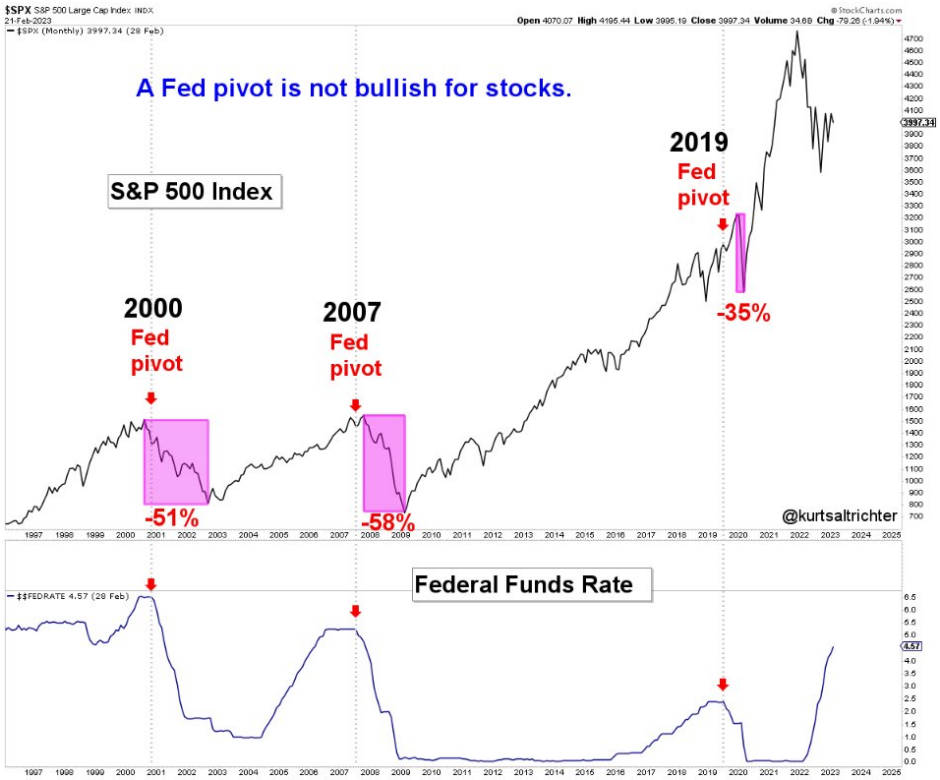
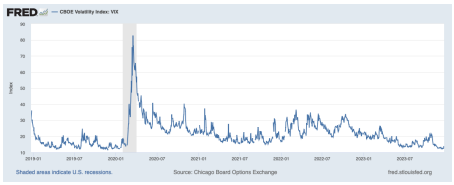
It's essential to recognise that market reactions to Fed pivots are context-dependent, and various factors contribute to the overall sentiment. Investors should consider a holistic view of economic indicators, global conditions, and market dynamics to form a well-informed assessment of the potential impact of a Fed pivot on stock markets




# Economic Outlook 2024:

## Assessing the Possibility of a US Economic Recession, and Bureau of Economics Data Forging

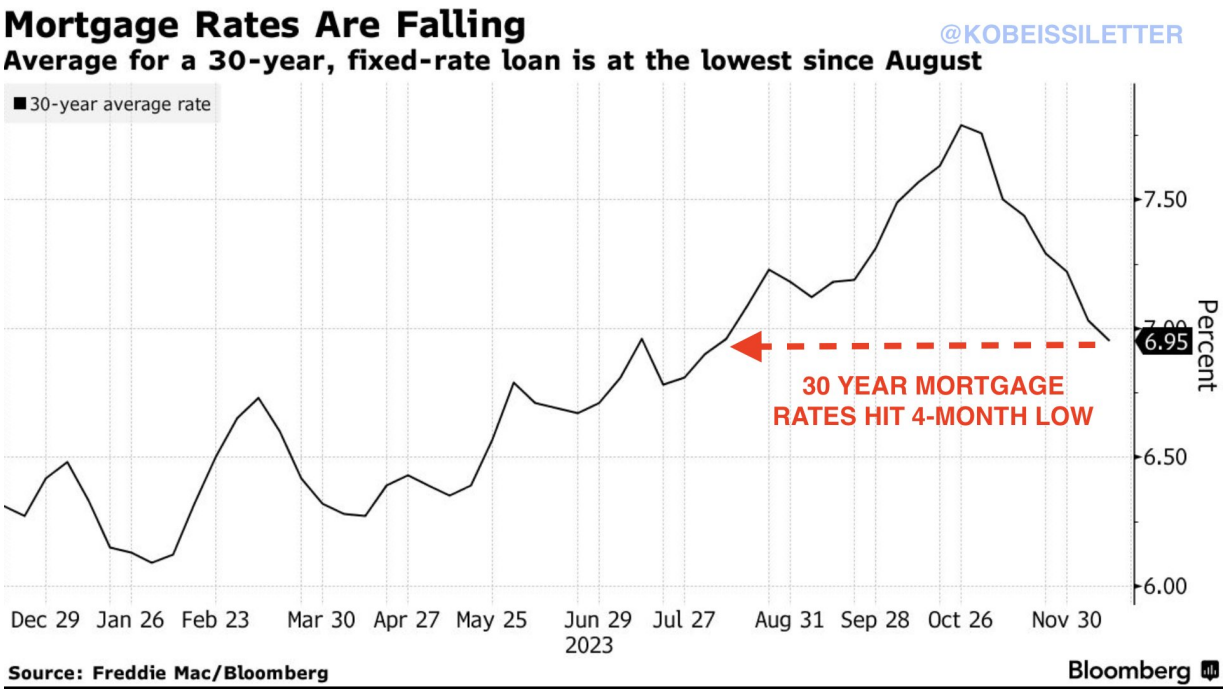


The US economy has experienced fluctuations in recent years, influenced by various factors such as global trade tensions, geopolitical uncertainties, and the impact of the COVID-19 pandemic. As of the last available data, key economic indicators, including GDP growth, unemployment rates, and inflation, indicate a mixed picture. The ongoing recovery from the pandemic has contributed to economic growth, but certain challenges persist.

## Current Economic Conditions

The latest data shows US inflation YOY rate fell from 3.2% to 3.1% in Nov/2023, lowest reading in almost half year. The largest contributors are gas (-10.4%) and used cars and trucks (-3.8%), and main positive contributors are transportations (10.1%) and medical care (5%). Other components are basically in line with projections. High inflation impact the economic activities and life affordability, especially when the rate greater than Fed's target 2%. This normally leads to Fed's policy to be higher for longer. Unemployment rate follows a similar track that started picking up in a same period. Although the unemployment rate from November fell behind forecasts to 3.7%, the 3.9% of October opened door for recession. The Sahm Rule looks at a three-month rolling average of the unemployment rate. If the current average is at least 0.5 percentage points higher than the average at its lowest point in the preceding year, it could signal the start of a recession.

It is also important to note the market reaction to the economic data and Fed interest rate decisions.




Since recent Fed pivot and new plot indicating 6 times rate cuts in 2024, market has priced in full cuts already. The 10 year treasury yield fell more than 100 bps since peaked last month, 30 year mortgage rates recent hit 4-month low at below 7%. This indicates how the market digests, in general, realistic economy under current market speculation does not matter much. Powell speech would simply manipulate the market more than any other factors.

A Fed pivot is not bullish for stock market. The historical data shows that Fed pivot only peaks the market and crash it following first rate cut in that cycle. For other major economies around the world, e.g. UK, Germany, France, China are de facto recession. Under an inevitable recession context, our target is to trade recession, profit from it in a low cost way.

# Recession Market Investment Thesis

Several factors contribute to the possibility of an economic recession, including:

Global Economic Trends: The interconnected nature of the global economy means that external factors, such as a global economic downturn or trade tensions, can impact the US economy.

Interest Rates and Monetary Policy: Changes in interest rates by the Federal Reserve can influence consumer spending, investment, and overall economic activity.

Inflation: Persistent inflationary pressures can erode consumer purchasing power, leading to a slowdown in economic activity.

Geopolitical Risks: Political instability or conflicts can disrupt global supply chains and impact investor confidence, affecting economic growth.

Recession, or at least economy slowdown, will certainly affect Fed's policy regarding interest rate decisions. In the past 2 years, the Fed moved historically fast to tame inflation, adding 550 bps under 20 months.

Regarding the Fed's rate cuts, historical statistics show that it is normally rapid and aim to be done in a year or two. Our data states the annually weighted Fed cuts are 278.34 bps, while banks predict only 150 cuts over next year. The real progress could be much quicker and more fundamental than the general market projection.

Fed's Historical Rate Cuts

| | Length | Cuts (bps) |
|---|---|---|
| **09/01/1991** | | |
| **04/09/1992** | | |
| | 604d | 375 |
| **03/01/2001** | | |
| **06/11/2002** | | |
| | 672d | 475 |
| **10/09/2007** | | |
| **16/12/2008** | | |
| | 463d | 450 |
| **31/07/2019** | | |
| **15/03/2020** | | |
| | 228d | 200 |
| | | |
| **Average per year cut:** | 278.34 | |

It could be interesting and volatile investing when the rate cutting cycle is underway. Although the rates cutting expectation benefits risky assets, the big transition typically indicates fundamental economy changes.

Market conditions and things are more complex this year. Although mostly due to lags effect and incompetent of statistic departments, US shows resilient signs of a strong economy. Besides, 10 year and 2 year treasury yield are still inverted.

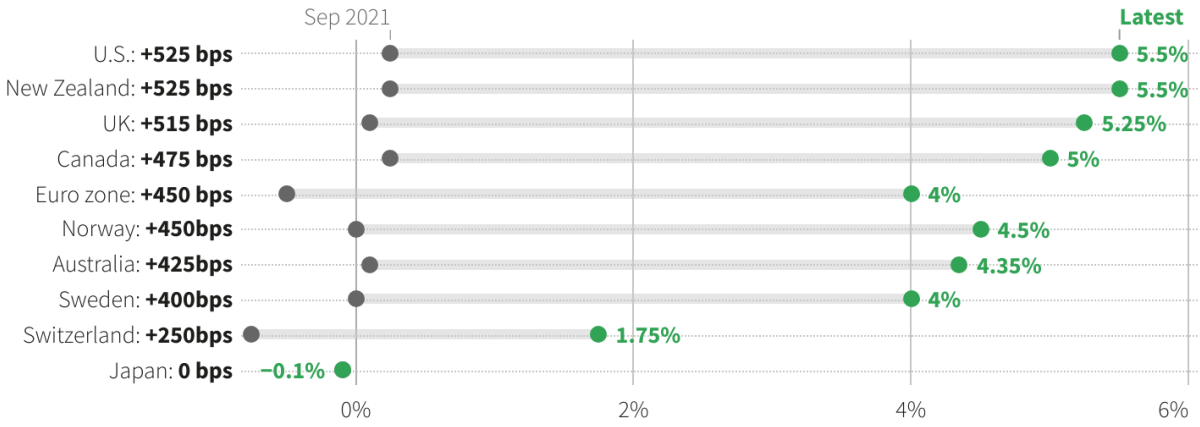
Until the yield enters a full bull steepening stage, it is difficult to predict the exact time for a transition from over tightening to full QE. The average time until recession is 10 months from its deepest inversion, which roughly indicates February/ 2024 (Jun/2023 + 10m).

# The Catalyst and Risks

Now, let’s check the major central banks’ policy and signs when the rate transition could happen. After a lengthy and historic monetary tightening campaign to battle high inflation, major central banks are keeping high interest rates steady for now. Street now believes the current rates are terminal and bond markets fully priced-in the next year cuts already.

**The race to raise rates slows down**

Change in policy rates by central banks overseeing the 10 most traded currencies.




Note: As of December 14, 2023.
Source: LSEG Datastream | Reuters, Dec. 14, 2023 | By Kripa Jayaram

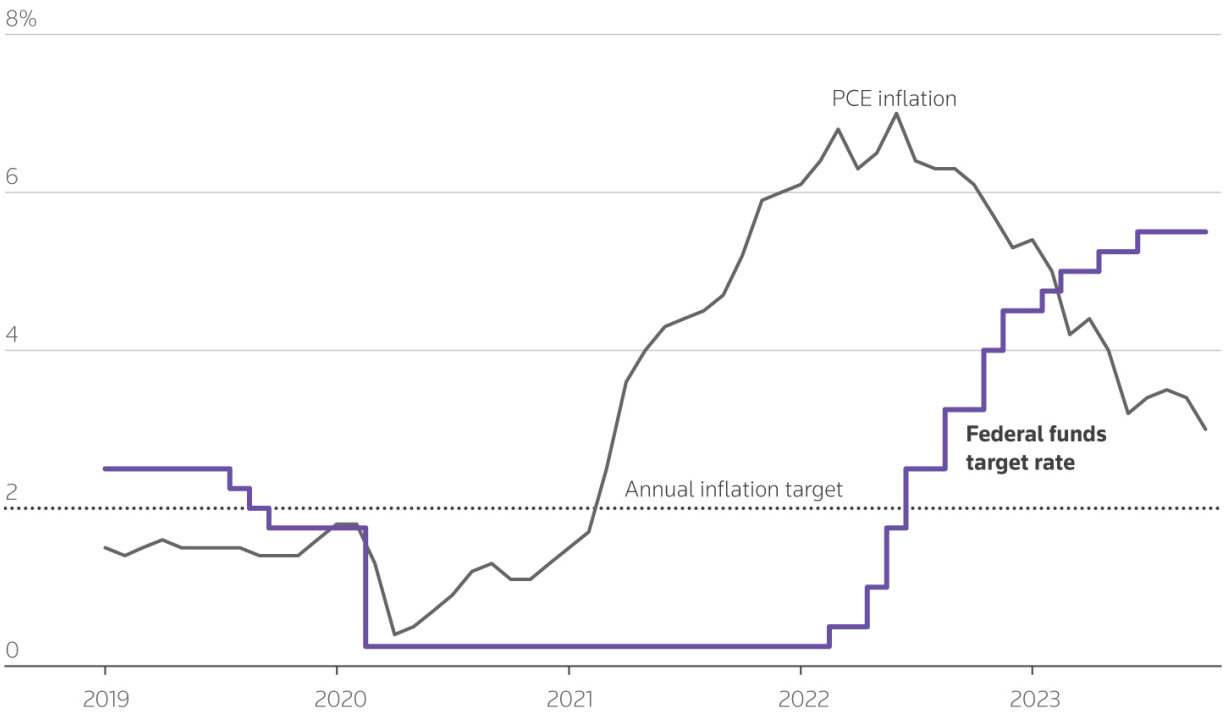
Here’s the central banks rates raising race above. Majority has increased rates over 400 bps, while Japan is the only one held dove stance.

Fed had led a fresh rates cutting speculation this time. While the release projects 75 bps cuts over 2024, the market has already priced-in 150 bps. Inflation on personal consumption expenditures (PCE) index slowed to 3% year-on-year in October, but remains above the Fed's 2% inflation goal.

Powell noted inflation was easing faster than expected and rate cuts were coming "into view", all but confirming a period of aggressive monetary tightening by the world's most influential central bank is over.

**Inflation gauge on watch after policy rates kept steady**

Inflation on personal consumption expenditures (PCE) index slowed to 3% year-on-year in October, but remains above the Fed's 2% inflation goal.




Note: The federal funds target rate in the chart is the high-end of the target range.

Source: LSEG Datastream

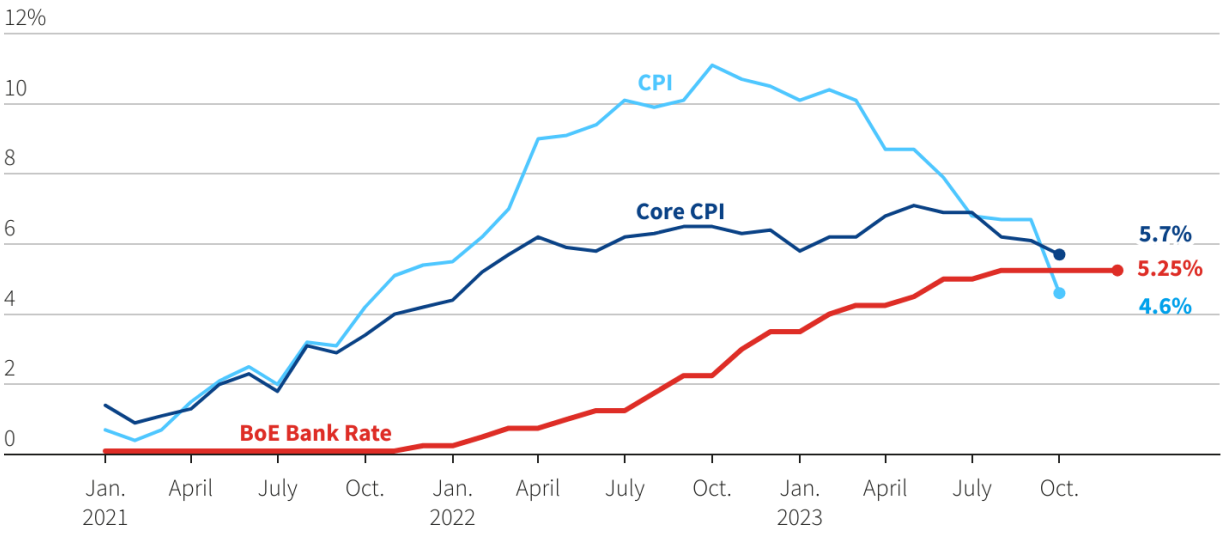
Prinz Magtulis • Dec. 13, 2023 | REUTERS

The BoE attempted pushing back against market rate-cut speculation on their release, leaving its key rate at a 15-year high of 5.25% and said rates would need to stay high for an "extended period." However, the market did their job and reflecting on the gilt that a more 100 bps cut already done.

While UK has their own problems regarding inflation and growth, how long they can stronghold a Fed pivot becomes questionable. Still, long as the gilt rate stays above the CPI, inflation eventually will reach BOE's target.

## BoE says rates will stay high

The Bank of England kept Bank Rate unchanged at 5.25% and said interest rates needed to stay high for 'an extended period'.




Note: Inflation data through October 2023.
Source: LSEG Datastream | Reuters, Dec. 14, 2023 | By Kripa Jayaram

ECB of course follows the pause party. After raising its policy rate to the highest since 1999, the ECB has pressed paused at 4% as inflation has fallen consistently in the last year but remains well above its 2% target.

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**ECB presses pause**

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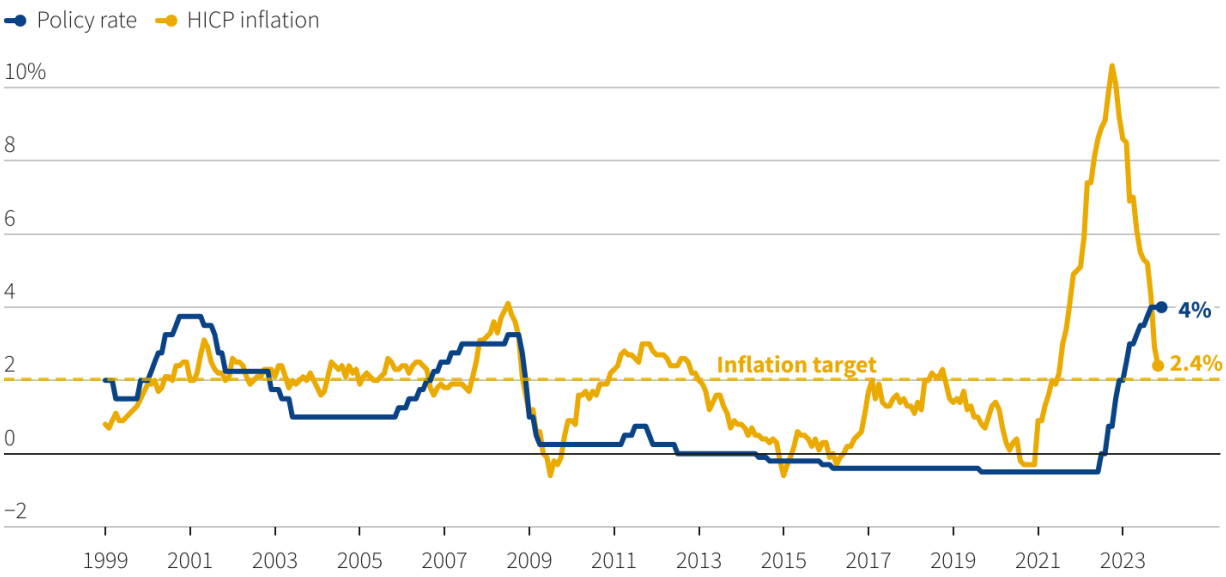
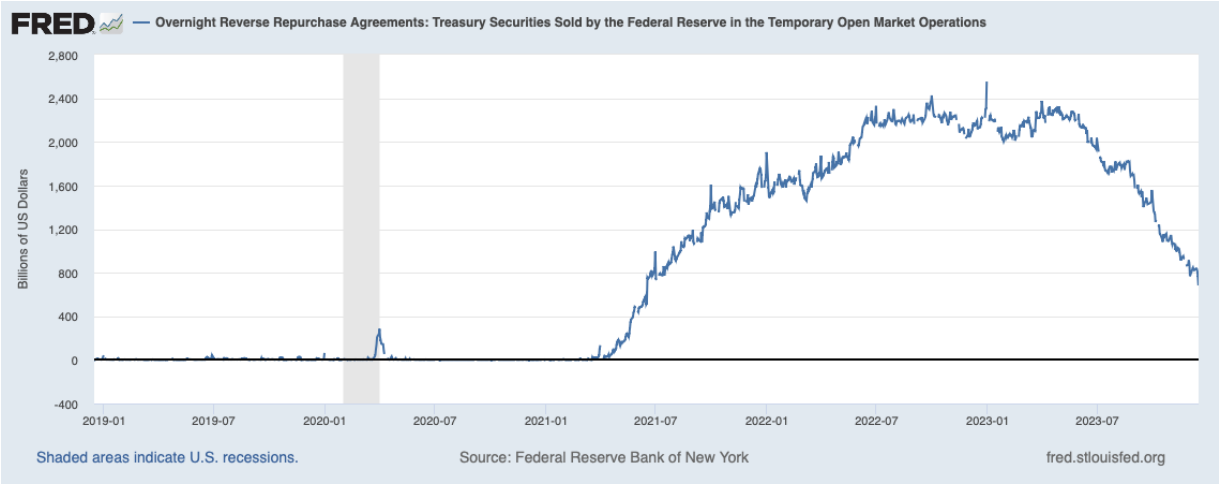



Note: Inflation data through November 2023.
Source: LSEG Datastream | Reuters, Dec. 14, 2023 | By Kripa Jayaram

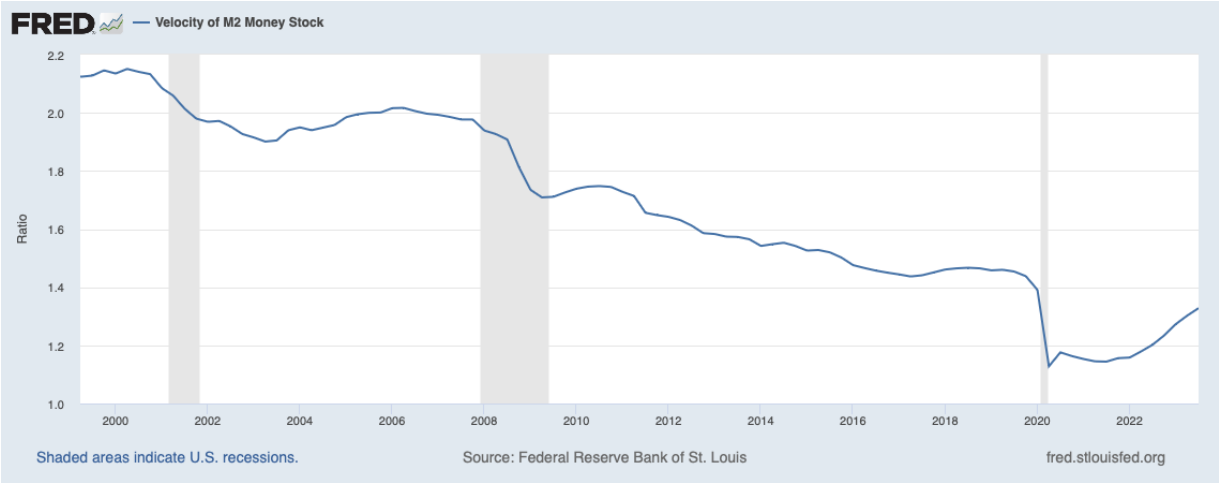
EU has its rate at historical high and major countries e.g. Germany, France are developing a deflation trend, so their pausing does make a sense.

One major factor our team believes fundamental for consumer price is the money supply, as well be the important sign which cycle we could enter (tightening or easing). Fisher’s equation expresses the quantitative relationship between national income level, price level, and money supply. Fisher's equation is: MV=PY, where M is the quantity of money, V is the velocity of money circulation, P is the price level, and Y is output. The Fisher equation states that the level of transactions caused by a certain level of nominal income determines people's demand for money.

Fisher believed that assuming that V (velocity of money, that is, the velocity of circulation of one unit of nominal money balance) remains unchanged and Y remains unchanged, changes in the money supply M will be fully reflected in changes in price P. Under the contemporary financial system, right hand side equation is GDP, and left is monetary/fiscal/ government policy with its efficiency.




RRPON (Overnight Reverse Repurchase Agreements) represents the amount of extra cash on the market, we treat it as the M in Fisher's. The current liquidity level is about same as mid 2021, with the current pace it will drop to the pre-pandemic level by March/2024.



The money supply velocity (V in Fisher's) has tumbled since 2000 dot crash. It is also a clear trend that theres a sudden pull during every recession. Once the current velocity upper trend snapped, we can expect recession coming in as quick as weeks.

Trading under a recession poses several risks due to the challenging economic environment. Investors and traders should be aware of these risks to make informed decisions and manage their portfolios effectively. Timing, volatility, liquidity drying up and black swan event, etc. can all contribute to a large withdraw from your capital. Only by quantifying risks we can manage it, which will be discussed next chapter.

# Quant

Our model consists of two parts, combined with a binomial tree GDP projection and mean deviations from other economic data such as unemployment rate.

The binomial tree model is a useful tool for predicting GDP growth by considering multiple possible future scenarios. By assigning probabilities to various economic outcomes, decision-makers can make more informed predictions and assess the associated risks. This model involves constructing a tree structure that represents different economic states and their respective probabilities, allowing for a comprehensive analysis of potential GDP trajectories.

The Z-score, commonly used in statistics, measures how far a particular data point is from the mean of a group of data. In the context of predicting the unemployment rate, the Z-score can be applied to historical unemployment data to identify deviations from the mean. This information can then be used to estimate the probability of unemployment rates exceeding a certain threshold, such as 20.4%.

We first ran regression tests on GDP with coefficients of unemployment and retail data, based on the over 30 years data getting strong supportive results here:

GDP_regression

| | Coefficients | | | P-value |
|---|---|---|---|---|
| Intercept | 0.021370809 | | | 2.2E-21 |
| UNEMPLOY | -0.181335815 | | | 3.71E-07 |
| RETAIL | 0.213692798 | | | 2.47E-08 |

Then, a z-score variance distance test was conducted, multiple milestones being picked up:

```
dtypes: float64(6), int64(1), object(18)
memory usage: 76.9+ KB
None
u, zscore_u, probability: 4.2 -0.8566540501771595 0.1958180524561245
u, zscore_u, probability: 5.100000000000005 -0.35386436115257863 0.3617202683933596
u, zscore_u, probability: 6.000000000000001 0.14892532787200255 0.5591937223386099
u, zscore_u, probability: 6.900000000000001 0.651715016896583 0.7427074833567247
u, zscore_u, probability: 7.800000000000002 1.1545047059211642 0.875853344822332
u, zscore_u, probability: 8.700000000000001 1.6572943949457446 0.9512700150161667
u, zscore_u, probability: 9.600000000000001 2.1600840839703257 0.9846169195466775
u, zscore_u, probability: 10.500000000000002 2.662873772994907 0.996126176443874
u, zscore_u, probability: 11.400000000000002 3.1656634620194875 0.9992263515157793
u, zscore_u, probability: 12.300000000000002 3.668453151044068 0.9998779888015957
u, zscore_u, probability: 13.200000000000003 4.17124284006865 0.9999848528596813
u, zscore_u, probability: 14.100000000000003 4.67403252909323 0.99999852328739
u, zscore_u, probability: 15.000000000000004 5.1768222181178105 0.9999998871514526
u, zscore_u, probability: 15.900000000000004 5.679611907142391 0.9999999932499649
u, zscore_u, probability: 16.800000000000004 6.182401596166972 0.9999999996843316
u, zscore_u, probability: 17.700000000000003 6.685191285191552 0.9999999999884689
u, zscore_u, probability: 18.6 7.187980974216133 0.9999999999996713
u, zscore_u, probability: 19.5 7.690770663240713 0.9999999999999927
u, zscore_u, probability: 20.4 8.193560352265292 0.9999999999999999
```

The result shows us an extreme case that after 20 month the US unemployment rate could reach 20.4% with a +8.19$\sigma$ offset. This case shows a stat almost 100% higher than historical average, any point higher than this is statistically impossible. In fact, the last time US had this much jobless people was 1932, 2 years after the great depression.

Therefore, the model will only reach far as unemployment rate at 20.4%. A binomial tree was then created for modelling final GDP net present value. The risk neutral was used for probability for each node, the binomial tree illustrated as below:


Confident to observe that after reaching 7.8% unemployment rate the possibility it happens dropped dramatically, and only 1% situations it surpluses 10.5%.

```
worst case gdp:  -0.09335999999999989
worst case unemployment:  20.4
Reached final nodes: 4.2
NPV result and gap: 3.852523754299288 0.2718935203272306
Reached final nodes: 3.2
Tree<'NPV -> Jobless: 3.7; GDP: 4.9'>
```

As the conclusive result, the discounted GDP net present value is 3.85%, lower than the published reading 27% (the latest US bureau of economic analysis data was 4.9%). It could represent that statistics methods US bureau of economic analysis uses is outdated and inaccurate, or even worse that they forged/missed/forgot to revise some part of data. It is no doubt their own data contracts each other.

Interestingly, at the possible black swan event when the US unemployment rate passing 20.4% GDP will only contras 0.1%, but with the possibility of data forging, the actual projection could be anywhere from -1.84% to -13%.

# Trading Strategy

Trading during a recession can be challenging, but there are strategies that some investors find profitable in such economic environments. It's important to note that all investments carry risks, and what works in one market condition may not be suitable for another. There are 3 ways our team recommends and believes could be profitable.

1. Dividend Investing:

Focus on stocks with a history of stable dividends. Dividend-paying stocks can provide a source of income, even when capital appreciation is limited. Look for companies with strong balance sheets and sustainable dividend payout ratios.

For subscribers only:

2.

3.