong and unemployment rate is still low
- **Argument for scenario 3**
  - We have just experienced unprecedented shutdown and reopening of the economy, extreme fluctuations in demand and supply, with all-time-high introduction and withdraw of fiscal and monetary stimulus. Pent-up demand rose quickly and should fall faster than in the past
  - Investors learn from past experiences, consumer confidence swings faster, due to more accessible media. Therefore, the perception of upcoming recession becomes a self-fulfilling prophecy (along with a hawkish Fed)
  - Market reaction YTD looks more like the eve of a recession than the eve of a yield curve inversion

Conclusion

- In either case, the most likely path forward is double digital returns over the next 12 months for REITs.
- Real estate is a great place to be if a recession is coming.
- When everyone is worried about a recession, the worst is likely over, as the peak-to-trough today already reflect the typical peak-to-trough during recessions. It's priced in.

	U.S. Equities				U.S. REITs			
Recessions	Peak	Trough	Days	Magnitude (%)	Peak	Trough	Days	Magnitude (%)
Oil Crisis I	1/11/1973	10/3/1974	630	-45	9/29/1972	12/31/1974	823	-37
Oil Crisis II	2/13/1980	3/27/1980	43	-17	2/29/1980	4/30/1980	61	-12
Oil Crisis III	11/28/1980	8/12/1982	622	-20	6/30/1981	9/30/1981	92	-11
Early 90s Recession	7/16/1990	10/11/1990	87	-19	8/31/1989	10/31/1990	426	-24
Dot Com Recession	3/23/2000	10/09/2002	930	-47	4/7/1998	12/15/1999	617	-29
Great Financial Crisis	10/9/2007	3/09/2009	517	-55	2/7/2007	3/6/2009	758	-75
COVID Recession	2/19/2020	3/23/2020	33	-34	2/21/2020	3/23/2020	31	-45
Current environment	1/3/2022	6/13/2022	161	-21	12/31/2021	6/13/2022	164	-24
Average of the 7 recessions	-	-	**409**	**-32**	-	-	**401**	**-32**
Average ex GFC	-	-	**391**	**-30**	-	-	**342**	**-26**

U.S. Equities (%)							
T-6M	T-3M	T+3M	T+6M	T+9M	T+12M	T+24M	T+36M
5.3	0.5	5.8	8.6	10.0	12.4	15.0	26.9
-4.9	-1.4	5.2	6.4	8.8	6.2	17.9	31.7

U.S. REITs (%)							
T-6M	T-3M	T+3M	T+6M	T+9M	T+12M	T+24M	T+36M
7.0	2.2	1.9	5.4	10.8	18.5	18.1	40.6
-1.6	1.5	5.4	9.9	12.9	16.5	32.8	59.0

Scenarios
Scenario 2: Partial -> Full -> Recession
Scenario 3: Neg. GDP-> Recession (ex-GFC)

Source: Bloomberg

Appendix: Deep Dive on the Past Recession

Oil Crisis I – November 1973

- Market topped, then partial and full inversion occurred, followed by the recession in 1973
- Inflation was running hot (3% in 1972 to 10% in 1974), forcing the Fed to aggressively raise policy rate (5% in 1972 to 13% in 1974) despite warning signs of recession and even well into the recession
- **Catalyst:** expansionary fiscal policy in the late 60s to fund the Vietnam War and social security to keep people happy at home, forced expansionary monetary policy ahead of election, end of Bretton Woods in the early 70s, and finally, an oil embargo that caused crude price to go from $3 to $12 in 5 months
- **Why its like today:** previous expansionary fiscal and monetary policy (COVID measures), inflation rooted in energy price and geopolitical risk, fear of stagflation
- **Why its not like today:** the Dollar is not at risk, consumer sanctions the producer vs. producer bans the consumer, crude market share of Russia vs. OPEC, U.S. shale

		Gap	To Next Milestone			Cumulative		
Oil Crisis I	Month	(Mth)	Equities (%)	REITs (%)	NCREIF (%)	Equities (%)	REITS (%)	NCREIF (%)
Market Top	Dec – 72	2	-5.0	-4.0	-	-5.0	-4.0	-
Partial Inversion	Feb – 73	5	-1.7	0.5	-	-6.6	-3.5	-
Full inversion	Jul – 73	4	-10.1	-11.3	-	-16.0	-14.4	-
Recession	Nov-73	6	-7.5	-6.0	-	-22.3	-19.6	-
End of QT	May-74	2	-8.6	-6.1	-	-29.0	-24.5	-
QE	July-74	3	-3.3	-3.7	-	-31.3	-27.3	-
Recession + 3M	Oct-74	3	6.3	7.1	-	-27.0	-22.1	-
Recession + 6M	Jan-75	3	14.0	8.0	-	-16.8	-15.9	-
Recession + 9M	April-75	3	3.1	3.4	-	-14.2	-13.1	-
Recession + 12M	Oct-75	3	1.7	-10.3	-	-12.8	-22.0	-
Recession + 15M	-	-	-	-	-	-12.8	-22.0	-

From partial inversion to market top
- Length: NA – rare case market top occurred first
- Upside (REITs): NA
- Initial recession drawdown (REITs): -27%

Source: Bloomberg

Oil Crisis II – Jan 1980

- Yield curve partially and fully inverted in late 1978, but ahead of recession and market top in early 1980
- CPI was still elevated and turning higher again (7% in 1978 to 14% in 1980), once again forcing the Fed to aggressively raise policy rate (7% in 1978 to 15% in 1980 and briefly reached 20%) despite warning signs of recession
- Once recession started, the Fed cut policy rate faster this time. Good news is that recession lasted only two quarters and market reaction was more positive than the first oil crisis. Bad news is QE backfired and resulted in another recession as inflation was still there
- **Catalyst**: second oil crisis, when crude went from low $10 to high $30 after the Iranian revolution in 1979 and Iran-Iraq war in 1980
- **Why its like today:** similar to 1973, runaway inflation rooted in energy price and geopolitical risk, fear of stagflation
- **Why its not like today:** much lower debt levels, which required positive real rate to reduce consumption and motivate saving (more to come)

		Gap	To Next Milestone			Cumulative		
Oil Crisis II	Month	(Mth)	Equities (%)	REITs (%)	NCREIF (%)	Equities (%)	REITS (%)	NCREIF (%)
Partial Inversion	Aug – 78	2	-9.0	-14.4	3.1	-9.0	-14.4	3.1
Full Inversion	Oct-78	15	28.3	58.7	24.4	16.7	35.8	28.2
Recession	Jan – 80	1	0.0	-0.4	1.8	16.7	35.2	30.6
Market Top	Feb-80	1	-9.7	-15.5	1.8	5.4	14.3	32.9
End of QT	Mar-80	1	4.6	5.5	0.8	10.3	20.7	33.9
QE	Apr-80	3	15.3	24.9	2.8	27.1	50.7	37.7
Recession + 3M	Jul-80	3	6.0	12.4	4.2	34.7	69.4	43.5
Recession + 6M	Oct-80	3	3.5	-2.2	4.4	39.3	65.7	49.9
Recession + 9M	Jan-81	3	3.8	8.5	3.4	44.6	79.7	54.9
Recession + 12M	Apr-81	3	-0.2	7.0	3.8	44.4	92.4	60.9
Recession + 15M	Jul-81	3	-5.3	-5.7	3.9	36.7	81.3	67.1
Recession + 18M	Oct-81	-	-	-	-	-	-	-

From partial inversion to market top
- Length: 18 months
- Upside (REITs): +35%
- Initial recession drawdown (REITs): -16%

Source: Bloomberg

Oil Crisis III – July 1981

- Yield curve inverted again by the end of 1980, followed by another/recontinuation of the previous recession in 1981
- CPI was still in the low-teens during this time, forcing the Fed to once again raise policy rate to mid-teens (and briefly 20%)
- Crude peaked in 1981 at high $30s and went back to $15 by the mid of the decade
- Policy rate went on a 40-year downward trend (until today)
- Why its like today / why its not like today: continuation of the 1980 recession

		Gap	To Next Milestone			Cumulative		
Oil Crisis III	Month	(Mth)	Equities (%)	REITs (%)	NCREIF (%)	Equities (%)	REITS (%)	NCREIF (%)
Partial Inversion	Aug-80	1	2.9	-2.2	1.2	2.9	-2.2	1.2
Full Inversion	Sep-80	2	12.7	11.5	3.5	16.0	9.0	4.8
Market Top	Nov-80	6	-3.1	3.2	7.4	12.3	12.5	12.6
End of QT	May-81	1	-0.6	8.6	1.4	11.6	22.2	14.1
QE	Jun-81	1	0.2	1.0	1.1	11.9	23.4	15.4
Recession	Jul-81	3	-5.3	-5.7	5.9	5.9	16.3	19.8
Recession + 3M	Oct-81	3	0.3	2.0	6.2	6.2	18.7	24.9
Recession + 6M	Jan-82	3	-1.6	0.4	4.5	4.5	19.2	27.9
Recession + 9M	Apr-82	3	-7.2	-6.8	-3.0	-3.0	11.0	30.2
Recession + 12M	Jul-82	3	24.9	23.1	21.1	21.1	36.7	32.9
Recession + 15M	Oct-82	3	9.7	10.3	32.9	32.9	50.9	36.3
Recession + 18M	Jan-83	-	-	-	-	-	-	-

From partial inversion to market top
- Length: 3 months
- Upside (REITs): +9%
- Initial recession drawdown (REITs): -6%

Source: Bloomberg

Early 90s Recession – July 1990

- Yield curve inverted in late 1988 and early 1989, ahead of the recession in 1990
- The Fed initially did not respond to the partial inversion but did respond to the full inversion, which could have delayed the recession or made it milder. Inflation was around 4-5%, not too high and not too low for those who still remember the 70s and 80s
- No specific catalyst. 1990 marked the end of what was the longest peacetime economic expansion in U.S. history, which lead to more restrictive monetary policy and an ordinary adjustment in the business cycle
- Why its like today: job growth and employment rate are strong, no obvious black-swan risk other than CPI
- Why its not like today: the Fed did not need to worry about inflation or strike a delicate balance between inflation and full unemployment

		Gap	To Next Milestone			Cumulative		
Early 90s	Month	(Mth)	Equities (%)	REITs (%)	NCREIF (%)	Equities (%)	REITS (%)	NCREIF (%)
Partial Inversion	Nov-88	2	9.1	2.8	1.6	9.1	2.8	1.6
Full Inversion	Jan-89	1	-2.5	-1.2	0.6	6.3	1.6	2.2
End of QT	Feb-89	4	11.0	4.6	2.6	18.0	6.3	4.8
QE	Jun-89	11	17.1	-11.2	6.2	38.3	-5.7	11.2
Market Top	May-90	2	-1.0	-1.4	0.8	36.9	-7.0	12.1
Recession	Jul-90	3	-14.3	-21.5	0.1	17.3	-27.0	12.2
Recession + 3M	Oct-90	3	13.6	16.3	-0.9	33.2	-15.1	11.1
Recession + 6M	Jan-91	3	9.8	13.3	0.0	46.2	-3.8	11.2
Recession + 9M	Apr-91	3	4.4	-3.3	-0.1	52.7	-7.0	11.1
Recession + 12M	Jul-91	3	2.0	-1.4	-2.0	55.7	-8.3	8.8
Recession + 15M	Oct-91	3	5.5	9.3	-3.7	64.4	0.3	4.9
Recession + 18M	Jan-92	-	-	-	-	-	-	-

From partial inversion to market top
- Length: 18 months
- Upside (REITs): -6%
- Initial recession drawdown (REITs): -23%

Source: Bloomberg

Dot Com – March 2001

- Yield curve partially inverted in 1999, but the Fed did not respond in a timely manner, even though inflation was under control (2-3%)
- NASDAQ crashed in March 2000 and the Fed ended QT. Yield curve soon fully inverted and the Fed started QE in 2001, just before the start of the recession
- Catalyst was a valuation bubble on the emerging Tech sector
- **Why its like today:** NASDAQ was too expensive in hindsight and led the market correction this year
- **Why its not like today:** big Techs today trade at a much lower multiple to begin with, are highly profitable, and have much stronger balance sheet with excess cash

		Gap	To Next Milestone			Cumulative		
Dot Com	Month	(Mth)	Equities (%)	REITs (%)	NCREIF (%)	Equities (%)	REITS (%)	NCREIF (%)
Partial Inversion	May-99	10	16.3	-10.7	8.9	16.3	-10.7	8.9
Market Top	Mar-00	2	-5.1	7.7	2.0	10.4	-3.9	11.1
End of QT	May-00	2	0.9	12.8	2.0	11.4	8.4	13.3
Full Inversion	Jul-00	6	-3.3	7.4	6.0	7.7	16.5	20.1
QE	Jan-01	2	-15.5	-1.9	1.6	-8.9	14.3	22.0
Recession	Mar-01	3	6.0	11.7	2.5	-3.5	27.7	25.0
Recession + 3M	Jun-01	3	-15.3	-6.1	1.6	-18.3	19.9	26.9
Recession + 6M	Sep-01	3	10.5	5.5	0.7	-9.7	26.5	27.8
Recession + 9M	Dec-01	3	0.4	8.7	1.5	-9.4	37.5	29.7
Recession + 12M	Mar-02	3	-13.9	3.4	1.6	-22.0	42.3	31.8
Recession + 15M	Jun-02	3	-18.0	-10.2	1.8	-36.0	27.8	34.1
Recession + 18M	Sep-02	-	-	-	-	-	-	-

From partial inversion to market top
- Length: 10 months
- Upside (REITs): -11%
- Initial recession drawdown (REITs): NA

Source: Bloomberg

Great Financial Crisis – December 2007

- Yield curve partially inverted as early as 2005. The Fed waited a bit and eventually ended QT 6 months later
- Full inversion happened in 2006. The Fed waited for another 14 months before starting QE. One reason for the wait could be slightly elevated inflation (3-4%). Market topped by the end of 2007 and recession started
- Catalysts were housing bubble and subprime lending, which could have been a normal recession until the fall of Lehman, bailout of others, and effectively a bank-run on the shadow banking system that dried up liquidity
- Why its like today: liquidity is being systematically removed from the financial system. Rise of property prices made people feel richer and increased disposable income, which helped to drive demand higher as COVID restrictions were lifted
- Why its not like today: liquidity is being pulled out of the system in an orderly manner after introducing excess stimulus. Household debt as % of GDP is still high today but has been in a steady decline since the GFC. Banks have much better balance sheets.

		Gap	To Next Milestone			Cumulative		
GFC	Month	(Mth)	Equities (%)	REITs (%)	NCREIF (%)	Equities (%)	REITS (%)	NCREIF (%)
Partial Inversion	Dec-05	6	2.8	13.5	7.5	2.8	13.5	7.5
End of QT	Jun-06	1	0.6	3.6	1.2	3.4	17.5	8.8
Full Inversion	Jul-06	14	20.6	12.7	18.4	24.7	32.5	28.8
QE	Sep-07	1	1.6	1.4	1.1	26.7	34.4	30.2
Market Top	Oct-07	2	-4.8	-14.6	2.1	20.6	14.7	32.9
Recession	Dec-07	3	-9.7	1.6	1.6	8.9	16.5	35.0
Recession + 3M	Mar-08	3	-2.3	-4.8	0.6	6.4	10.9	35.8
Recession + 6M	Jun-08	3	-8.3	4.5	-0.2	-2.4	15.9	35.5
Recession + 9M	Sep-08	3	-22.9	-39.1	-8.5	-24.8	-29.4	24.0
Recession + 12M	Dec-08	3	-10.3	-35.6	-7.5	-32.5	-54.5	14.7
Recession + 15M	Mar-09	3	15.4	31.0	-5.3	-22.2	-40.4	8.6
Recession + 18M	Jun-09	-	-	-	-	-	-	-

From partial inversion to market top
- **Length: 22 months**
- **Upside (REITs): +34%**
- **Initial recession drawdown (REITs): -15%**

Source: Bloomberg

COVID Recession – February 2020

- Yield curve both partially and fully inverted in mid-2019
- Since there was on target in 2018 (~2%), the Fed ended QT even before curve inversion and was able to re-started QE when the curve inverted
- Without knowing anything about the upcoming pandemic, all the signs of a recession were already in place in 2019. Proactive response from the Fed might have kicked the can down the road until COVID happened

		Gap	To Next Milestone			Cumulative		
COVID	Month	(Mth)	Equities (%)	REITs (%)	NCREIF (%)	Equities (%)	REITS (%)	NCREIF (%)
End of QT	Dec-18	3	13.2	15.4	1.8	13.2	15.4	1.8
Partial Inversion	Mar-19	2	-2.3	-0.4	1.0	10.6	15.0	2.8
Full Inversion	May-19	2	8.5	2.7	1.0	19.9	18.1	3.8
QE	Jul-19	6	9.0	6.1	2.7	30.8	25.2	6.6
Market Top	Jan-20	1	-8.2	-8.3	0.2	20.0	14.9	6.9
Recession	Feb-20	3	5.2	-15.4	-0.4	26.3	-2.8	6.4
Recession + 3M	May-20	3	14.8	7.4	0.2	45.0	4.4	6.6
Recession + 6M	Aug-20	3	4.5	6.5	1.0	51.5	11.2	7.7
Recession + 9M	Nov-20	3	5.6	8.4	1.5	60.0	20.5	9.3
Recession + 12M	Feb-21	3	10.4	13.4	2.9	76.6	36.6	12.5
Recession + 15M	May-21	3	7.8	8.8	4.6	90.3	48.6	17.7
Recession + 18M	Aug-21	-	-	-	-	-	-	-

From partial inversion to market top
- Length: 10 months
- Upside (REITs): +10%
- Initial recession drawdown (REITs): -24%

Source: Bloomberg

THANK YOU

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