Macro Intelligence Report

April 2023

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INVESTMENT
CONSULTING

Gamma Global Macro Model Highlights

- **The Gamma US Economic Model continues to predict the economy sliding into recession in the second half of 2023.** The forecast of a mild-to-moderate recession assumes that interest rates will peak in the first quarter and then gradually decline beginning late in the year. The big question is how the recent banking crisis will affect Federal Reserve policy and, by implication, money growth. Money growth is already at its weakest since 1932. Further contraction would threaten to turn a mild-to-moderate recession into something much more severe.

- **The S&P 500 and Nasdaq Models remained neutral (in cash) for April**. Despite the Silicon Valley Bank collapse, the S&P 500 and Nasdaq rallied 3.5% and 6.6%, respectively, courtesy of a $366 billion infusion of cash by the Fed to shore up the banking system. Our Composite Liquidity Indicator remains near its lowest level since 1980, however, which along with persistent overvaluation will continue to weigh on equity price.

- **The 30-Year Treasury Model covered its long position and went short (higher yields) for April, joining the 10-Year Treasury Note and Corporate Investment Grade Models which were already short.** Abrupt changes in inflation expectations due to unexpectedly strong growth in January and February and last month's banking crisis have created substantial uncertainty for Fed policy. As a result, the fixed income Models have reversed positions unusually frequently over the last several months.

- **The Gold Model covered its short position and went long again for April**. The Model got caught last month by market concerns that strong economic data for the economy would cause the Fed to raise rates more aggressively. Instead, last month's collapse of Silicon Valley Bank and Signature Bank convinced gold investors that the Fed has reached the end of its tightening cycle.

- **The EUR/USD Model remained long the euro for April. The USD/JPY Model remained long the dollar (short yen).** The European Central Bank (ECB) is still playing catch up to the Fed. Markets now expect European rate to continue to rise even after the Fed is done tightening which is supporting the euro. In Japan, an expected move to raise interest rates by the Bank of Japan (BoJ) has not materialized which has renewed downward pressure on the yen.

I. It's All Fun and Games Until Someone Loses a Bank

Markets have been on a roller coaster ride for the past six weeks starting with the unusually strong employment and consumer spending data for January and February. Those numbers triggered a panicked reaction by the markets that inflation was still way too high. Markets immediately priced in at least three more rate hikes in 2023 including a 50 bps Fed increase in March.

Three weeks later, multiple cracks appeared in the banking system courtesy of the Fed's most extreme tightening in 40 years. In rapid succession, Silicon Valley Bank and Signature Bank failed, First Republic Bank was bailed out with $30 billion in deposits from several money-center banks, and Credit Suisse was bought by UBS aided by a $54 billion bailout package from the Swiss National Bank. Interestingly, after all this we are left almost exactly in the same position that we had forecasted in December's Macro Intelligence Report.

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To get some perspective on where we go from here, let's look at why Silicon Valley Bank (SVB) and numerous other regional banks were (are) so vulnerable to the Fed's rate hikes. The run on SVB was triggered by depositor concerns over losses the bank had suffered due to rising interest rates. Which raises the question: where did these losses come from?

As we've noted in previous Reports, narrow money supply soared 80% between March 2020 and December 2021 as a consequence of the government's response to the pandemic. All that money had to go somewhere. Banks like Silicon Valley Bank were flooded with deposits as venture capitalists poured money into startups, creating new clients for the bank. SVB deposits rose 3x from $62 bln at the end of 2019 to $189 bln at the end of 2021. In response to the flood of cash, SVB bought billions of dollars' worth of U.S. Treasuries and over $80 bln in mortgage-backed securities (MBS) with an average duration of about 10 years and a yield of 1.56%. These would normally be considered safe assets because the default risk is virtually zero if they are held to maturity.

If SVB bought, for example, 5-year Treasury notes at a price of $1,000 with a 2% coupon, the bank would have received a semi-annual payment of $10 per $1,000 for five years. At the end of five years, the bank would have gotten back its $1,000 principal. What SVB did not take into account (or hedge) was the 4.50 percent increase in interest rates since the end of 2021.

Potential problems arise if the bank has to sell the notes before they mature. If interest rates rise, the price of existing notes has to fall (remember that price and yield move inversely) in order for the old notes to have a yield that is competitive with the new, higher-yielding notes. This does not necessarily mean that the bank actually loses money on those notes. If the bank holds the notes until maturity, they will pay off exactly as the bank expected when they purchased them.

Banks are allowed to declare that the notes they buy are going to be "held-to-maturity," which means they do not have to mark them to market prices (i.e., value them at their prevailing liquidation value) and can go on reporting them as being worth their face value on their balance sheet and for the purposes of regulatory capital.

The rules don't let banks entirely hide these mark-to-market losses. In their financial statements banks are required to explain the difference between the market value of their note holdings and the value listed on their balance sheet.

Moreover, if a bank ever sells any of the notes that it has declared as "held-to-maturity," all of the rest of its holdings get disqualified from this treatment. That means they all have to be marked to the market value, potentially triggering a huge accounting loss. To avoid doing this, banks also hold notes that are labeled as "available for sale" as a cushion. These can be sold without disqualifying other notes from being treated as held-to-maturity, but they must be marked to market.

Even the unrealized losses on those available-for-sale notes do not hurt a bank's net income. They get tracked under a balance sheet line item called "accumulated other comprehensive income." It's only when a note is actually sold at a loss that it hits the bank's income statement. Thus, none of this was a problem as long as SVB maintained their deposits, since these securities would eventually pay out more than they cost.

Several days before it collapsed, SVB disclosed it had sold $21 bln of their "available for sale" securities at a $1.8 billion after-tax loss and would, on the (dubious) advice of their investment bank, seek to raise $2.25 billion in new capital by selling common and preferred stock. That effectively waved a red flag in front of a bull.

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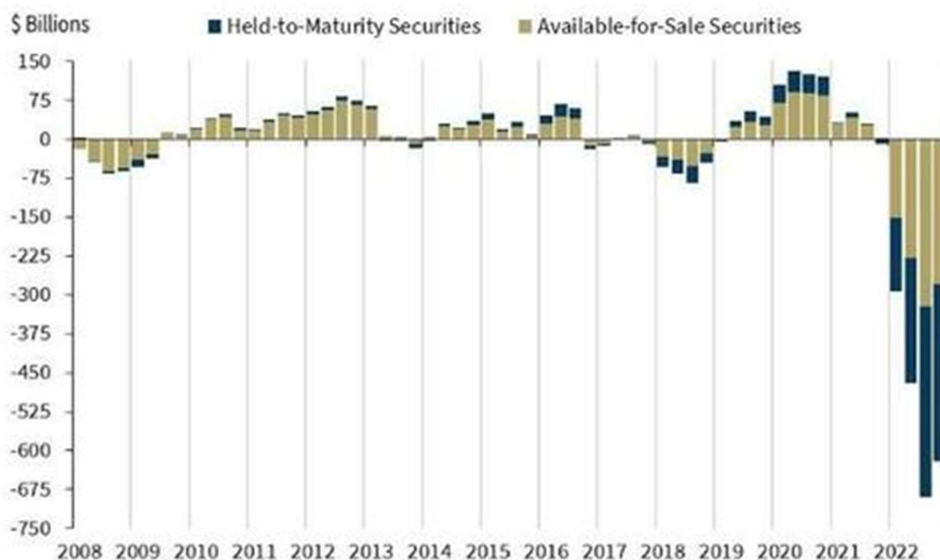
The price of the bank's shares plummeted by 60 percent. Investors and customers quickly realized that SVB had $17 billion of unrealized losses. Spooked customers began pulling deposits, attempting to withdraw as much as $42 billion in a single day. The rest is history.

The FDIC responded by extending its $250,000 limit on insured deposits to effectively cover all the deposits at the now defunct SVB and Signature banks. The action was intended to quell fears of a more widespread run on banks, especially at many regional banks that were (are) potentially in the same situation as SVB. Problem solved.

Or is it? SVB failed because it faced a liquidity squeeze. The bank could only satisfy withdrawals (short term liabilities) by liquidating long-term assets. The resulting losses ate through the bank's capital, making it insolvent. Silicon Valley Bank was (is) not alone in sitting on a mountain of unrealized losses, however. The Federal Deposit Insurance Corporation (FDIC) revealed in February that across the U.S. banking system, unrealized losses on available-for-sale and held-to-maturity securities totaled $620 billion as of December 31 (Chart 1). A year earlier, before the Fed began hiking rates, unrealized losses were just $8 billion.

CHART 1



Source: FDIC.
Note: Insured Call Report filers only.

These losses, when subtracted from regulatory capital, effectively reduce the capital cushion for many banks, including some of the largest money-center banks, by as much as 80%. That dramatically reduces the cushion that these banks have against operating losses or bank runs. Plus, even though many banks are sitting on safe (from a return-of-principal perspective) "held-to-maturity" assets, many of these assets are being funded at a net loss. Because of the current inverted yield curve, many banks' marginal cost of funds, the Fed Funds rate (currently at 4.75 percent), is higher than the return on some of their assets. These losses potentially eat even further into banks' capital making them even more vulnerable to economic and liquidity shocks.

Add to that one more potential problem. U.S. banks currently have about $22 trillion in deposits. The FDIC fund available for backstopping deposits is less than $130 billion – less than 0.6% of all deposits.

Even at those banks with the highest proportion of FDIC-insured accounts, only about 42% of deposits are covered. The prospect of extending FDIC coverage to all deposits means the FDIC has nowhere near the funds it needs to cover potential depositor losses. In normal times, the chance of a wholesale run on banks would be very small. At the moment, however, banks are sitting on record large unrealized losses. And that doesn't take into account that delinquencies and defaults on loans may begin to increase.

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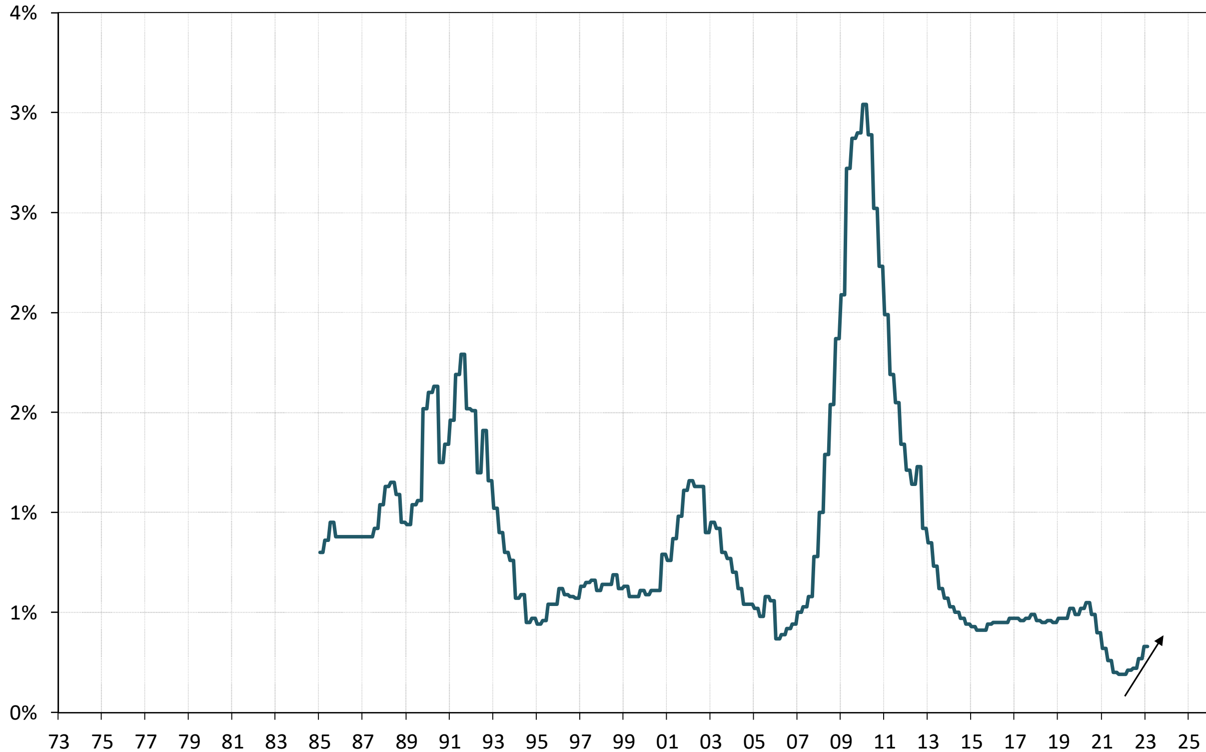
Bank loan delinquencies and defaults are still near record lows largely because of the Covid stimulus and near record low unemployment. The Gamma Economic Model continues to predict the beginning of a moderate recession later this year. As the economy slows, expect nonperforming loans to have an increased impact on



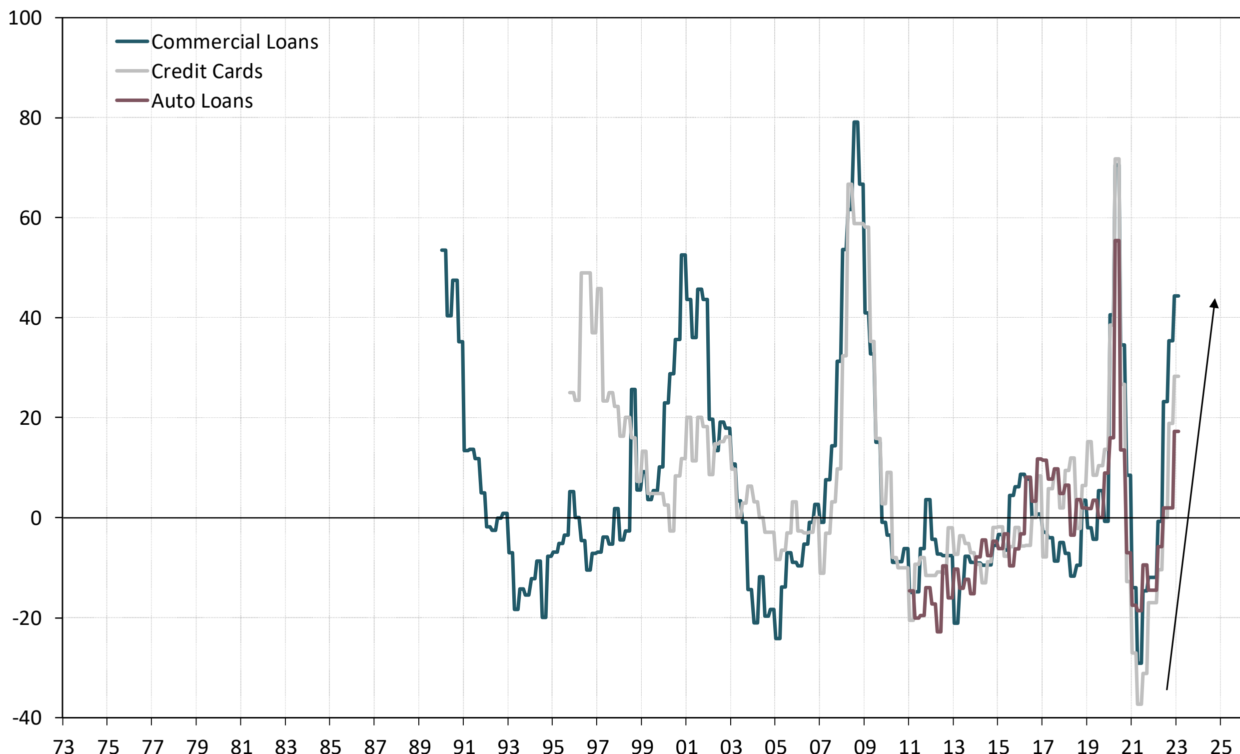


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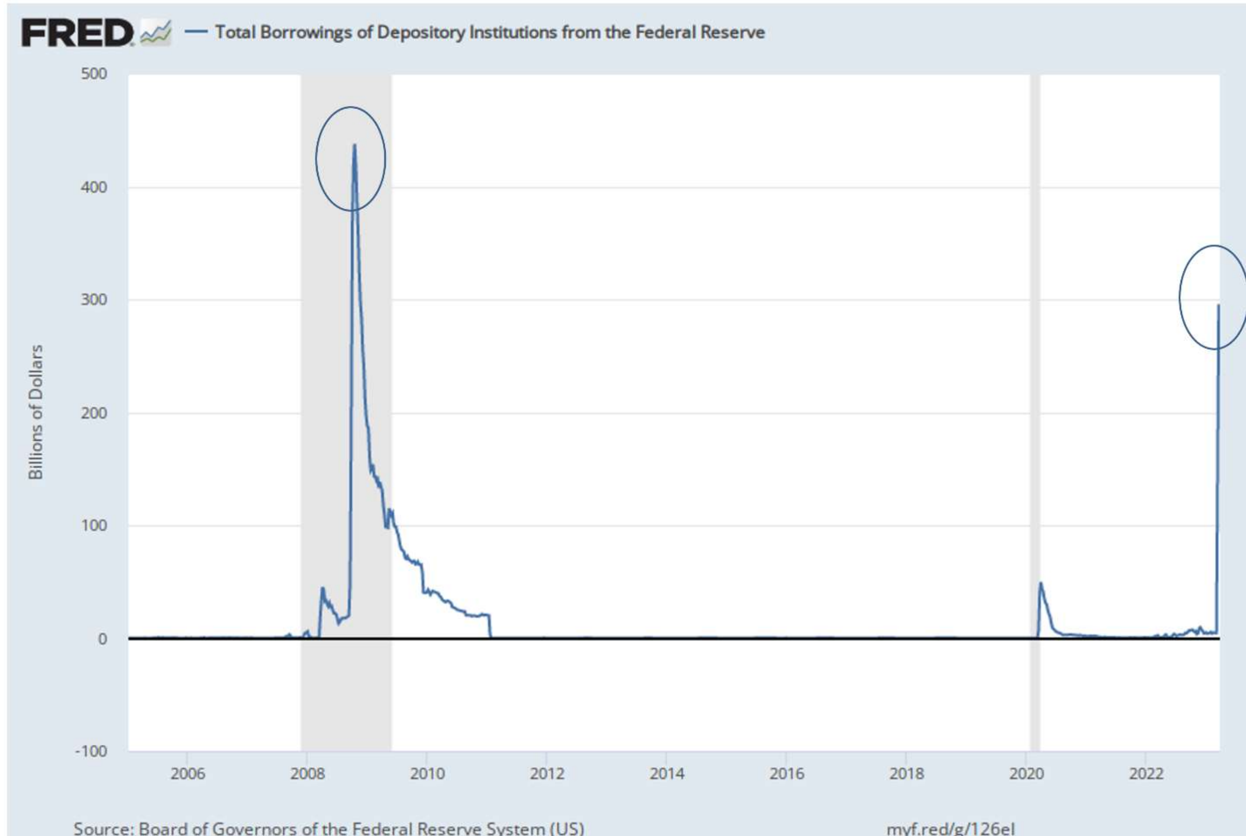
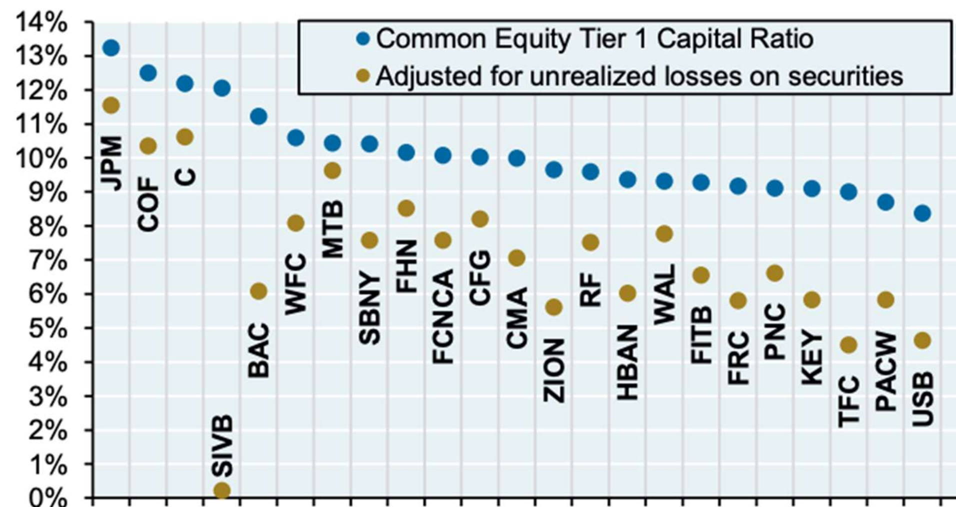
CHART 4



bank earnings. Charge-off rates on loans have risen steadily since the beginning of 2022 (Chart 2) albeit from very low levels. Banks have also been aggressively increasing their lending standards across the board (Chart 3). Credit quality has historically continued to deteriorate through a recession until economic growth has begun to recover. Unless interest rates begin to decline and the yield curve steepens (short term rates fall more than long term rates), banks may be faced with a triple whammy of 1) large unrealized losses on their investment portfolios that 2) are being funded at a loss at the same time that 3) delinquencies and defaults are increasing.

Concern that SVB's problems could spread more widely has receded in recent days based on the performance of bank stocks. **This is despite a surge in emergency borrowing from the Federal Reserve's discount window to its highest level since the 2008 financial crisis (Chart 4)**. That doesn't mean that the problems have gone away. The regulatory authorities and the Federal Reserve are still faced with:

CHART 4a



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1) Some banks whose capital is perilously close to being impaired (Chart 4a),
2) Banks that are fundamentally sound but could face liquidity issues if unrealized losses on their investment portfolios are realized,
3) Banks that are fundamentally sound now but could be adversely impacted by an increase in nonperforming loans,
4) All while trying to bring inflation back to its 2% long-term target without triggering a major recession.

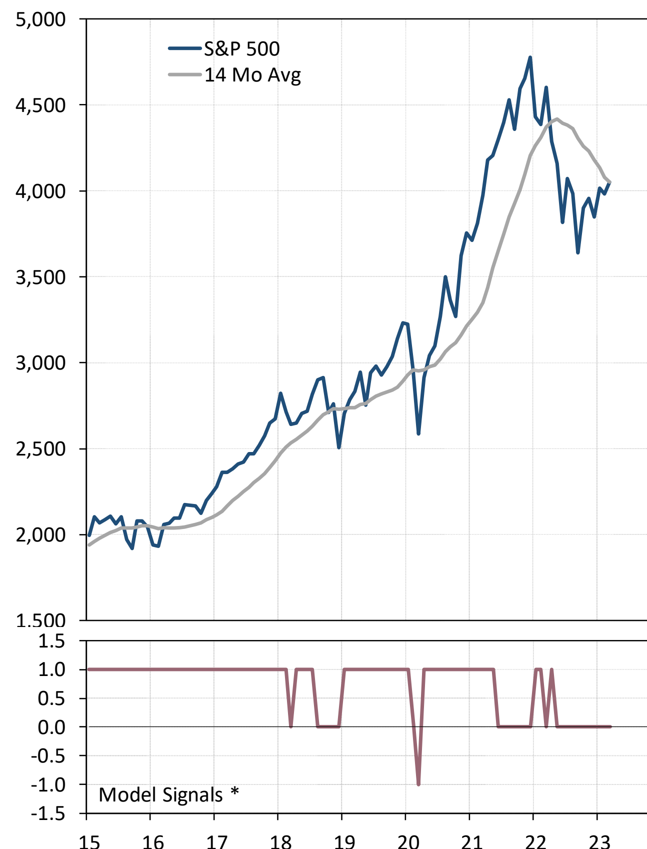
The Federal Reserve is walking through a minefield of its own making. Its primary long-term goal is to return the inflation rate to its 2% target rate. The problem is how to reach that goal without triggering additional bank insolvencies or bank runs while also maintaining its inflation-fighting credibility. Ignoring the inflation rate is not an option. That that would risk an even more severe crisis down the road. The short-term solution to the bank problem (i.e., supporting banks through additional liquidity), however, is diametrically opposed to the Fed's inflation mandate. **It is quite possibly that there is no path forward that doesn't lead to a severe recession, additional bank failures, or a resurgence of inflation.** Keep in mind that there is no "master plan" the Fed is following. The Fed is making this up as it goes along. We'll discuss the Fed's options and their implication for financial markets below.

II. Equity Index Outlook

Despite the worst financial crisis since 2008, stocks actually ended higher in March. The S&P 500 rose 3.5% while the Nasdaq jumped 6.6%. Markets continue to be wedded to the idea that the "Greenspan put" of Fed easing aggressively into a financial crisis will always bail them out. So far, they've been right. As emergency Fed lending soared last month to nearly $300 bln (Chart 4), markets promptly took that as an "all clear" sign and drove stock prices higher. Even bank shares which were down -19% for the month still managed to rally 5% off their lows. Despite all this the underlying fundamentals for stocks actually worsened during the month. As a result, the Gamma Equity Models for the S&P 500 and Nasdaq remained neutral (in cash) for April (Chart 5).

CHART 5

Country	Instrument	1 Mo Fcst	Position	Trade	Updated
USA	S&P 500	0.00%	Neutral	Hold	3/31/23



Negative Factors

- Short-term interest rates continue to rise. While markets focused on the billions in emergency liquidity that the Fed injected last month, they also conveniently forgot that the Fed raised rates by an additional 25 basis points to a 4.75-5% range at its March meeting. The Fed has now hiked rates nine times since February 2022. **The 4.75% increase is the largest 13-month rise since 1981 (when interest rates started at 11%, not 0.25%) (Chart 5a).** The CME Fedwatch Tool also shows odds favoring another 25 basis point increase in May. The steady rise in rates is further inverting the yield curve and causing money growth to collapse. The increase in banks' short-term borrowing costs will keep downward pressure on bank earnings while also discouraging lending. The rise in short-term

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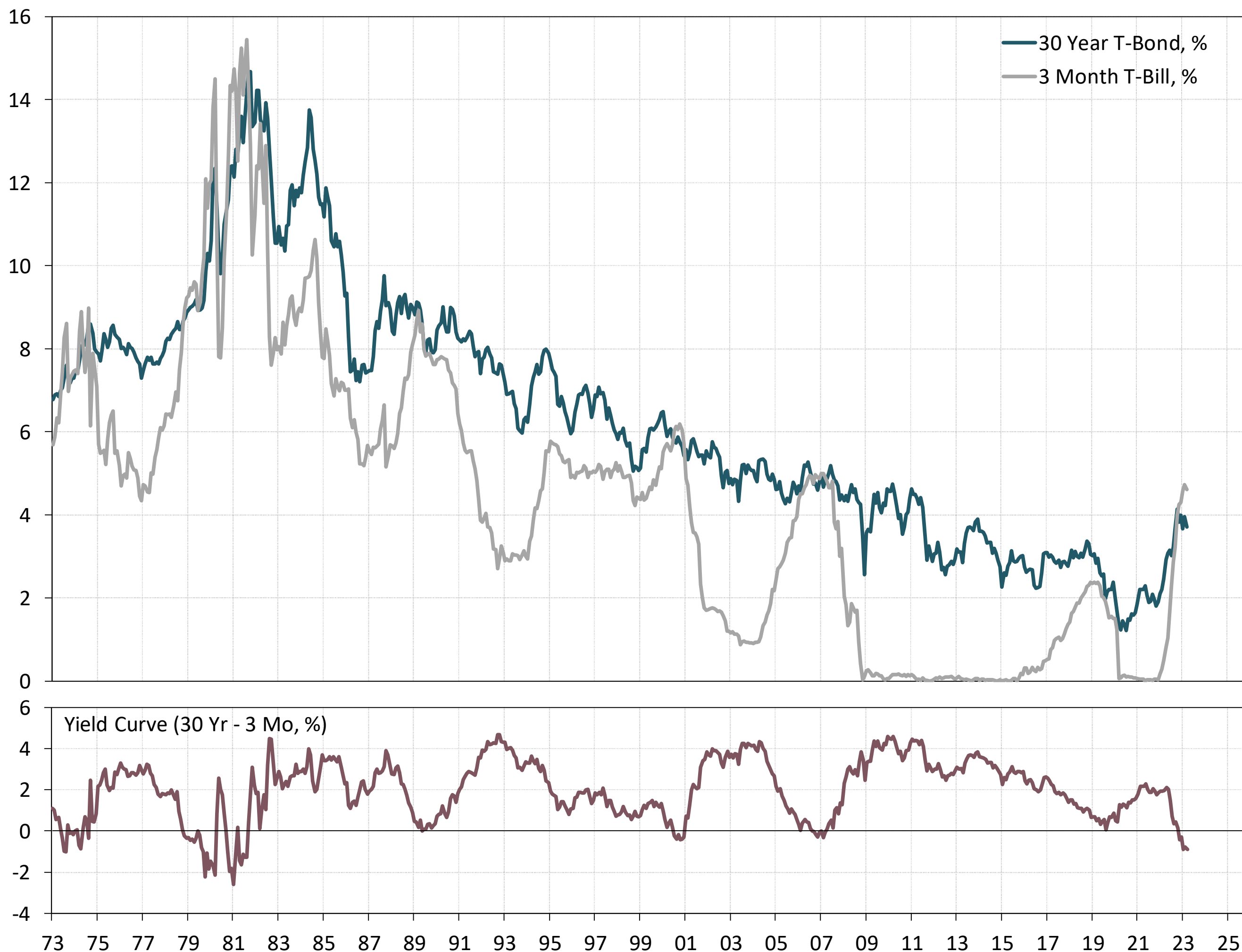
CHART 5a



rates is also likely to slow economic growth in the second half of the year which could worsen default rates on existing credit lines for both businesses and consumers. Some investors may believe that the end to the Fed tightening in May would mark the end of the bear market. Unfortunately, history doesn't bear this out. **Of the last ten major tightening cycles, stock prices hit their cyclical lows after the Fed started to cut rates. The average maximum drawdown in the S&P 500 after the Fed's first cut was over -25% (Chart 6).** The only exception was the tightening cycle that ended in 1989. Even then, however, stock prices were largely unchanged for seven months. The delay reflects the fact that the Fed usually starts to ease when economic activity is clearly slowing. At that point, however, corporate earnings also tend to drop which puts additional downward pressure on stock prices.

- The yield curve remains inverted. After steepening briefly in February, the 3-30 Treasury yield curve inverted further in March, matching its most extreme level of this cycle (Chart 5a). The 3-30 curve has now been inverted for five months, the longest such stretch since 2000. The 2-10 curve steepened, however, as the yield on 2-year Treasury notes fell sharply on expectations that the Fed tightening will be over by its May meeting. **Both curves still remain indicative of a very restrictive monetary policy.** Short-term funding costs above the yield on long-term assets will put a damper on bank lending. That will further slow money growth that, on both a nominal and inflation-adjusted basis, is already strongly negative. The longer and more extreme the inversion, the greater the risk of another major leg down in equity prices. As we noted last month, since 1960 inversions in the 3-30 curve have invariably been followed by much lower

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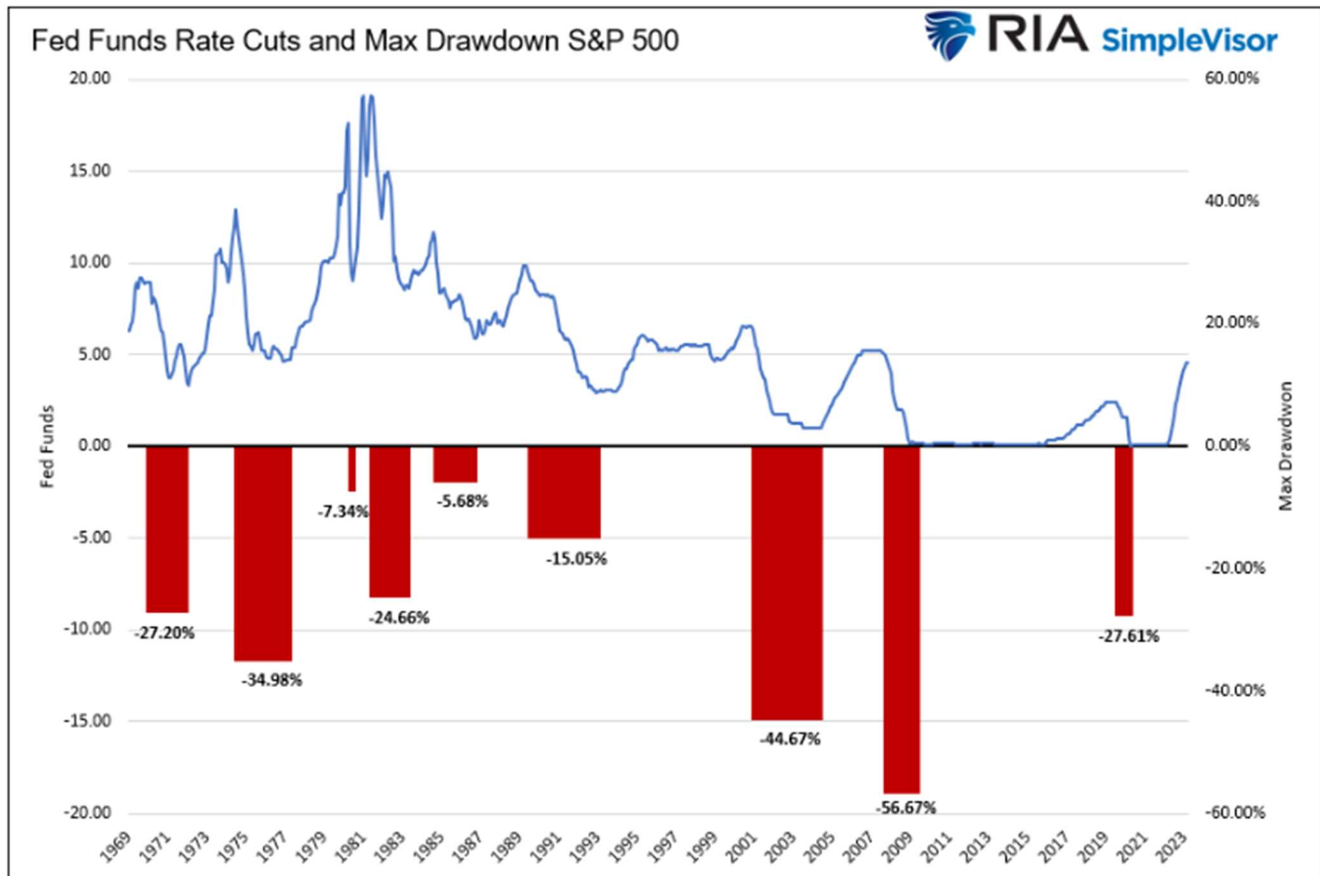
CHART 6



Source: "A Federal Reserve Pivot Is Not Necessarily Bullish," by Michael Lebowitz, Investing.com

stock prices. **The bottom in stock prices has occurred on average 13.5 months after the curve inverts.** Assuming that this cycle plays out similar to others, stock prices are not likely to bottom until mid-to-late 2023.

- Every measure of money growth continues to deteriorate. Real (inflation-adjusted) True Money Supply (TMS) growth fell sharply again last month. Real TMS was down -7.5% yr/yr in March, its sharpest 12-month drop since December 1981 (Chart 7). The alternative narrow money measure, real M1, was down -12.2% yr/yr, the tenth negative month in a row. **Real M2 was down -8.7%, the largest 12-month decline since 1932!** All the measures are indicative of a severe contraction in liquidity which is also likely to worsen. Banks sitting on $620 billion of unrealized losses won't be rushing to add long-term assets that yield less than their funding costs (remember the inverted yield curve?). Slower lending growth then translates into slower money growth at a time when yr/yr money growth is already negative at or near historic lows.
- Composite Liquidity Indicator continues to deteriorate. The Gamma Composite Liquidity Indicator (CLI) remains near its cyclical low despite a slight improvement in March. The Index has swung from a record high in March 2021 to last month's near-record low in the most extreme reversal on record. Weaker money growth was offset by an improvement in the 2-10 yield curve and a slower rate of increase in short- and long-term interest rates. The Index is likely to stabilize around current levels as further expected weakness in money growth is likely to be offset by steadier interest rates as the Fed's tightening winds down.
- Corporate earnings are falling. 12-month trailing earnings for the total US market, S&P 500, and Nasdaq indexes continued to weaken in March (Chart 8). S&P 500 earnings were down -9% from a year earlier. Nasdaq earnings were down -14%, though 12-month earnings momentum improved marginally for both indexes. Historically, the equity markets have tended to bottom when 12-month earnings momentum turns

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CHART 7

Real True Money Supply and M2

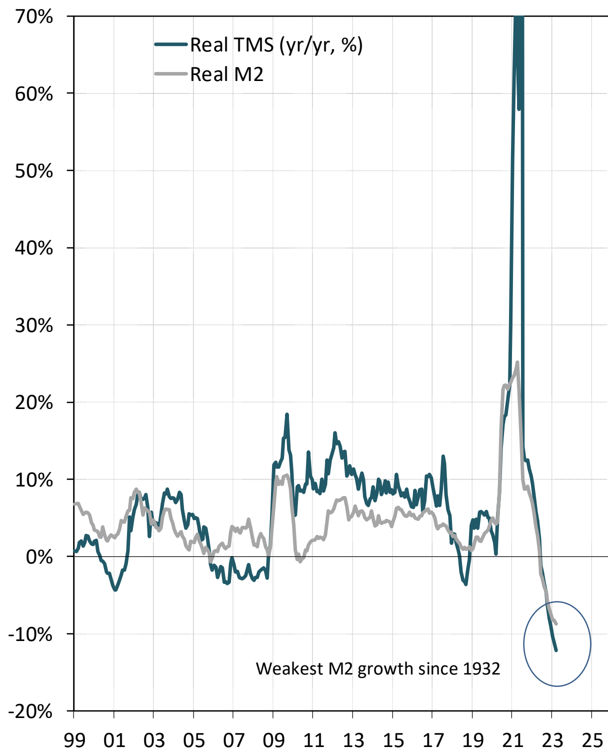
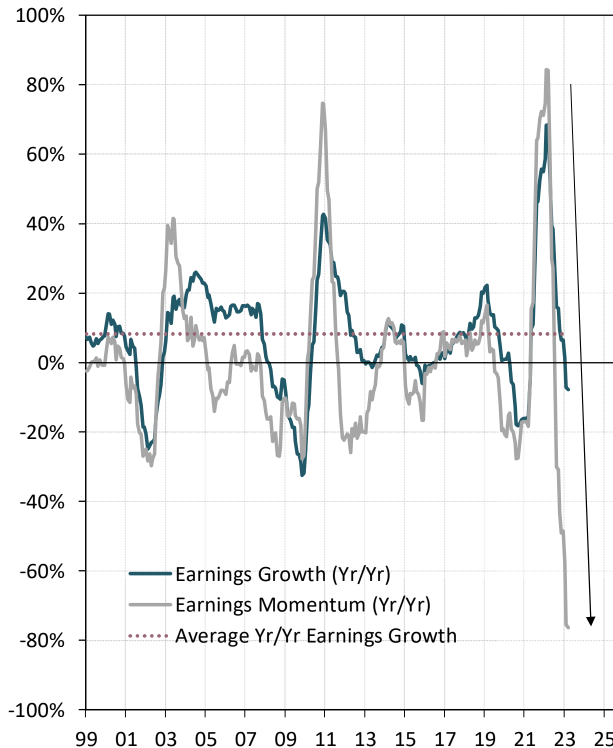


CHART 8

US Total Market Earnings Growth



positive. Current -73% earnings momentum for the S&P 500 is a record low. Nasdaq momentum at -57% is the lowest since after the dot com collapse in 2002. Historically, in those cases where equity indexes dropped over 20% from their peaks, earnings continued to fall for an average of 12 months after their yr/yr growth turned negative. That implies that earnings will remain a drag on equity prices into 2024.

- Equities Remain Overvalued. The single biggest obstacle to a sustained equity rally is the current level of valuation. Despite the S&P 500 being down -14% from its December 2021 peak, valuation continues to run stubbornly high (Table 1). The combination of higher interest rates, higher bond yields, and the decline in corporate earnings has more than offset the effect of lower equity prices on valuation. As a result, the S&P 500 remains 19% (0.9 standard deviations) overvalued according to the Gamma Valuation Model. The Nasdaq remains even more extreme at 33% overvaluation (1.2 standard deviations). We have noted in past Reports that **no recovery from a major bear market low has occurred in the last 60 years when stocks were not at least fairly valued. On average, new bull markets launched when stocks were 25% undervalued.** We believe that the severe liquidity contraction since the end of 2021 will eventually trigger the second major leg down of the current bear market. That correction will bring valuation to levels capable of sustaining a new bull market.

Neutral Factors

- The Federal Reserve's portfolio. Prior to the collapse of Silicon Valley Bank, the Federal Reserve had shrunk its assets by $626 billion fits May 2022 peak. The reduction in its assets was part of the plan to slow inflation by gradually draining liquidity from the banking system. Sales (or the maturing) of Treasury securities or mortgage-backed securities (MBS) causes money leave the banking system as the issuers of the debt repay the holder (the Fed). The banking crisis has undone almost 60% of this tightening. The Fed's balance sheet expanded by about $366 bln last month largely due to a surge in emergency borrowing at the Fed's discount window (Chart 4). The collapse of Silicon Valley Bank and Signature Bank prompted other banks to shore up their liquidity (and borrow some cheap money) in order to avoid a similar fate. Between

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the collapse of SVB over the March 10 weekend and March 22, domestically chartered banks in the United States lost $213 billion in deposits ($190 bln of it from smaller, non-top 25, banks) as skittish savers rushed to withdraw their money. Money market funds were the big beneficiaries as they gained $286 billion in March. There are signs that the immediate crisis may be receding. But many smaller regional banks are still faced with the withdrawal of billions of dollars of deposits that will likely have to be replaced at higher interest rates. This at a time when their capital positions have become increasingly shaky (Chart 4a). **We do not believe that bank regulators and the Fed will allow the collapse of a large regional bank without full FDIC protection for depositors.** That implies that the Fed's inflation mandate may clash headlong with its interest in preventing additional bank runs. Given the uncertainty over these conflicting demands, we now place the Fed's portfolio decisions into the "neutral" category regarding their impact on equity prices.

Positive Factors

- Seasonals. April is the last strong positive seasonal month before the summer doldrums begin. The S&P 500 has historically risen 1.7% in April, tied with November as the strongest positive month of the year.
- Non-US equity performance. Several non-US markets have significantly outperformed the US market this year. The S&P 500 is up 7.2% year-to-date through March. European stocks over the same period are up 9.4% including a 12.5% gain in Germany and a 13.2% rise in France. Even with this rally, non-US equities are still, on average, 22% undervalued compared to 19% overvalued for the S&P 500 (Table 1). This extreme 41% differential in valuation may help cushion the expected second leg down in US equites as the economy slows later this year.

TABLE 1

EQUITY INDEX VALUATION

Country	Valuation (σ)	Valuation (%)
United States	+0.94	+19%
S&P 500	+0.88	+19%
Nasdaq	+1.19	+33%
S&P 600 Small Cap	-1.09	-18%
Canada	-1.38	-24%
Brazil	-2.58	-56%
Mexico	-0.84	-12%
Australia	-1.65	-39%
Japan	+0.02	+1%
China	-0.91	-34%
S. Korea	-0.73	-17%
India	-0.94	-17%
Europe	-1.22	-28%
Germany	-1.42	-30%
France	+0.48	+10%
Italy	-1.51	-37%
Switzerland	-0.13	-3%
UK	-0.27	-6%
Russia	-1.72	-67%
S. Africa	-1.66	-28%

II. Fixed Income Outlook

The Gamma 30-year Treasury Bond Model covered its long position and went short (higher yields) for April. The 30-year joined the 10-year T-Note and Investment Grade Corporate Bond Models which remained short. (Charts 9, 10). The unusually frequent position changes in recent months reflect the market's abrupt reassessments of Fed policy. We started the year with expectations that the Fed would raise rates 25 bps at its February and March meetings before taking an extended pause. Then, unexpectedly strong employment and retail sales data for January and February caused a panicked revision that called for a full 50 basis point rate hike in March, 25 basis points in May, and another 25 basis points in July or September for a total of 100 basis points in 2023. Then, Silicon Valley Bank and Signature Bank collapsed forcing the Fed to flood the money markets with $350 bln+ in cash, largely undoing their asset liquidation of the past 13 months. After all that, interest rate expectations have reverted back to where they were in December!

Negative Factors

- "Quantitative ?" The Fed contracted its balance sheet by $626 billion between May 2022 and February 2023. The reduction made up a relatively small part of the Fed's $8 trillion portfolio, but the timing clashed with $1.8 trillion of new borrowing by the Federal government. That combination contributed to the sharp rise in bond yields from a 1.80% low in November 2021 to as high as 4.15% late in 2022. The recent injection of liquidity via discount window borrowing has created a dilemma for the Fed. In the short term, the $366 billion added to the banking system has depressed Treasury yields. The 10-year T-Note yield fell by almost 0.5% in March. At some point, the Fed will have to decide whether to drain those

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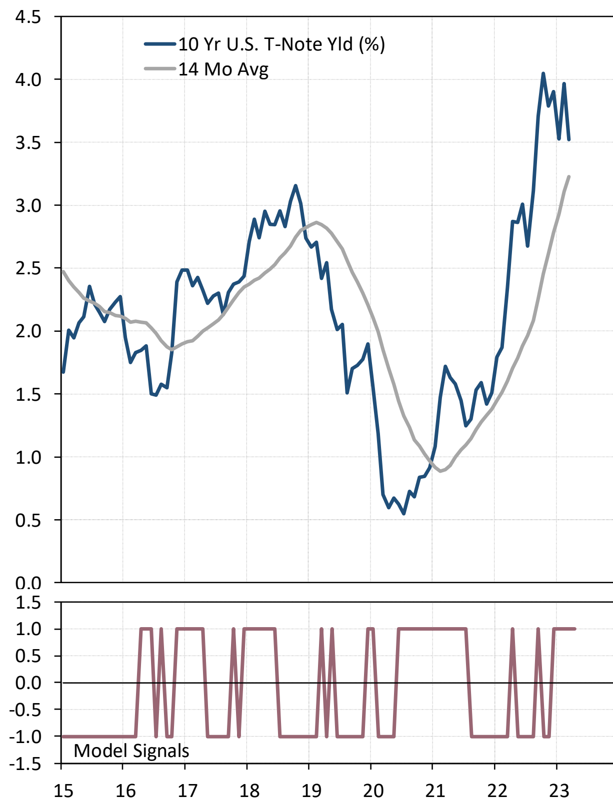

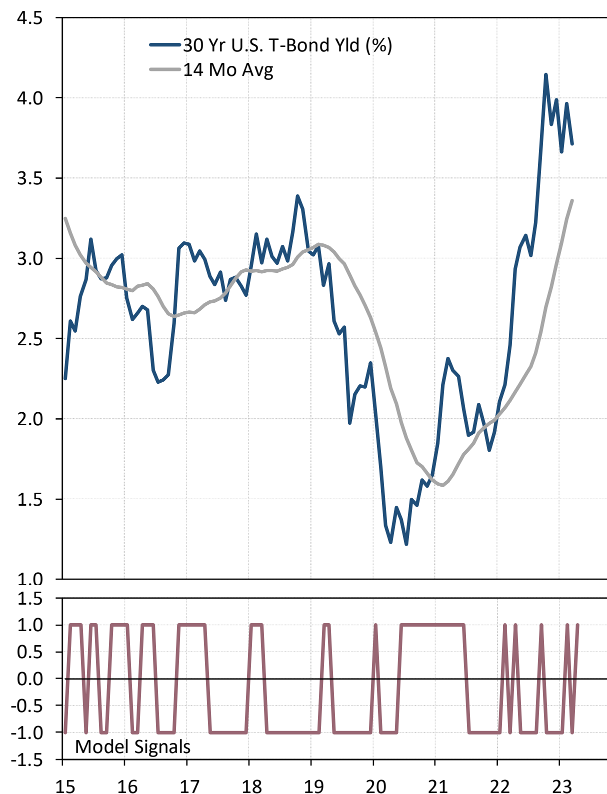

bank reserves or continue to support the banking system by adding additional liquidity. Draining the money will likely reverse last month's drop in long-term yields. Not draining the reserves will cause the bond market to question the Fed's resolve in bringing inflation back to its 2% target rate. In either case, the result is likely to be higher long-term interest rates at least for the short term.

- Inverted yield curve. The Gamma Bond Model includes the shape of the yield curve as one of its predicative inputs. Because of the severe current inversion, the incentive to carry relatively lower-yielding, longer-term bonds compared to short-term money market instruments is reduced. That's why bonds often underperform when short-term rates are higher than bond yields. Inverted curves tend to be indicative of tight monetary policy which typically causes slower economic growth. It is the resulting weaker economy and the subsequent decline in inflation that causes bond yields to fall. An inverted curve in and of itself, however, is not a reliable indicator of lower bond yields. In the nine episodes since the mid-1960's when the yield curve inverted, in only one case were long term rates decidedly lower 12 months later. It was only years later, after inflation had declined substantially, that bond yields fell below their pre-inversion levels.
- Negative seasonals. Long-term Treasury yields have historically risen in the first five months of the year, with April showing the largest increase. The 10-year T-Note has risen on average 5 bps in April. The 30-year T-Bond yield has risen 4.8 bps. April marks the last strong positive seasonal month as yields have historically trended lower for the balance of the year.

Positive Factors

- Bonds are undervalued. The 10- and 30-year Treasuries are moderately undervalued. **Investment grade corporates are highly undervalued** (Table 2). Despite concern that inflation might worsen after the release of strong economic data earlier this year, the reality is that inflation continues to moderate across the board. Consumer price inflation has fallen from an 8.9% yr/yr peak in September 2022 to a 6.3% rate last month. Core CPI (excluding food and energy) has been more stubborn but has still fallen from a 6.6% rate

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CHART 11
USA: 10 Yr T-Note Valuation

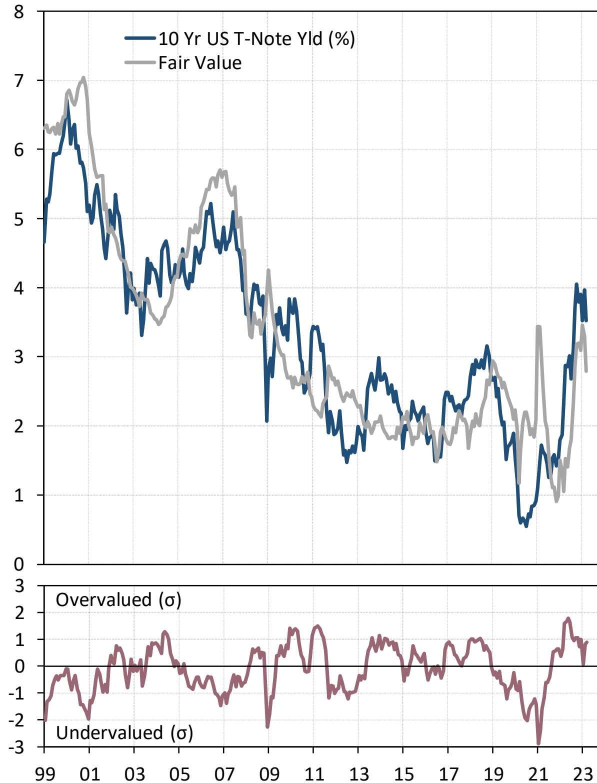
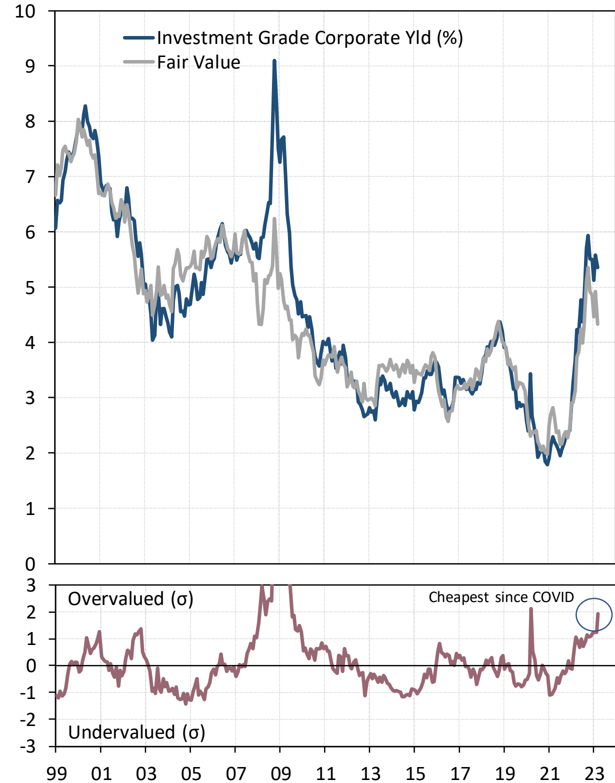


CHART 12
USA: Invest Grade Corporate Valuation



to a 5.5% rate. Energy prices, food prices, and industrial commodity prices are all down anywhere from -10% to -25% from their year-ago levels. Since the peak in CPI inflation, the 30-year T-Bond yield has actually increased by 18 basis points. The yield on the 10-year T-Note has fallen only 21 basis points. As a result, 10-year T-Note undervaluation has widened to 0.9 standard deviations. 30-year T-Bond undervaluation has widened to one standard deviation. Investment grade corporates have jumped to almost two standard deviations undervalued (Chart 12). During previous periods of such extreme undervaluation, corporate bond yields have fallen by as much as 100 basis points over the next 12 months. We expect current undervaluation to provide support for bond prices and keep long-term downward pressure on yields.

TABLE 2
FIXED INCOME VALUATION

Country	Debt Instrument	Yield Valuation (σ)	Price Valuation (%)
USA 2	2 Yr T-Note	+0.17	-0.2%
USA 5	5 Yr T-Note	+0.59	-2.0%
USA 10	10 Yr T-Note	+0.89	-6.0%
USA 30	30 Yr T-Note	+0.99	-15.7%
USA IG	IG Corporate	+1.92	-8.2%
USA HY	HY Corporate	+1.28	-15.7%

- Economic growth is slowing. The Conference Board's index of leading economic indicators (LEI) fell for the 13th consecutive month in March (Chart 13). The index is now down -5.9% yr/yr. **The index has never been down over 2% yr/yr without being followed by a recession**. At this point, the Gamma Economic Model is still predicted the beginning of a mild-to-moderate recession starting mid-year. Numerous quantitative and anecdotal indicators that we follow, especially in real estate and manufacturing, are flashing major warnings of an impending slowdown. Given the biggest decline in the money supply in 90 years, the inverted yield curve, and a contraction in lending due to the banking sector's problem, we are increasingly concerned that the expected recession could be more abrupt and more severe than most investors are expecting. The only positive from that would be that inflation would remain on its downward trajectory and keep long-term interest rates headed lower.

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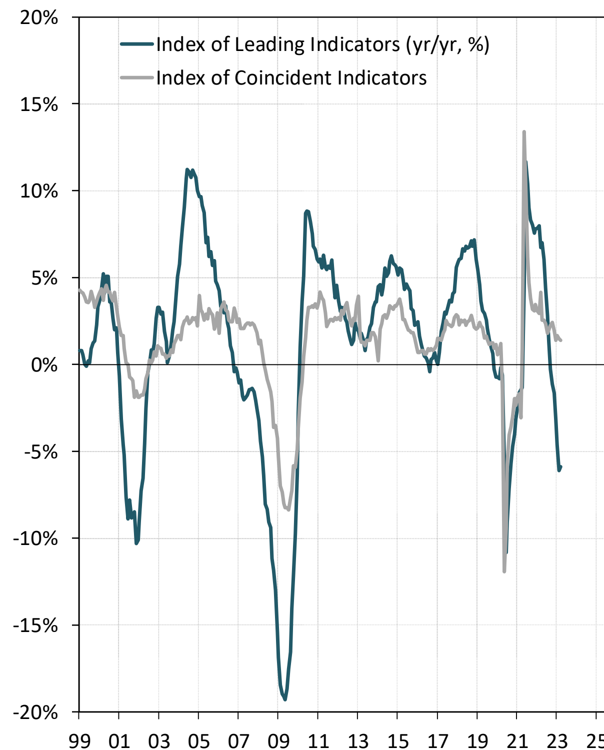
- Inflation will continue to slow. Despite the slight worsening in inflation last month, the Gamma Economic Model projects that the inflation rate will continue to decline into 2024. The ISM manufacturing prices paid index did recover last month to 51.3 from 39.4 two months ago. The ISM services index, however has fallen for the last four months in a row. Also, industrial materials prices were down -13.4% yr/yr, and the Goldman Sachs Commodity Index (GSCI) was down -13.5%. Energy prices fell for the fourth month in a row and were down -15.7% from a year ago. Even food prices, which have remained stubbornly high, dropped sharply last month and were down -8% yr/yr. With the Composite Liquidity Indicator at its cyclical low, the longer-term outlook for inflation remains favorable. **Over the last ten years, each 1% increase in True Money Supply (TMS) growth has been consistent with a 0.2% rise in consumer prices. Extrapolating this relationship implies that with yr/yr TMS growth down to 0.3%, inflation still has plenty room to improve.**



III. Gold and Precious Metals Outlook

The Gamma Gold Model covered its short position and went long for April (Chart 14). The Model had gone short in March when unexpectedly strong employment and retail sales data triggered a large upward revision in interest rate expectations that more than offset very favorable valuation. The cracks that emerged in the financial system last month have now caused gold investors to believe that interest rates are at or very close to their peak for this cycle. The huge emergency injection of reserves by the Federal Reserve has also confirmed to many gold investors that the Fed is willing to tolerate higher inflation in order to support the banking system. The result has been a surge in gold prices. Gold jumped has now rallied 11% from its late February low. Gold has historically been the longest leading indicator of changes in interest rates. **With rates expected to peak in May (according to the CME Fedwatch Tool) and extremely favorable valuation, we continue to believe that the outlook for precious metals and gold mining shares remains very favorable.**

Positive Factors

- Precious metals are still cheap. Gold remains substantially undervalued despite a 9% gain in March. Gold reached two standard deviations undervaluation last October when prices dropped below $1,650/oz. Gold strongly overreacted to rising interest and contracting liquidity by dropping seven consecutive months in a row to start 2022. The price recovery since then has caused valuation to become less favorable, but the yellow metals was still 1.2 standard deviations (-29%) undervalued last month (Chart 15). That would put the target “fair value” price at $2,550/oz. The Gold Mining Shares Index has performed even better having risen almost 16% last month. The Gold Shares Index is still 0.83 standard deviations undervalued (-25%). These levels of valuation suggest that all both cash gold and gold mining stocks still have ample upside potential.

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CHART 14
Gold Model Forecast

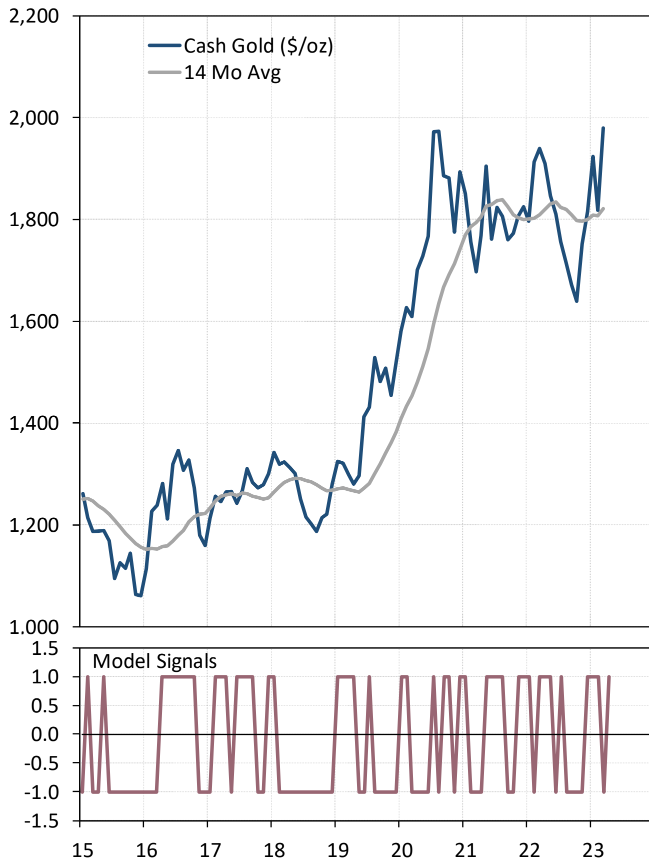
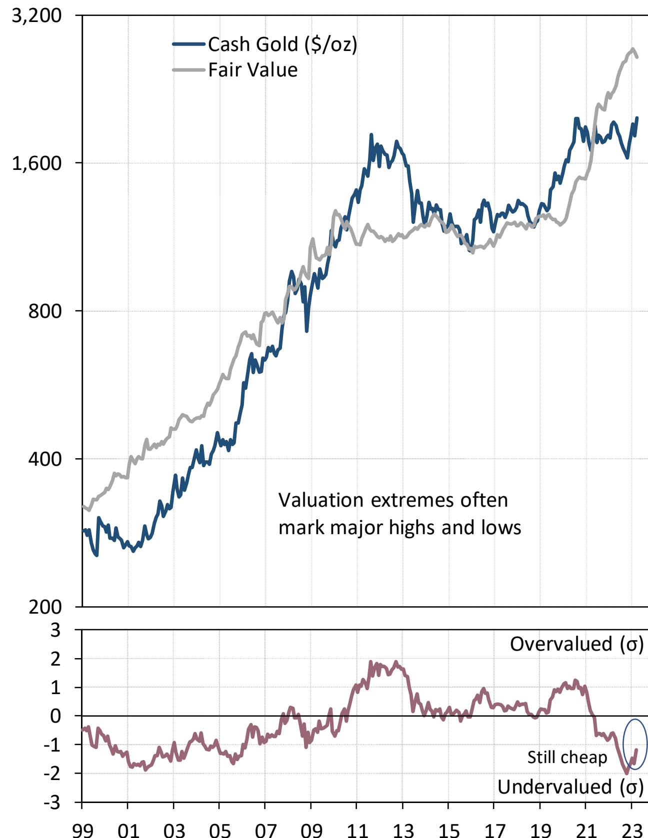


CHART 15
Gold Valuation



- A dollar peak? The dollar has dominated other currencies since mid-2021 as the Fed raised interest rates aggressively compared to most foreign central banks. After the brief upward revision to US interest rate expectations in February, signs now indicate that US rates may be at or near a major peak. In contrast, European inflation continues to run well above the US inflation rate. The European Central Bank (ECB) is likely to continue to raise rates longer than the Fed. That should further narrow the interest differential in favor of the euro. A sustained narrowing of the differential would remove the dollar's major support for the last two years. The result is that the Gamma FX Models for the euro and Swiss franc remained short the dollar for the fifth month in a row. As a dollar substitute, gold and the other precious metals are likely to benefit from a narrowing of this differential.
- Bullish seasonals. Gold prices are coming to the end of their historically weak period from February to June. April has historically been a weak positive month, averaging a 0.37% gain. After June, however, prices in the second half of the year have jumped an average of 5.2% - a nice tailwind when interest rates start to edge lower.

Neutral Factors

- Monetary policy. Gold has had to deal with an extremely aggressive rise in interest rates since the Fed hiked its Fed Funds rate in March 2022. Now that markets anticipate that interest rates will peak by May, gold will no longer need to deal with this bearish headwind. In addition, the huge increase in discount widow borrowing reversed much of the Fed's "quantitative tightening." That may encourage gold investors to believe that keeping the banking system solvent has a higher priority than controlling inflation.

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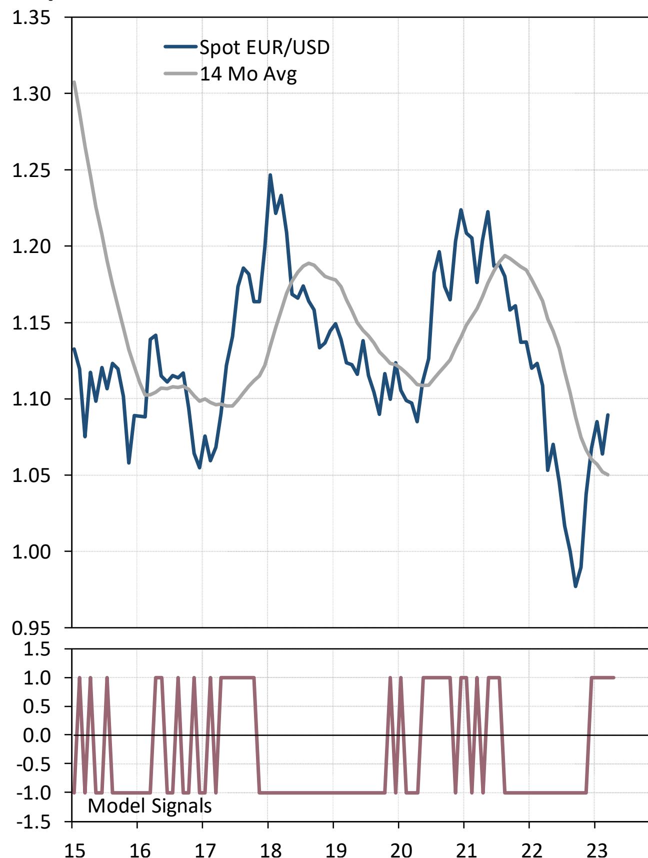
IV. Foreign Exchange Outlook

The Gamma EUR/USD Model remained long the euro (short USD) for April (Chart 16). This is now the fifth consecutive month that the Model has stayed long the euro after being short the previous 16 months. The euro had been in a steady decline since early 2021, but the pace accelerated early in 2022 when the Federal Reserve began raising rates aggressively. The Eurozone currency was hammered by a perfect storm of lower interest rates, slower growth, and higher inflation compared to the US. Russia's invasion of Ukraine was the final blow as Europe struggled to replace lost supplies of Russian natural gas and crude oil. Now, however, all these factors have reversed or are on the verge of reversing.

CHART 16

EUR/USD Model Forecast

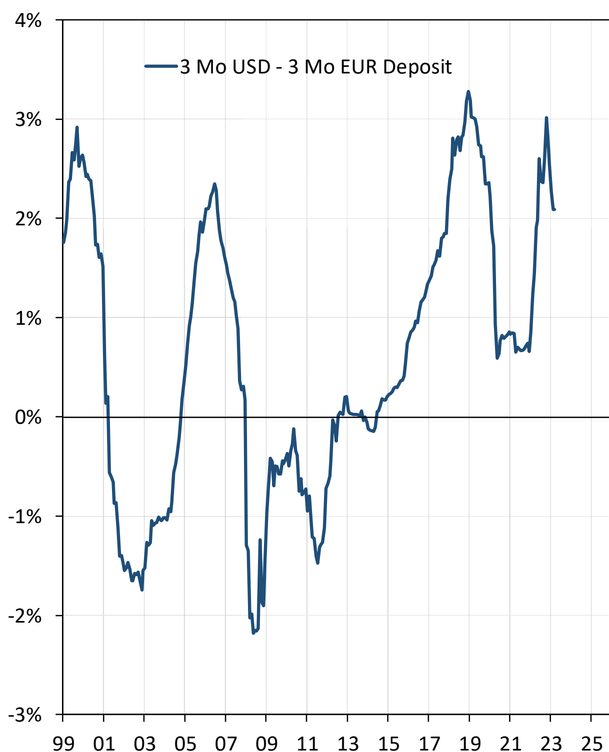


Negative USD Factors

- Relative monetary policy. The outlook for the EUR/USD exchange depends heavily on the outlook for relative interest rates for the two currencies. The Federal Reserve has raised rates by 4.75% since March 2022. During the same period, euro rates rose 3.50%, and most of that increase has occurred in the last five months. US interest rates are now expected to peak no later than May. Comments by ECB officials indicate that Eurozone rates are likely to continue heading higher. ECB President Christine Lagarde recently noted at a conference that "even though inflation has likely passed its peak, it is descending from very high levels, and it is projected to be too far above our target for too long." US consumer prices were up 6.0% yr/yr last month compared to 8.5% in the Eurozone. Core inflation (excluding food and energy) is more even with US inflation running at a 5.5% rate compared to a 5.6% European rate. That 5.6% rate, however, is more than double the previous peak hit in 2008. Also, European producer price inflation – which tends to be more relevant for determining exchange rate movements – is running double that of the US. Until these inflation differentials close, we expect a widening interest rate differential caused by tighter ECB policy to be the primary support for the euro in the near-term (Chart 17).

CHART 17

3 Month Interest Rate Differential



- Positive euro seasonals. The euro has historically rallied an average of 0.23% in April.

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-Karl Chalupa

Mr. Chalupa is the CEO and Co-Founder of Gamma Investment Consulting and Editor of the Gamma Intelligence Reports. He is also President of Gamma Capital LLC, a quantitative global macro investment firm. Mr. Chalupa developed the Gamma Investment Program used for previously trading the firm's $400 million global macro program. He was previously Director of Risk Management at Titan Advisors LLC, a $4.5 billion alternative investments firm. Mr. Chalupa was also Managing Director of the Currency and Alternative Investment Strategies Groups at State Street Global Advisors (SSGA) where he developed a $9 billion currency overlay program and launched SSGA's first hedge fund based on his Gamma Model. Mr. Chalupa spent 13 years at ABN Amro Bank where he traded interest rate and currency derivatives and was Manager of the Proprietary Trading and Economic Research Desk. He began his career as an economist for the Federal Reserve Bank of Chicago. Mr. Chalupa holds an MA in Economics from Brown University, graduated magna cum laude from Northern Illinois University with BAs in Economics and Political Science, and is Series 3 registered.

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Gamma Macro Model Forecasts for April 2023

1 MONTH STOCK INDEX MODEL FORECASTS (%)

Country	Stock Index	Price	1 Mo Forecast	Previous Forecast	Position	Trade	Updated
USA	S&P 500	4,050.83	0.00%	0.00%	Neutral	Hold	3/31/23
USA	Nadaq	12,085.12	0.00%	0.00%	Neutral	Hold	3/31/23
Canada	S&P/TSX 60	1,205.72	0.00%	0.00%	Neutral	Hold	3/31/23
Mexico	IPC	54,508.61	0.20%	1.47%	Long	Hold	3/31/23
Brazil	Bovespa	103,608.15	0.00%	0.00%	Neutral	Hold	3/31/23
Japan	TOPIX	2,003.50	1.43%	1.13%	Long	Hold	3/31/23
Australia	S&P/ASX 200	7,177.80	0.00%	0.00%	Neutral	Hold	3/31/23
S. Korea	KOSPI	2,476.86	0.00%	0.00%	Neutral	Hold	3/31/23
China	Hang Seng CEI	6,968.86	0.29%	0.95%	Long	Hold	3/31/23
China / HK	Hang Seng	15,638.03	0.00%	0.00%	Neutral	Hold	3/31/23
India	Nifty 500	14,557.85	0.62%	0.31%	Long	Hold	3/31/23
Eurozone	STOXX 600	458.05	0.00%	0.00%	Neutral	Hold	3/31/23
Germany	DAX	15,638.03	0.00%	0.00%	Neutral	Hold	3/31/23
France	CAC 40	7,323.79	0.00%	0.00%	Neutral	Hold	3/31/23
Italy	FTSE/MIB 30	27,140.52	0.00%	0.00%	Neutral	Hold	3/31/23
Switzerland	Swiss Market	11,112.44	0.00%	0.00%	Neutral	Hold	3/31/23
UK	FTSE 100	7,640.43	0.00%	0.00%	Neutral	Hold	3/31/23
Russia	RTS 50	991.14	0.00%	0.00%	Neutral	Hold	3/31/23
S. Africa	FTSE/JSE 40	70,583.59	2.34%	2.32%	Long	Hold	3/31/23

1 MONTH FIXED INCOME MODEL PRICE CHANGE FORECASTS (%)

	Debt	Current	Price Change Forecasts (%)		Bond		
Country	Instrument	Yield (%)	1 Month	Previous	Position	Trade	Updated
USA	2 Yr T-Note	4.10	-0.03%	-0.02%	Short	Hold	3/31/23
USA	5 Yr T-Note	3.65	0.09%	-0.14%	Long	Cover Short & Buy	3/31/23
USA	10 Yr T-Note	3.52	-0.01%	-0.17%	Short	Hold	3/31/23
USA	30 Yr T-Note	3.71	-0.08%	0.20%	Short	Cover Long & Sell	3/31/23
USA	IG Corporate	5.36	-0.21%	-0.43%	Short	Hold	3/31/23
USA	HY Corporate	8.72	-0.86%	-0.32%	Short	Hold	3/31/23
Canada	10 Yr Govt	2.91	0.24%	-0.06%	Long	Cover Short & Buy	3/31/23
Mexico	10 Yr Cetes	8.84	0.32%	0.36%	Long	Hold	3/31/23
Brazil	10 Yr Govt	12.90	0.34%	0.35%	Long	Hold	3/31/23
Japan	10 Yr JGB	0.36	0.10%	-0.04%	Long	Cover Short & Buy	3/31/23
Australia	10 Yr Govt	3.29	0.48%	-0.06%	Long	Cover Short & Buy	3/31/23
S. Korea	10 Yr Govt	3.33	-0.08%	-0.19%	Short	Hold	3/31/23
China	10 Yr Govt	2.86	0.21%	0.02%	Long	Hold	3/31/23
India	10 Yr Govt	7.32	-0.03%	0.10%	Short	Cover Long & Sell	3/31/23
Germany	10 Yr Bund	2.33	0.00%	0.41%	Short	Cover Long & Sell	3/31/23
France	10 Yr OAT	2.84	0.61%	0.19%	Long	Hold	3/31/23
Italy	10 Yr BTP	4.15	0.91%	0.60%	Long	Hold	3/31/23
Switzerland	10 Yr Conf	1.20	0.57%	0.15%	Long	Hold	3/31/23
UK	15 Yr Gilt	3.81	0.81%	1.03%	Long	Hold	3/31/23
Russia	10 Yr Govt	10.31	-1.03%	-3.17%	Short	Hold	3/31/23
S. Africa	10 Yr Govt	9.85	0.46%	0.04%	Long	Hold	3/31/23

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Gamma Macro Model Forecasts for April 2023

1 MONTH FX MODEL FORECASTS (%)

Currency	Spot FX Rate	1 Mo Forecast	Previous Forecast	Position	Trade	Updated
EUR/USD	1.0892	0.71%	0.64%	Long	Hold	3/31/23
GBP/USD	1.2388	0.24%	0.31%	Long	Hold	3/31/23
USD/CHF	0.9122	-0.17%	-0.06%	Short	Hold	3/31/23
USD/NOK	10.4612	0.28%	-0.29%	Long	Cover Short & Buy	3/31/23
USD/SEK	10.3480	-0.11%	-0.41%	Short	Hold	3/31/23
USD/JPY	132.99	0.11%	0.75%	Long	Hold	3/31/23
AUD/USD	0.6710	-0.60%	-0.35%	Short	Hold	3/31/23
NZD/USD	0.6268	-0.28%	-0.17%	Short	Hold	3/31/23
USD/KRW	1,303.12	0.24%	0.27%	Long	Hold	3/31/23
USD/CNY	6.8688	0.08%	0.72%	Long	Hold	3/31/23
US/INR	82.08	0.34%	0.82%	Long	Hold	3/31/23
USD/SGD	1.3290	0.39%	0.35%	Long	Hold	3/31/23
USD/CAD	1.3529	0.34%	0.12%	Long	Hold	3/31/23
USD/BRL	5.0838	0.28%	-0.66%	Long	Cover Short & Buy	3/31/23
USD/MXN	18.02	-0.55%	-0.53%	Short	Hold	3/31/23
USD/RUB	77.58	-0.88%	-1.17%	Short	Hold	3/31/23
USD/ZAR	17.71	0.08%	0.88%	Long	Hold	3/31/23
BTC/USD	28,373.00	5.45%	5.58%	Long	Hold	3/31/23

1 MONTH COMMODITY PRICE FORECASTS (%)

Commodity	Cash / Futures Price ($)	1 Month Forecast	Previous Forecast	Position	Trade	Updated
Gold	1,979.20	0.43%	-1.52%	Long	Cover Short & Buy	3/31/23
Silver	24.04	-0.01%	-1.36%	Short	Hold	3/31/23
Platinum	990.14	0.19%	-1.14%	Long	Cover Short & Buy	3/31/23
Palladium	1,476.72	-1.21%	-0.61%	Short	Hold	3/31/23
Aluminum	2,344.25	-0.86%	-1.43%	Short	Hold	3/31/23
Copper	9,003.25	-1.15%	0.68%	Short	Cover Long & Sell	3/31/23
Lead	2,161.50	-1.35%	-2.03%	Short	Hold	3/31/23
Nickel	23,006.52	-1.09%	-0.39%	Short	Hold	3/31/23
Tin	26,036.00	-0.84%	-1.89%	Short	Hold	3/31/23
Zinc	2,963.50	-0.13%	-0.26%	Short	Hold	3/31/23
WTI Crude Oil	68.23	0.00%	0.00%	Neutral	Hold	3/15/23
HH Natural Gas	2.25	4.83%	4.59%	Long	Hold	3/20/23

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