Macro Intelligence Report

February 2024

GAMMA INVESTMENT CONSULTING

Gamma Global Macro Model Highlights

- **Bucking the overwhelmingly bullish consensus, the S&P 500 went SHORT for February while the Nasdaq Model remained NEUTRAL (in cash)**. The bearish positioning for equities is due to valuation hitting its highest level since March 2002 when prices were collapsing following the dot com boom. Bond yields also rose 20 bps during the month and the Fed postponed a March rate cut which added additional downward pressure to the equity price forecast.

- **Fixed income remains a mixed bag. The 30-year Treasury Bond Model remained NEUTRAL for February while the 10-year Treasury Note Model (along with the 5-year and 2-year Models) went short (higher yields). The Investment Grade Corporate and High Yield Corporate Models remained LONG (lower yields**). The conflicting positions are due to confusion over Fed policy, the favorable impact of continued strong growth on credit spreads, and the possibility of slightly lower borrowing by the Treasury due to better-than-expected tax revenues.

- **The Gold Model covered its long position and went NEUTRAL for February though the silver and platinum Models remained LONG due relatively more attractive valuations.** Unexpectedly strong fourth quarter GDP and December employment have likely delayed Fed rate cuts which has put downward pressure on gold and gold mining share prices (which also went neutral).

- **The EUR/USD Model remained SHORT euros (long USD) for February.** With stronger U.S. growth likely to delay Fed rate cuts, the prospect of a persistent interest differential favoring the dollar is likely to keep downward pressure on the euro.

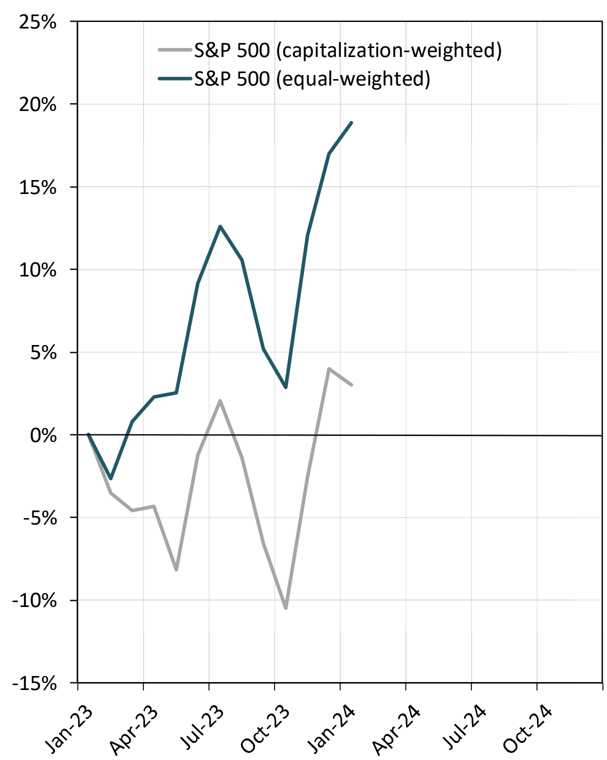
Equity Index Outlook

The S&P 500 posted a solid 1.6% increase in January while the Nasdaq gained 1.0%. The rally continues to be extremely narrowly focused with the “Magnificent 7” of Amazon, Apple, Microsoft, Meta, Nvidia, Google, and Tesla leading the charge. To put the magnitude of the impact of these stocks into perspective since bottoming in September 2022 the capitalization-weighted S&P 500 is up 35.1% while the equal-weighted S&P is up only 22.8%. The more recent divergence in performance is even more telling. Over the last twelve months, the equal-weight S&P 500 is up only 3.0% compared to a whopping 18.9% for the traditional S&P 500 (Chart 1). Market breadth has been falling as the number of performance drivers has dwindled to the AI threesome of Meta, Microsoft, and Nvidia.

The extreme movement of these seven stocks has pushed the P/E ratio for the S&P 500 to 25.4 compared to about 21 for the equal-weight index. The result is that according to the Gamma Equity Valuation Model, the S&P 500 at 1.53 standard deviations is now at its most extreme level since March 2022. In contrast, the equal-weight index is only about one standard deviation overvalued. The S&P 500’s

CHART 1

Relative S&P 500 Performance



extreme valuation combined with last month's 20 basis point increase in long-term Treasury yields was enough to tip the S&P 500 Model into a net short position (Chart 2).

Negative Factors

- **Rate cuts: back to higher for longer?** Amazingly just a month ago the market was pricing in six (!) 25 basis points rate cuts in the next twelve months. Fed Chairman Powell let the air out of that rate cut balloon following the last FOMC meeting. The FOMC voted unanimously to maintain its five policy rates including a federal funds rate of 5.50%. The current 5.50% rate has been unchanged since last July. Puzzlingly, despite the fact that Fed officials have been telegraphing a much slower pace of rate cuts and no end of QT for weeks, investors seemed genuinely surprised by the Fed's decision.

  To emphasize how big a shift this was compared to market expectations, consider the exact wording of the Fed's post meeting statement. "In considering any adjustments to the target range for the federal funds rate, the Committee will carefully assess incoming data, the evolving outlook, and the balance of risks. The Committee does not expect it will be appropriate to reduce the target range until it has gained greater confidence that inflation is moving sustainably toward 2 percent." Addressing Quantitative Tightening (QT), the release noted that "(the) Committee will continue reducing its holdings of Treasury securities and agency debt and agency mortgage-backed securities, as described in its previously announced plans. The Committee is strongly committed to returning inflation to its 2 percent objective."

  Why the divergence between Fed action and market expectations? The reason is that markets have been anticipating a "Goldilocks" scenario in which economic growth slows (but not too much) and inflation continues to converge to the Fed's desired 2% target. Instead, the latest round of economic numbers showed the market to be wrong on both counts. Fourth quarter real GDP grew at a 3.3% annual rate – almost double the 2.0% consensus estimate - and well above even the highest forecast of 2.5%. That was followed by January nonfarm payrolls which exploded higher by 353,000 – double the expected 180,000. In addition, the previous month's number was revised sharply higher from 216,000 to 330,000. Some commentators have noted that the data was likely biased higher by annual seasonal

CHART 2

USA: S&P 500 Model Forecast

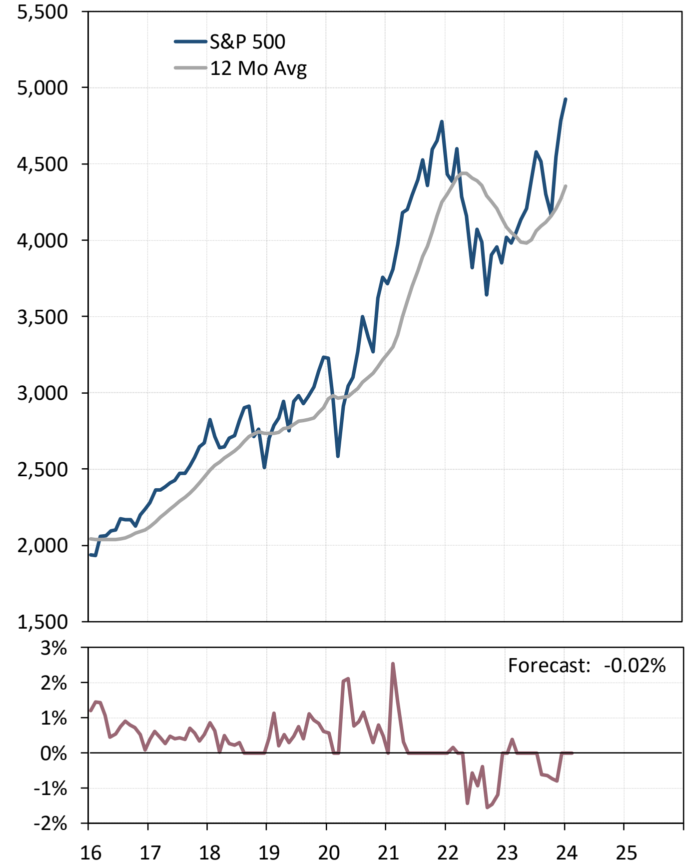
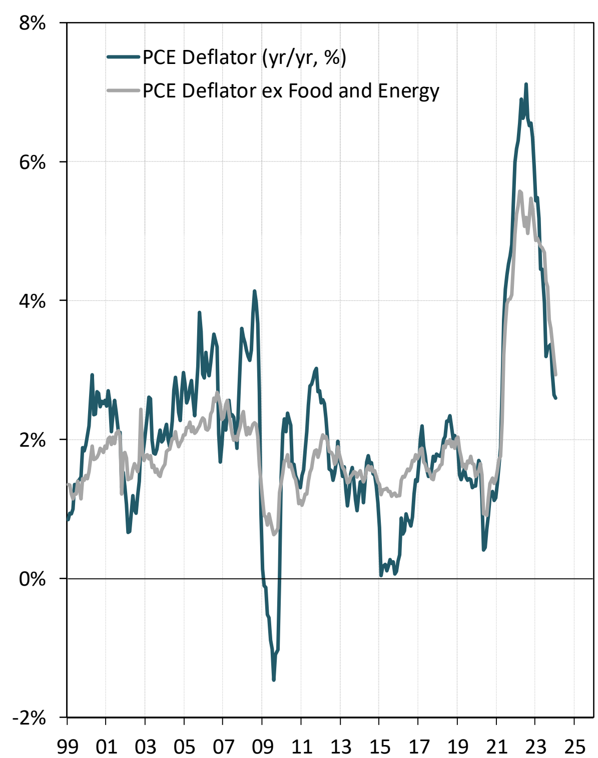


CHART 3

Inflation Measures



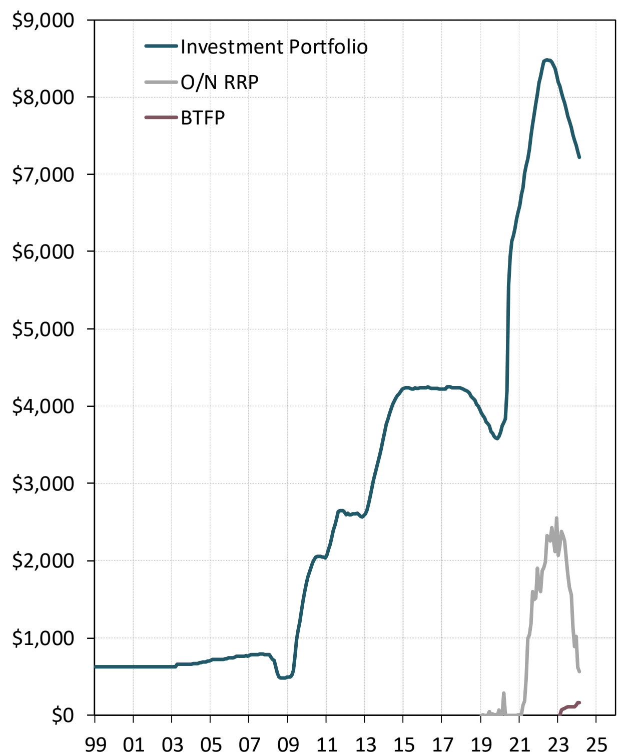
adjustment revisions and the makeup of job growth (full-time vs part-time), but the fact remains that growth was much higher than even the highest forecast.

This unexpectedly strong growth is likely to cause the Fed to take a long look at how such strong economic conditions may affect inflation. Average hourly earnings rose 0.6% last month after a 0.4% gain in December. Wage growth accelerated to a 4.5% yr/yr rate from a 4.3% rate previously. Annual wage growth remains well above its pre-Covid level and also well above the 3-3.5% rate that the Fed likely believes consistent with its 2% inflation target. Offsetting this, however, is growth in the Fed's preferred inflation gauge, the personal consumption expenditure deflator (PCED). The PCED rose 0.2% last month and was up 2.6% yr/yr for the second month in a row (Chart 3). While the yr/yr rate is still above the Fed's target, the three-month annualized rate was only 0.5%. The rate excluding food and energy was up only 1.5% annualized. Even the stubborn services inflation fell to a 3.2% annual rate over the last three months.

These numbers indicate that inflation is converging towards the Fed target. The surprisingly strong growth of the economy, however, will likely cause the Fed to move cautiously in cutting rates for fear of reigniting another round of inflation. A March rate cut is almost certainly off the table, but cuts later in the year are possible if inflation stays low and wage pressure eases in the coming months.

CHART 4

Federal Reserve Balance Sheet Items (Bln $)



- **Alphabet soup.** Last month we discussed the multiple vehicles that the Fed is using to at the same time add and drain liquidity from the banking system. Readers may recall from last month's Report that the Federal Reserve back in 2020 created a special overnight reverse repo facility (O/N RRP) for money market funds (MMF) to prevent interest rates from turning negative.

  As a quick refresher, a reverse repo from the perspective of a MMF is simply a secured loan. The MMF places money with the Fed at some interest rate (currently 5.30%). That loan is secured (collateralized) with Treasury securities that the Fed holds in its portfolio. The effect of this is to drain money from the economy because money invested by the MMF leaves the financial system and gets deposited in the Fed's account. The reverse repo facility swelled from $0 in July 2020 to a peak of $2.55 trillion in December 2022 (Chart 4). Once the Fed began to raise interest rates in March 2022, the likelihood of negative interest rates receded thus largely eliminating the need for the reverse repo facility. As a result, the Fed has been steadily reducing the size of its O/N RRP book. Since September 2022, the Fed has allowed the reverse repos to run off by $2 trillion to $552 billion currently. **The money previously invested with the Fed is now being returned to the financial system**. Remember, a reverse repo drains liquidity; allowing a reverse repo to run off reverses this and **ADDS** money back into the financial system. The Fed has been reducing the O/N RRP by $180 billion a month over the past ten months. That implies that the facility will be closed by April and will no longer be a source of liquidity to the banking system.

  The next stop on the acronym express: the Bank Term Lending Program (BTLP). The BTLP was established in March 2023 in reaction to the series of regional bank failures. Banks were encouraged during the height of the Covid pandemic to purchase "safe" Treasury securities as the Fed pushed interest rates down near zero. As the Fed began to raise rates in March 2023, the price of these Treasuries plummeted (higher rates = lower bond prices) causing many of these banks to be insolvent if these Treasuries were marked-to-market. The Fed established the BTLP so that banks in this situation could borrow money using these Treasuries as collateral. The idea was that the Treasuries, if held to maturity, would pay off at their full face-value even if they were temporarily "under water" due to the rise in interest rates.

Balances in the BTLP rose from zero in February 2023 to over $110 billion six months later. The facility has since swelled to over $165 billion as banks have arbitraged the Fed's borrowing and lending rates by borrowing cheaper money at the BTLP and then investing it at the higher rate the Fed pays on bank reserves. The Fed has announced that it plans to wind down this facility by the end of March. That would drain an additional $165 billion from the banking system at the same time that winding down the O/N RRP adds an additional $180 billion a month.

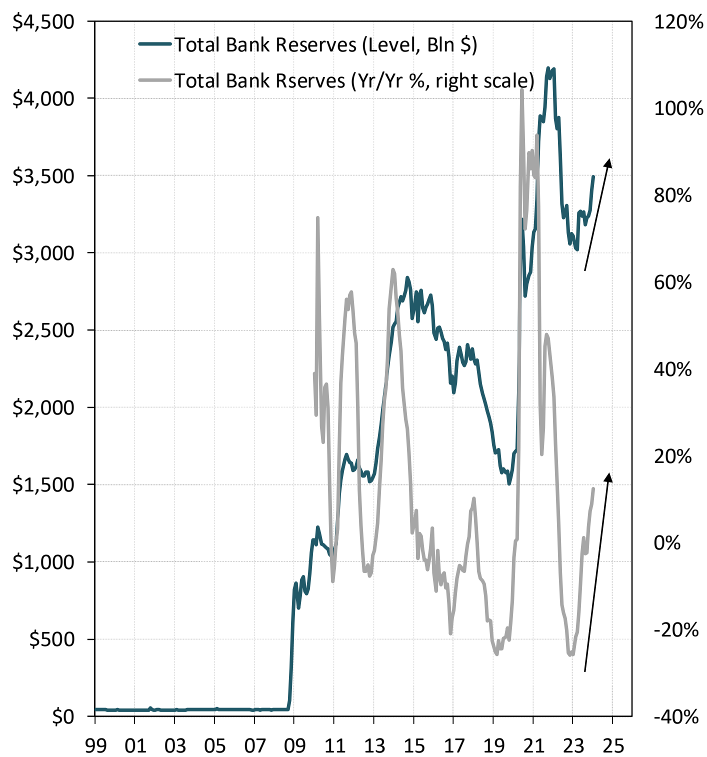
Which brings us to the last big moving part in all this: Quantitative Tightening (QT). The Covid pandemic prompted the Federal government to finance its Covid boondoggle spending by issuing $8.4 trillion in net new debt between December 2019 and the end of 2022. Of this $8.4 trillion, $4.5 trillion was purchased by the Federal Reserve for its investment portfolio. The result was a 92% increase in the money supply that was directly responsible for the 20% rise in consumer prices since then.

As inflation accelerated into 2022, the Fed reacted by raising rates starting in March. At the same time, the Fed announced that it would drain liquidity from the banking system by either selling or allowing to mature $60 billion a month in Treasuries and $35 billion in mortgage-backed securities (MBS). The result is that the Fed's investment portfolio has contracted by $1.3 trillion since mid-2022 (Chart 4).

To understand how these three programs, O/N RRP, BTLP, and QT, affect the markets we need to look at their total net change. **Whether Fed policy is loose or tight depends on the NET effect of all of these policies**. Looking at the net effect helps explain why stock prices have managed to rally to record highs despite a two-decade high in interest rates and the most extreme contraction in the monetary aggregates since the 1930's.

The S&P 500 peaked in December 2021 and turned decidedly lower in March 2022 as the Fed began to raise rates and real money growth collapsed from a 75% yr/yr rate to zero. The S&P dropped -24% from its high before bottoming in September 2022 **despite interest rates rising another 300 basis points from their September 2022 levels**. So, what happened? Simply, the **NET** amount of reserves (O/N RRP + QT) bottomed in November 2022 and started to rise steadily into 2023 as the monthly amount of (restrictive) QT was more than offset by the liquidity being added by the winding down of the O/N RRP. Then, the bank crisis hit in March 2023 which resulted in the launch of the BTLP. The BTLP added $100+ billion in bank reserves on top of the liquidity being added by the winding down of the O/N RRP. As a result, bank reserves which were falling at a -26% yr/yr rate 14 months ago are now growing at a +12.4% rate (Chart 5). This reversal in the growth of reserves has more than offset the negative effects of the 225 basis points rise in interest rates over that period.

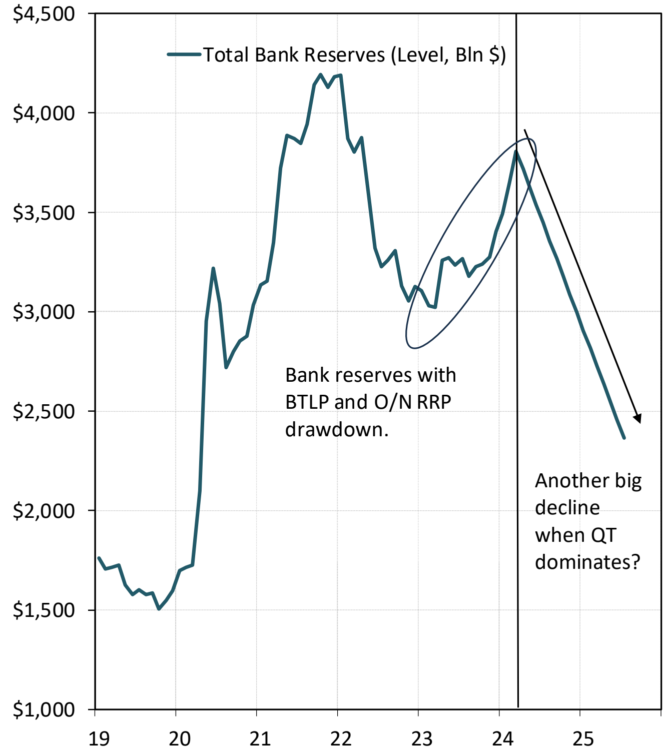
CHART 5
Total Bank Reserves



So where from here? Let's start with our baseline assumptions: the economy continues to grow at or near trend, the PCE deflator continues to converge to the Fed's 2% target, and the Fed is serious about continuing its QT until total bank reserves fall to their desired level of around $2.4 trillion. That would be consistent with reserves being reduced by another $1.1 trillion given the current level of reserves ($3.49 trillion).

CHART 6

Bank Reserves After BTLP and O/N RRP Expire



Let's look at the math of how this would happen. If we take the Fed at its word (always dangerous given their tendency to make things up on the fly), the plan is to reduce both the BTLP and O/N RRP to zero by the end of March. At the same time, the Fed will continue to trim its investment portfolio by about $90 billion a month. That implies that bank reserves will rise $7.5 billion in each of the next two months (-$82.5 BTLP +$180 O/N RRP - $90 QT = $7.5). After March, however, reserves would start to decline by the full $90 billion QT since there would be no offsetting liquidity from the BTLP or O/N RRP. To reach the $2.4 trillion reserve target, the Fed would need to maintain QT through March 2025 (Chart 6).

As we noted above, we believe that much of the recovery in stock prices since the end of 2022 has occurred due to the combination of the O/N RRP winding down and then the surge in reserves provided by the BTLP. The result was that growth in total bank reserves swung from a -26% y/yr rate to a +12.4% rate last month. The monthly addition of $7.5 billion noted above will cause yr/yr growth in reserves to hit 15% by the end of March. **This, combined with favorable seasonals, will likely support stock prices for the next two months**.

After March, however, the situation changes dramatically. Reserves will start to fall be -$90 billion a month. At that rate, yr/yr growth in reserves will hit zero by the end of June and will turn strongly negative by the end of the year. **We believe that the reduction in reserves combined with high equity valuation and less favorable seasonals after April will set the stage for at a minimum an extended consolidation in stock prices starting in the spring**.

- **Risks to this scenario**.

The scenario laid out above depends heavily on the assumption that the economy will continue to perform at least moderately well. We have discussed repeatedly, however, the performance of the Index of Leading Economic Indicators (LEI). The LEI dropped again last month, the 21st consecutive drop in a row. The Index is down -7.7% yr/yr, and the pace of decline has actually accelerated over the last three months (Chart 7). While consumer spending, capital investment, and the labor market remain solid, other sectors continue to struggle. Commercial and residential real estate continue to struggle due to higher interest rates. The ISM Manufacturing Index has been negative eight months in a row including a sharp drop last month. Consumer savings have fallen back near their pre-Covid levels raising the question of whether consumer spending can continue to support the economy.

Should the economy weaken suddenly, the Fed is likely to cut rates more aggressively and may even reduce or eliminate QT entirely. While this in itself would be bullish for stocks, a weaker economy would also be a major negative for corporate earnings. Which influence wins out – lower rates versus weaker earnings – is unclear though the market's extreme overvaluation and narrow breadth favor lower stock prices.

The other major potential influence on Fed policy is another banking crisis. The Fed removed the following sentence from its post-FOMC statement: "The U.S. banking system is sound and resilient." The question this raises is 1) did the Fed drop the wording because the U.S. banking system is over the regional banking crisis and thus requires no more cheerleading, or 2) is another shoe about to drop regarding the regional banks?

Regional banks have significantly underperformed the larger money center banks over the past six months. Shares of Western Alliance Bancorp, Zions Bancorp, Comerica, Webster Financial, Citizens Financial, Regions Financial, SouthState, Prosperity Bancshares, Schwab, PacWest, and Huntington Bancshares have all been under pressure. Concerns are mounting over exposure to commercial real estate by many of these banks. The persistent inverted yield curve is also putting pressure on these banks' earnings as short-term funding costs continue to run well above the rate at which many of these commercial real estate loans were made.

Barry Sternlicht, CEO of Starwood Capital Group, recently said that he sees over $1 trillion in losses in office real estate. "Once a $3 trillion asset class, offices now are probably worth $1.8 trillion. There's $1.2 trillion in losses spread somewhere, and nobody knows exactly where it all is." If it ends up in the regional banks, additional bank failures can't be ruled out. In that case the Fed would likely resurrect the Bank Term Funding Program that they are presently trying to shut down. Such a lending facility would inject emergency reserves into the banking system which would potentially more than offset the contractionary impact of QT. The previous BTLP helped propel stocks higher because the Treasuries pledged as collateral were fundamentally sound. This time may be different because the real estate loans held by the banks may themselves be impaired. Whether a stock rally happens a second time will depend heavily on the banks effected, the size and nature of the problem, possible contagion to other banks, and the potential contraction of the money supply as banks curtail lending.

- **Money growth could be heading lower**. All three major measures of real (inflation-adjusted) money growth remain strongly negative on an yr/yr basis (Chart 8). As of January, yr/yr growth in real M1 was down -

CHART 7

Measures of Economic Activity

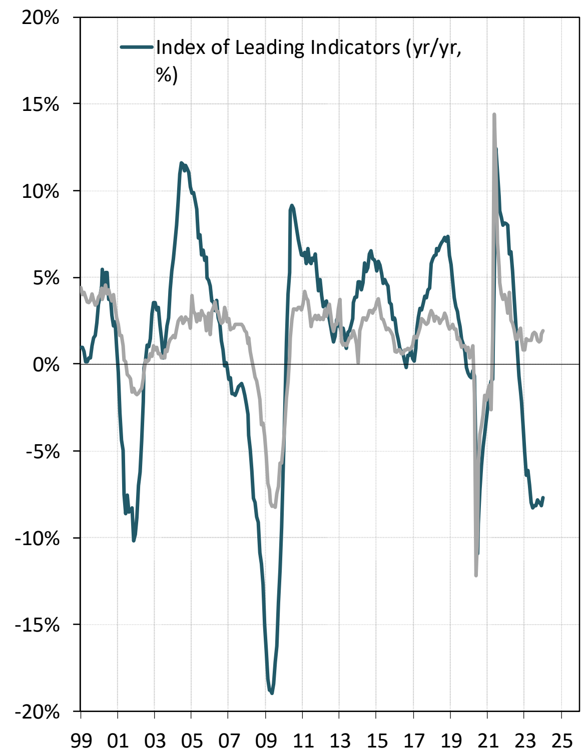
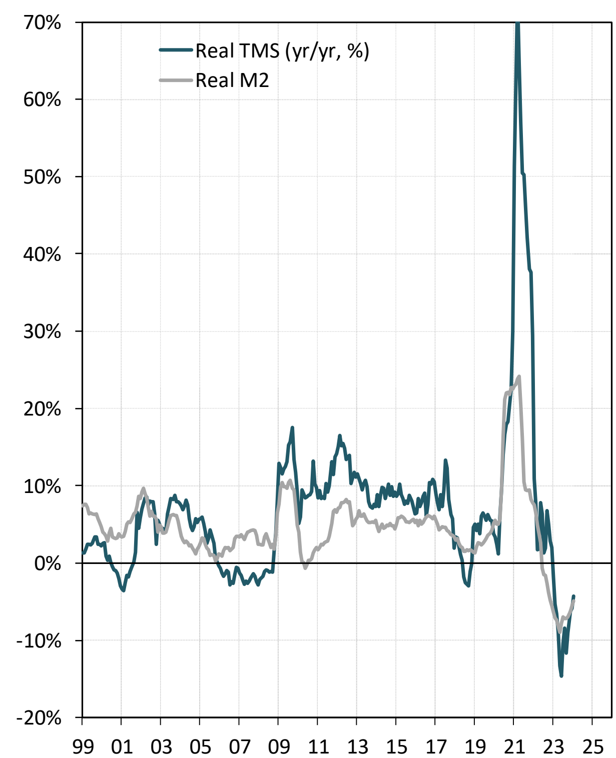


CHART 8

Real True Money Supply and M2



11.8%. Real True Money Supply (TMS) was down -4.8% while real M2 fell -5.4%. All three measures are showing signs of bottoming, but this improvement has likely been the direct result of the combination of BTLP and the reduction in the O/N RRP facility. Chart 8a plots bank reserves against the TMS money measures since the end of 2019. Over that stretch changes in bank reserves have led changes in TMS by 3-6 months. The increase in reserves started in March 2023 which coincided with the launch of the BTLP and the accelerating drawdown in the O/N RRP facility. The result is that bank reserves have grown 21% since then. Not coincidentally, TMS growth bottomed in June 2023 and has risen 6.3% since then.

More rapid money growth is generally consistent with rising asset prices. The problem is that the same factors that have bolstered money growth over the past six months may be about to reverse. As we discussed above, the math regarding the Fed's three moving parts (BTLP, O/N RRP, and QT) will only be supportive of money growth for another 2-3 months at which point the positive influence of the BTLP and O/N RRP will drop close to zero. With QT targeting a $90 billion monthly decline in the Fed's portfolio, we would expect reserves to turn lower also. If the Fed holds true to its plan to reduce excess reserves to about $2.4-2.5 billion, QT will likely cause a renewed dip in the money supply that will likely take asset prices lower.

- **U.S. equities are becoming dangerously overvalued**. We have been warning for months that U.S. stocks are expensive both on an absolute basis and also relative to non-U.S. markets. **The recent rise in the S&P 500, Dow, and Nasdaq to record highs has caused valuation to rise to levels seen only twice in the last 50 years**. According to the Gamma Valuation Model, the total U.S, market was 1.64 standard deviations (33%) overvalued at the end of January (Chart 9). The S&P 500 was 1.52 standard deviations overvalued (32%), while the Nasdaq was at a whopping 1.73 standard deviations (48%) extreme (Table 1). Valuations have not been this extreme since following the dot com peak in 2000. To put this into perspective, the average non-U.S. market is -0.86 standard deviations undervalued (-20%).

Such extreme levels of overvaluation have historically been associated with extended periods of

CHART 8a

TMS and Bank Reserves

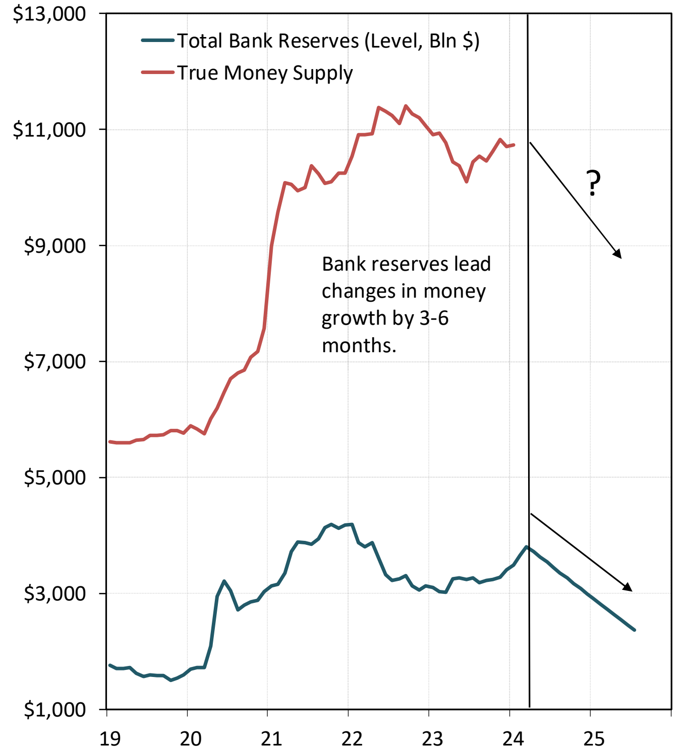


CHART 9a

Tech Stocks vs Total Market

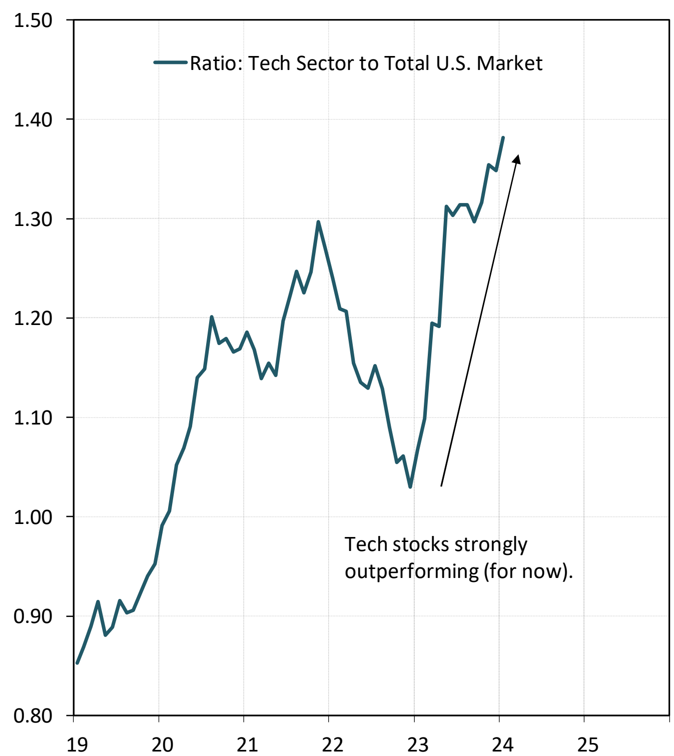
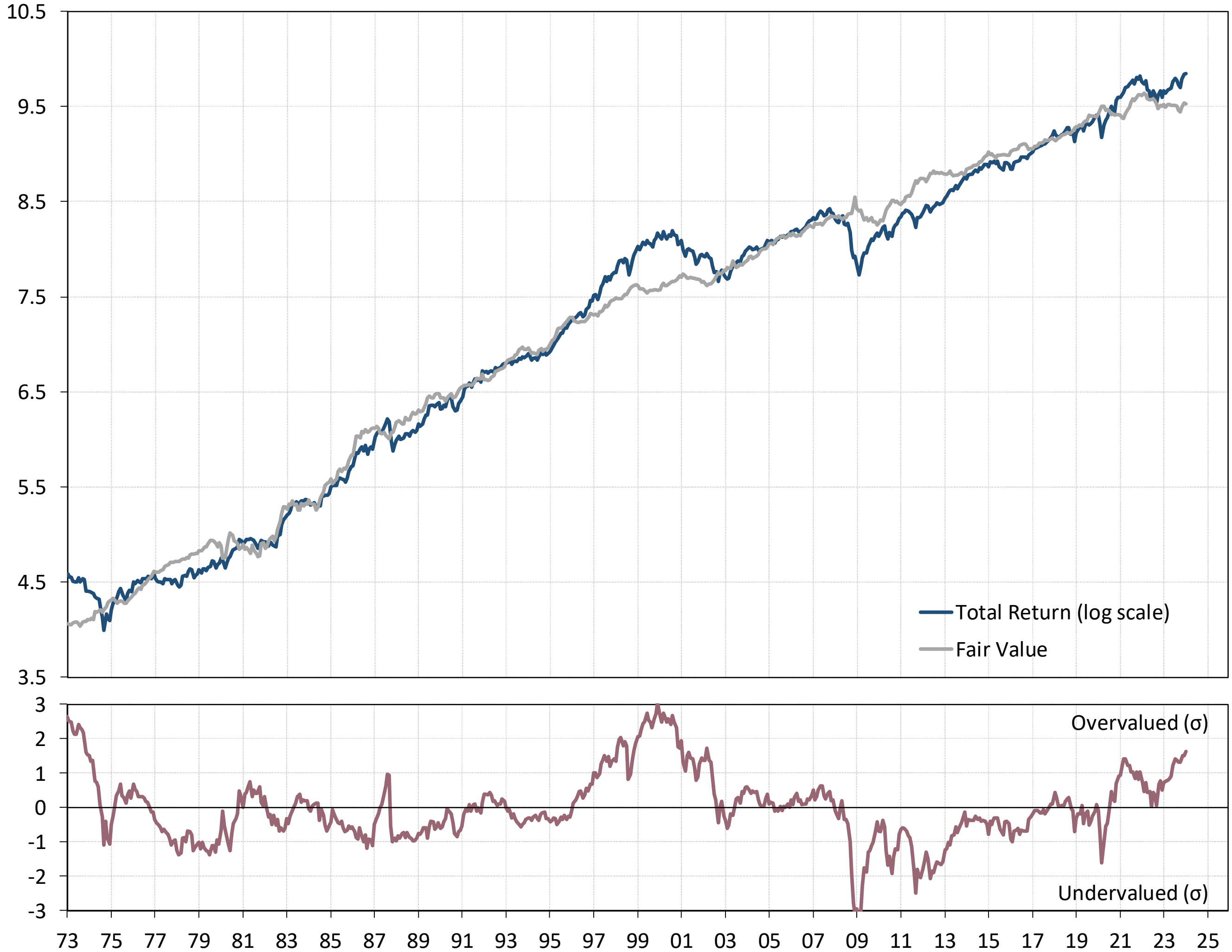


CHART 9

Equity Valuation: United States



underperformance. The Gamma Valuation Model, based on comparable previous extremes, predicts only a 1.9% return for the S&P 500 over the next 12 months (Table 1). The average annual return over the next five years is projected to be only 5.5% - almost 7.5% below the Index's average annual return since 1973. The Nasdaq is projected to be down -4.9% over the next year with the average annual return over the next five years only 2.8% compared to 15.6% since 1973. **These numbers clearly illustrate that extreme levels of valuation have invariably been followed by large corrections (>40%) and extended periods of below-average performance**.

TABLE 1

VALUATION vs FORWARD RETURN ANALYSIS

Country	Valuation (σ)	Valuation (%)	Valuation-Based Return Forecast (Cumulative, %) 1 Mo	3 Mo	6 Mo	1 Yr	2 Yr	3 Yr	5 Yr
United States	+1.64	+33%	-0.2%	-0.4%	-0.9%	-0.2%	5.7%	14.9%	30.8%
S&P 500	+1.53	+32%	0.0%	0.1%	0.3%	1.9%	9.2%	19.4%	36.7%
Nasdaq Composite	+1.73	+48%	-0.5%	-1.4%	-2.7%	-4.9%	-1.7%	7.0%	15.1%
S&P 600 Small Cap	-0.14	-2%	1.1%	3.4%	6.8%	13.8%	27.8%	42.4%	77.8%

The Nasdaq is particularly vulnerable because of its heavy tech bias. The Index hit an astronomical overvaluation high of 3.8 standard deviations in March 2000 before the subsequent 75% drop returned it to fair value. Most of the rise in the S&P 500 has been driven by a handful of tech names. Chart 9a illustrates the ratio of the technology sector total return to that of the S&P 500 since 1973. The ratio is quickly approaching the level just before the dot com bubble burst. When the reversal occurs, the bulk of the damage is likely to occur in the Magnificent 7 stocks that have driven the Index higher. In contrast, the more mundane small cap stocks of the S&P 600 are currently close to fair value and are likely to dramatically outperform the Nasdaq and S&P 500 high-fliers over the next 1-5 years.

II. Fixed Income Outlook

The 30-year Treasury Bond remained neutral for the second month in a row while the 10-year Treasury Note Model went short (higher yields) for the first time since mid-2022 (Charts 10, 11). The Investment Grade Corporate and High Yield Corporate Models, in contrast, remained long (lower yields), a position that they've held since last November.

CHART 10

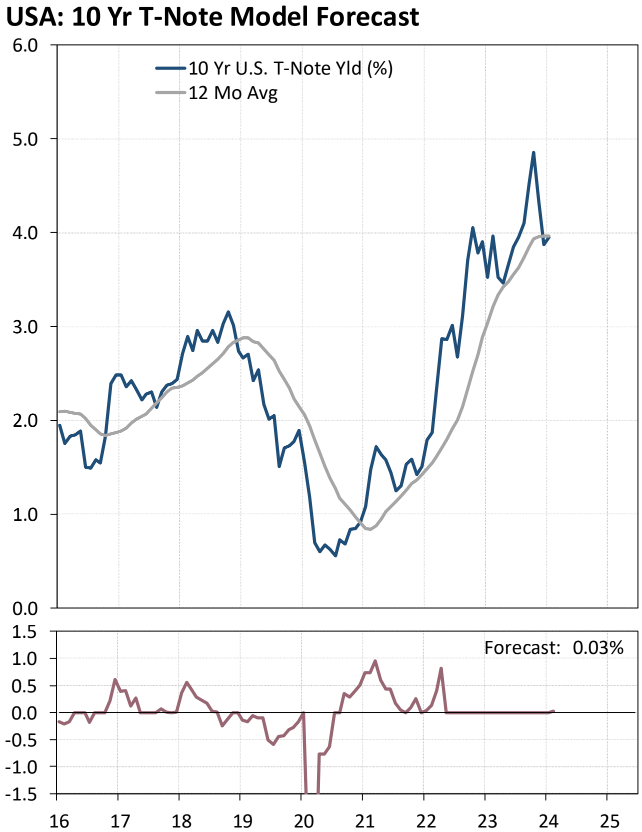
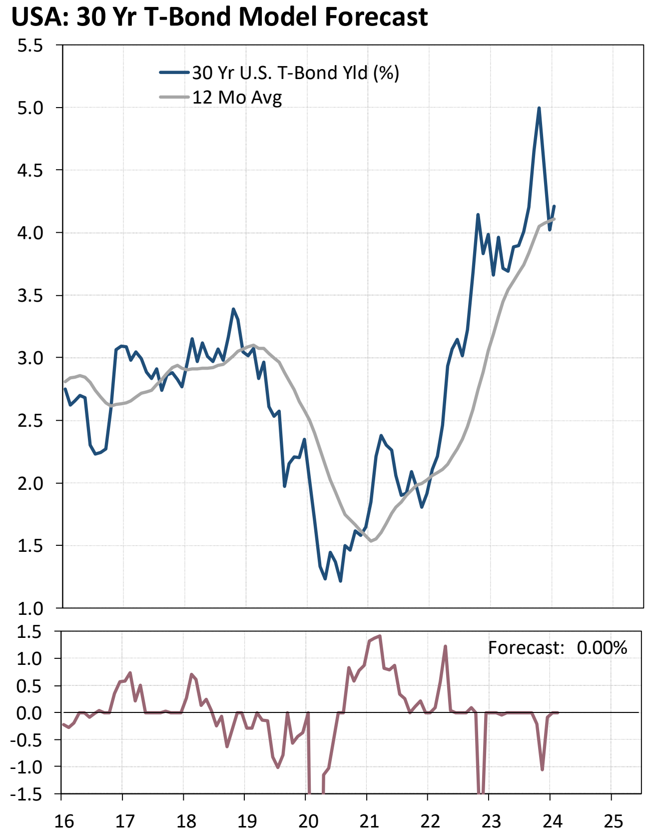


CHART 11



- **Interest rate cut expectations have eased.** A month ago, the bond market was anticipating six 25 basis point rate cuts in 2024. The combination of stronger-than-expected GDP growth and non-ag payrolls plus the hawkish statement following the last FOMC meeting have caused investors to postpone their expectations of the first rate cut until at least May. Investors have been encouraged by the decline in the inflation rate, but persistent economic outperformance suggests that the Fed will be cautious in cutting rates. With unemployment near record lows, wage growth accelerating, and service sector inflation remaining stubbornly high, the Fed will be concerned that too aggressive an ease will risk a resurgence of inflation.

  Even with these developments, the CME's Fedwatch Tool indicates that the market still expects five rate cuts this year. The Fed took the March rate cut off the table even before release of the January jobs numbers. Given the magnitude of the jobs number, it's safe to assume that even a May rate cut is also off the table because the Fed thinks it needs more data to gain "greater confidence" that inflation is coming down sustainably. It will not have much more data by the May meeting than it had in March. That means that there is a growing gap between what the market is anticipating versus what the Fed is telegraphing about its actions. That gap implies that bond yields could start rising again if the market's "Goldilocks" scenario isn't realized.

- **BTLP, O/N RRP, and QT**. Just as stocks have benefitted from the combination of BTLP lending and the winding down of the O/N RRP facility, so have bond yields fallen as a consequence. Bond yields have historically risen when the Fed has reduced its holdings of Treasuries and MBS. The BTLP and O/N RRP reduction, however, have more than offset the Fed's QT starting most strongly in September. At that time, the BTLP jumped sharply and the winding down of the O/N RRP accelerated. That caused the 10-year T-Note yield to drop over 100 basis points from its October peak. With the BTLP and O/N RRP winding down to zero by March or April, the bond market will be left with QT that will drain $90 billion a month. That reduction in liquidity will clash with the voracious borrowing needs of the U.S. government.

- **Presidential election**. While investors currently expect five rate cuts this year, we see the odds of this as very low for two reasons. First, the March rate cut has already been taken off the table. If the economy, especially the labor market, remains robust the chances of a May cut will likely fall to zero. That will put us almost halfway through the year without a rate cut and that would mean five rate cuts in seven months – an extremely unlikely scenario barring a clear downturn into recession. The second factor is the Presidential election. While the Fed is clearly a political animal, the FOMC will likely not want to be seen as playing favorites by moving rates significantly ahead of the November election. That implies that at least one opportunity to cut rates will also be taken off the table. **The most likely scenario is thus three 25 basis points rates cuts this year which clearly clashed with the markets expectation of five such cuts. The consequence is that bond yields could creep back up again as the prospect of "higher for longer" sinks in**.

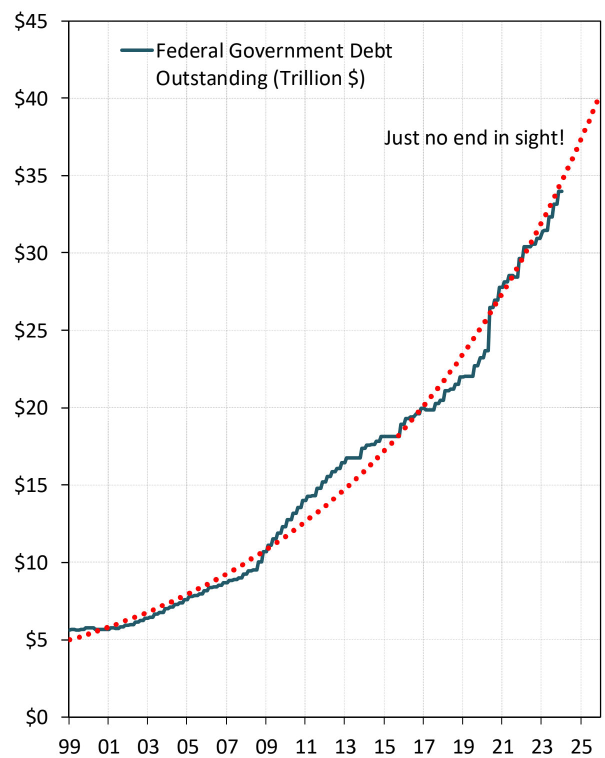
- **Government borrowing vs QT**. The focus on Fed policy so far in 2024 has distracted from the underlying debacle that is U.S. fiscal policy. Long-term interest rates dipped in January as the Treasury announced a $55 billion reduction in its borrowing for the first quarter. The reduction was apparently due to higher-than-expected tax revenues resulting from the economy's persistent strength. The positive response didn't last long, however, as bond yields by month-end had returned to their pre-announcement levels.

  This bit of good news is certainly welcome, but it in no way changes the fiscal trainwreck that is coming. The U.S. government is expected to raise a net new $760 billion in IQ2024 followed by another $472 billion in IIQ2024. The deficit is on target to top $2 trillion for the third year in a row which will push the amount of debt outstanding to $36 trillion by year-end (Chart 12).

  The size of the debt/deficit is creating a vicious circle. Money borrowed during the Covid pandemic was issued when 10-year Treasury notes yielded as low as 1.25%. Prior to the Covid pandemic annual interest payments on the debt were running at a rate of about $460 billion. Federal debt skyrocketed by over $8 trillion between 2020 and 2022. Since the Fed began tightening in March 2022, interest rates have jumped from near zero to over 5%. The combination has caused interest on the national debt to more than double to

CHART 12

Federal Government Debt (Trillion $)

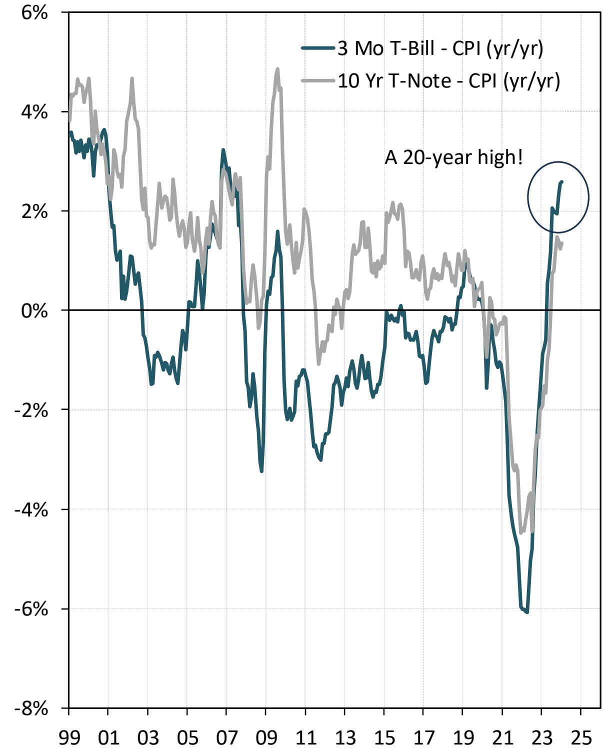


over $1 trillion a year. The annual cost of financing the debt is now larger than the defense budget ($880 billion), non-defense discretionary spending ($992 billion), Medicare ($821 billion), and Medicaid ($556 billion). Only Social Security spending at $1.559 trillion is larger. This has created a Catch-22 situation. The government needs to borrow more money to finance the interest payments on existing debt which then increases the total amount of debt on which interest is owed.

In addition to the $2 trillion of NEW debt, the government also has to refinance over $6 trillion in existing debt this year. The problem is that interest rates are MUCH higher than they were 2, 3, 5, 7, and 10 years ago when these notes were first issued. For example, in 2021 the Treasury issued $1 trillion in 3-year notes at a yield of almost zero. Those notes coming due this year will be refinanced at around four percent. Interest on the debt is already at $1 trillion a year, but that will swell to over $2 trillion within three years and as much as $5 trillion in ten years.

CHART 13

Real Interest Rates



The amount of money that the Federal government needs to raise is starting to have a material impact on borrowing costs throughout the economy. Real (inflation-adjusted) interest rates have turned strongly positive and have climbed to their highest level since 2009 (Chart 13). With debt expected to grow steadily as a percentage of GDP, this upward pressure on real interest rates is likely to continue. The result may be a long-term floor under interest rates that will only exacerbate the cost of financing the debt. The syphoning of capital from the private sector is also likely to harm GDP growth as the hurdle rate for profitable investment rises. Slower economic growth translates into weaker tax revenues which will in turn increases the amount borrowed.

In addition to the impact on the real economy, the rising deficits are set to directly clash with monetary policy. As we discussed above, the Fed still appears keen on reducing total bank reserves to around $2.4 trillion from the current $3.4 trillion. By April, QT will kick in full force meaning that $90 billion of liquidity will be draining out of the banking system each month for at least a year. That means $90 billion a month that is no longer available for financing the Treasury's borrowing needs. Barring an outright recession, the clash between the two is likely to cause a backup in long-term rates starting as soon as March.

III. Gold and Precious Metals Outlook

The Gamma Gold Model remained covered its long position and went NEUTRAL for February though the silver and platinum Models remained long (Chart 14). Gold slipped -0.5% last month following an 11% gain over the previous three months. The Gold Mining Shares Model also went NEUTRAL.

- **Interest rate expectations will slow gains**. After rallying on expectations of multiple rate cuts, gold eased back last month on the hawkish comments by FOMC members. Gold had benefitted from the same interest rate expectations - six 25 basis points cuts in 2024 - that had driven the recent rally in stock prices. After recent comments by Fed Chairman Powell, the number of 25 basis points rate cuts in 2024 is likely to be only three, a divergence of 75 basis points compared to the beginning of the year. The prospect of "higher for longer" sent gold prices down in January. The three expected rate cuts are likely to support additional gains, but the path higher is likely to be much choppier and shallower than what would have occurred with the more aggressive series of cuts expected at the beginning of the year.

- **Still favorable valuation**. Despite last month's small -0.5% dip, gold is still up over 10% from its September low. This rise has steadily eaten into the severe undervaluation the metal exhibited at the end of 2022. Gold at that time was 40% undervalued according to the Gamma Gold Valuation Model. Gold has risen 23% since then. The combination of lower long-term rates, an expansion in bank reserves, and the prospect of Fed rate cuts has reduced overvaluation to 11% (-0.5 standard deviations) last month (Table 2). A return to fair value would carry gold up to about $2,275/oz. We regard this as a realistic initial target. Historically, however, valuation extremes (either to the upside or downside) in excess of ±1.5 standard deviations or more have invariably been followed by overshoots of at least that size in the opposite direction (though this in several cases has played out over several years). That would suggest that a reasonable price target based on valuation alone would be in the $2,575-2,600 range.

CHART 14

Gold Model Forecast

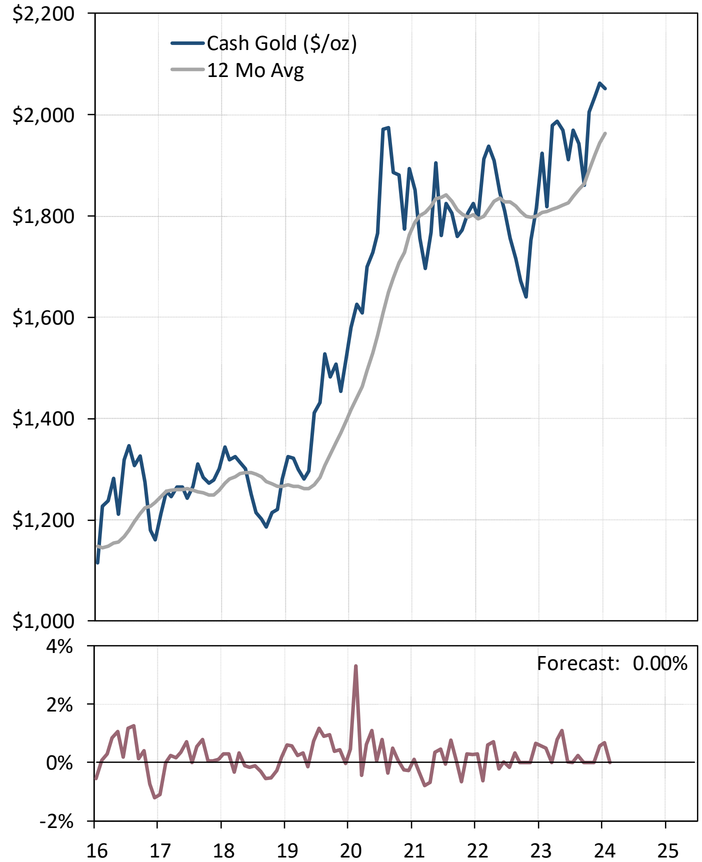


TABLE 2

VALUATION vs FORWARD RETURN ANALYSIS - ANNUALIZED RETURNS

Commodity	Valuation (σ)	Valuation (%)	Valuation-Based Forecast (Annualized, %) 1 Mo	3 Mo	6 Mo	1 Yr	2 Yr	3 Yr	5 Yr
Gold	-0.47	-11%	9.7%	9.2%	8.7%	9.1%	9.5%	9.7%	9.2%
Silver	-0.56	-19%	11.9%	11.9%	12.2%	11.9%	11.2%	10.2%	9.2%
Platinum	-1.49	-44%	7.8%	8.4%	9.0%	9.8%	11.3%	11.8%	10.3%
Palladium	-1.30	-55%	18.8%	18.3%	19.8%	21.0%	21.8%	20.5%	17.5%

IV. Foreign Exchange Outlook

The Gamma EUR/USD Model remained short the euro (long USD) for January for the seventh month in a row (Chart 15). As we have noted in recent months, monetary policy for both the Fed and ECB remains in neutral for the time being. The interest rate differential favors the dollar, however, which should keep at least moderate upward pressure on the U.S. currency.

- **<u>The U.S. has an interest rate edge no matter what happens to central bank policy</u>.** The Federal Reserve has effectively eliminated any chance of a March rate cut, and the odds of six cuts in 2024 has likely been trimmed to three. That in itself would be expected to provide support for the dollar. The ECB, however, seems to be matching Fed policy which should keep a lid on any major dollar gains. "The consensus around the table was that it was premature to discuss rate cuts," ECB President Christine Lagarde told her regular news conference following the decision, insisting that future decisions would depend on incoming data.

  "We need to be further along the disinflation process to be confident that inflation will be at target - sustainably so." ECB board member Isabel Schnabel recently noted in an interview that "the European Central Bank must be patient with cutting interest rates as inflation could flare up again and recent data confirm fears that the 'last mile' of getting price growth down will be the hardest." The Eurozone rates have remained at record highs since the last rate hike last September, but as with the Federal Reserve, debate over policy easing is intensifying due to weak economic growth and fading price pressures. Ms. Schnabel cautioned against cutting too soon, however, arguing that the effect of past rate hikes has already passed, and some worrying signs remain. "Selling-price expectations in services, they have gone up for several months in a row. We see sticky services inflation. We see a resilient labor market." The implication is that neither the Fed nor the ECB seemed inclined to rush any rate cuts.

  Under those circumstances it is the current spread in the level of interest rates rather than their changes that are likely to be the primary influence on the exchange rate. The interest rate differential still favors the dollar (Chart 16). The USD-EUR differential on three-month deposit rates has narrowed from 300 basis points in October 2022 but was still a substantial 146 basis points last month. The spread on 10-year governments, moreover, has been largely unchanged at 190 basis points favoring the U.S. The one measure that is moving strongly in favor of the euro is the relative yield curve. The relative yield curve, a measure of liquidity, has moved steadily in favor of the euro since the end of 2022 from +105 basis points to -42 basis points last month. These improvements have helped the euro recover

CHART 15

EUR/USD Model Forecast

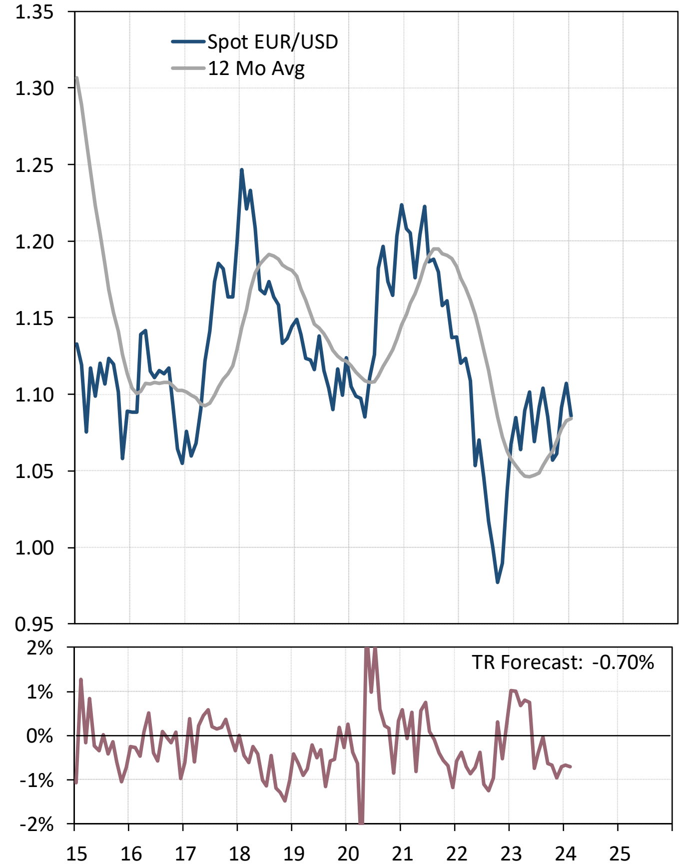
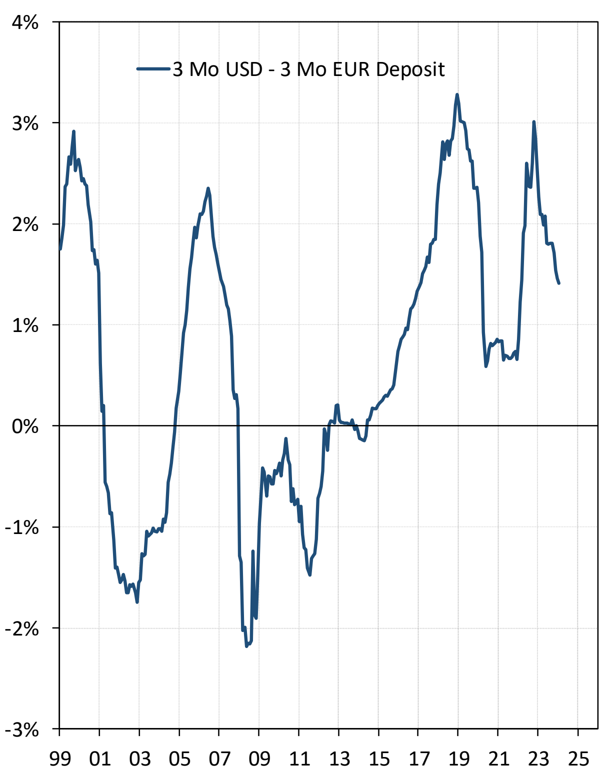


CHART 16

3 Month Interest Rate Differential



from its sharp drop below 0.9800 fourteen months ago to last month's 1.1100.

- **QT about to shift in favor of the dollar.** While the interest rate differential favors the dollar, the ECB arguably has been more aggressive in terms of reining in excessive liquidity than the Fed. Under the ECB's QT program, which started in October 2022, total assets have plummeted by €1.97 trillion (22.2%) to €6.87 trillion last month to their lowest level since November 2020. In contrast, because of the existence of the Fed's BTLP and O/N RRP programs which have offset QT, the Fed's balance sheet has shrunk by $1.24 trillion, a drop of 16%. The expiration of the BTLP and winding down of the repo facility over the next few months will set the stage for a much more aggressive draining of liquidity by the Fed than the ECB.

- **The U.S. economy continues to outperform**. Eurozone GDP was about unchanged in the IVQ2023. In contrast, U.S. output climbed 3.3%. As long as U.S. growth remains above trend, the Fed is likely to be more hesitant to cut rates than the ECB.

TABLE 3

VALUATION vs FORWARD RETURN ANALYSIS - ANNUALIZED RETURNS

	Valuation	Valuation	Valuation-Based Forecast (Annualized, %)						
Country / Index	(σ)	(%)	1 Mo	3 Mo	6 Mo	1 Yr	2 Yr	3 Yr	5 Yr
Europe	-1.12	-26%	17.8%	17.5%	19.0%	18.7%	17.5%	16.3%	15.9%
Germany	-1.91	-42%	19.8%	19.5%	20.4%	20.1%	18.9%	17.7%	16.4%
France	+0.43	+9%	10.8%	10.8%	10.2%	10.8%	12.0%	12.7%	13.2%
Italy	-1.08	-27%	14.4%	14.3%	16.0%	17.5%	16.7%	15.2%	15.8%
Switzerland	-1.86	-37%	10.3%	10.2%	12.3%	12.0%	11.6%	10.9%	12.9%
UK	-0.10	-2%	14.0%	13.8%	14.0%	13.9%	13.8%	14.0%	14.1%

- **Cheaper European equities may encourage capital inflows.** European equities offer much more attractive valuation than U.S. stocks. As noted above, U.S. equities are now at their most overvalued level since the dot com mania. European stocks, on the other hand, are still undervalued even after their rally over the past several months. The Euro Stoxx 600 has risen 14.4% from its October low, but the Gamma Equity Valuation Model still shows the broad European index to still be 26% undervalued compared to 32% **overvalued** for the S&P 500 – a record 58% differential that is the widest since 1974 (Table 3).

-Karl Chalupa

Mr. Chalupa is the CIO 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.

Gamma Macro Model Forecasts for February 2024

1 MONTH STOCK INDEX MODEL FORECASTS (%)

Country	Stock Index	Price	1 Mo Forecast	Previous Forecast	Position	Trade	Updated
USA	S&P 500	4,924.97	-0.02%	0.00%	Short	Sell	1/31/24
USA	Nasdaq	15,263.24	0.00%	0.00%	Neutral	Hold	1/31/24
USA	Russell 2000	1,985.16	0.00%	0.00%	Neutral	Hold	1/31/24
Canada	S&P/TSX 60	1,279.66	0.00%	0.00%	Neutral	Hold	1/31/24
Mexico	IPC	57,398.03	+0.56%	+1.62%	Long	Hold	1/31/24
Brazil	Bovespa	128,664.83	0.00%	0.00%	Neutral	Hold	1/31/24
Japan	TOPIX	2,551.10	0.00%	0.00%	Neutral	Hold	1/31/24
China	Hang Seng CEI	5,194.04	+1.23%	+0.54%	Long	Hold	1/31/24
Hong Kong	Hang Seng	16,906.66	0.00%	0.00%	Neutral	Hold	1/31/24
S. Korea	KOSPI	2,497.09	+0.69%	+0.68%	Long	Hold	1/31/24
India	Nifty 500	19,802.10	+1.27%	+1.78%	Long	Hold	1/31/24
Australia	S&P/ASX 200	7,680.70	0.00%	0.00%	Neutral	Hold	1/31/24
Europe	STOXX 600	486.43	0.00%	0.00%	Neutral	Hold	1/31/24
UK	FTSE 100	7,653.26	+0.93%	+1.42%	Long	Hold	1/31/24
Germany	DAX	16,906.66	0.00%	0.00%	Neutral	Hold	1/31/24
France	CAC 40	7,663.81	0.00%	0.00%	Neutral	Hold	1/31/24
Italy	FTSE/MIB 30	30,751.81	0.00%	0.00%	Neutral	Hold	1/31/24
Switzerland	Swiss Market	11,350.16	0.00%	0.00%	Neutral	Hold	1/31/24
Russia	RTS 50	1,125.63	0.00%	0.00%	Neutral	Hold	1/31/24
S. Africa	FTSE/JSE 40	68,034.46	+2.22%	+1.44%	Long	Hold	1/31/24

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	4.20	-0.03%	0.00%	Short	Sell	1/31/24
USA	5 Yr T-Note	3.86	-0.04%	0.00%	Short	Sell	1/31/24
USA	10 Yr T-Note	3.95	-0.03%	0.00%	Short	Sell	1/31/24
USA	30 Yr T-Note	4.21	0.00%	0.00%	Neutral	Hold	1/31/24
USA	IG Corporate	5.27	+0.21%	+0.61%	Long	Hold	1/31/24
USA	HY Corporate	7.88	+0.50%	+0.98%	Long	Hold	1/31/24
Canada	10 Yr Govt	3.35	-0.17%	-0.08%	Short	Hold	1/31/24
Mexico	10 Yr Cetes	9.30	0.00%	0.00%	Neutral	Hold	1/31/24
Brazil	10 Yr Govt	10.63	-0.07%	0.00%	Short	Sell	1/31/24
Japan	10 Yr JGB	0.72	0.00%	0.00%	Neutral	Hold	1/31/24
Australia	10 Yr Govt	3.97	0.00%	0.00%	Neutral	Hold	1/31/24
S. Korea	10 Yr Govt	3.35	0.00%	-0.39%	Neutral	Cover Short	1/31/24
China	10 Yr Govt	2.44	0.00%	0.00%	Neutral	Hold	1/31/24
India	10 Yr Govt	7.14	0.00%	-0.01%	Neutral	Cover Short	1/31/24
Germany	10 Yr Bund	2.16	+0.01%	+0.06%	Long	Hold	1/31/24
France	10 Yr OAT	2.66	0.00%	0.00%	Neutral	Hold	1/31/24
Italy	10 Yr BTP	3.74	0.00%	0.00%	Neutral	Hold	1/31/24
Switzerland	10 Yr Conf	0.82	0.00%	0.00%	Neutral	Hold	1/31/24
UK	15 Yr Gilt	4.18	+0.01%	+0.34%	Long	Hold	1/31/24
Russia	10 Yr Govt	12.27	0.00%	0.00%	Neutral	Hold	1/31/24
S. Africa	10 Yr Govt	9.76	0.00%	0.00%	Neutral	Hold	1/31/24

Gamma Macro Model Forecasts for February 2024

1 MONTH FX MODEL FORECASTS (%)

Currency	Spot FX Rate	1 Mo Forecast	Previous Forecast	Position	Trade	Updated
EUR/USD	1.0859	-0.70%	-0.67%	Short	Hold	1/31/24
GBP/USD	1.2730	-0.31%	-0.23%	Short	Hold	1/31/24
USD/CHF	0.8580	+0.92%	+0.52%	Long	Hold	1/31/24
USD/NOK	10.4544	+0.36%	+1.06%	Long	Hold	1/31/24
USD/SEK	10.3475	+0.24%	+0.38%	Long	Hold	1/31/24
USD/JPY	146.33	0.00%	0.00%	Neutral	Hold	1/31/24
AUD/USD	0.6609	-0.66%	-0.57%	Short	Hold	1/31/24
NZD/USD	0.6155	+0.31%	-0.60%	Long	Cover Short & Buy	1/31/24
USD/KRW	1,331.22	+0.67%	+0.65%	Long	Hold	1/31/24
USD/CNY	7.1681	+0.31%	+0.00%	Long	Hold	1/31/24
USD/INR	83.03	-0.64%	-0.48%	Short	Hold	1/31/24
USD/SGD	1.3367	+0.29%	+0.41%	Long	Hold	1/31/24
USD/CAD	1.3363	-0.07%	+0.40%	Short	Cover Long & Sell	1/31/24
USD/BRL	4.9415	+0.52%	+0.62%	Long	Hold	1/31/24
USD/MXN	17.19	0.00%	0.00%	Neutral	Hold	1/31/24
USD/RUB	89.89	-1.00%	+0.46%	Short	Cover Long & Sell	1/31/24
USD/ZAR	18.60	+0.94%	+0.38%	Long	Hold	1/31/24
BTC/USD	43,319	+2.21%	+4.52%	Long	Hold	1/31/24

1 MONTH COMMODITY PRICE FORECASTS (%)

Commodity	Cash / Futures Price ($)	1 Month Forecast	Previous Forecast	Position	Trade	Updated
Gold	$2,051.59	0.00%	+0.69%	Neutral	Cover Long	1/31/24
Silver	$23.27	+1.04%	+1.38%	Long	Hold	1/31/24
Platinum	$932.08	+1.13%	+0.89%	Long	Hold	1/31/24
Palladium	$990.58	-0.09%	+0.21%	Short	Cover Long & Sell	1/31/24
Aluminum	$2,251.51	0.00%	0.00%	Neutral	Hold	1/31/24
Copper	$8,103.00	+0.43%	0.00%	Long	Buy	1/31/24
Lead	$2,064.75	+0.31%	0.00%	Long	Buy	1/31/24
Nickel	$20,865.50	0.00%	0.00%	Neutral	Hold	1/31/24
Tin	$25,867.00	+0.87%	0.00%	Long	Buy	1/31/24
Zinc	$2,287.77	+0.40%	0.00%	Long	Buy	1/31/24
LME COMPOSITE	---	+0.33%	0.00%	Long	Buy	1/31/24
WTI Crude Oil	$72.94	0.00%	0.00%	Neutral	Hold	1/15/24
HH Natural Gas	$2.520	0.00%	0.00%	Neutral	Hold	1/19/24

GIC will use its reasonable best efforts to provide accurate and informative Information Services to Subscriber, but GIC cannot guarantee the accuracy, relevance and/or completeness of the Information Services, or other information used in connection therewith. GIC, its affiliates, shareholders, directors, officers, and employees shall have no liability, contingent or otherwise, for any claims or damages arising in connection with (i) the use by Subscriber of the Information Services and/or (ii) any errors, omissions or inaccuracies in the Information Services. The Information Services are provided for the benefit of the Subscriber. It is not to be used or otherwise relied on by any other person.

Some of the data contained in this publication may have been obtained from London Stock Exchange Group plc ("LSEG"). LSEG nor any other party involved in or related to compiling, computing, or creating the LSEG data makes any express or implied warranties or representations with respect to such data (or the results to be obtained by the use thereof), and all such parties hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability, or fitness for a particular purpose with respect to any of such data. Without limiting any of the foregoing, in no event shall Refinitiv, any of its affiliates or any third party involved in or related to compiling, computing or creating the data have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages. No further distribution, dissemination, reproduction of any information, opinions, views, data or material, including ratings ("Content") in any form is prohibited without Refinitiv's express written consent.

Gamma Investment Consulting LLC may also obtain data from other sources ("Content Providers"). Such party(s) and their affiliates and suppliers do not guarantee the accuracy, adequacy, completeness, timeliness or availability of any Content and are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, or for the results obtained from the use of such Content. In no event shall Content Providers be liable for any damages, costs, expenses, legal fees, or losses (including lost income or lost profit and opportunity costs) in connection with any use of the Content. A reference to a particular investment or security, a rating or any observation concerning an investment that is part of the Content is not a recommendation to buy, sell or hold such investment or security, does not address the suitability of an investment or security and should not be relied on as investment advice. Credit ratings are statements of opinions and are not statements of fact.

Important Disclaimer

This communication reflects our analysts' current opinions and may not be updated as views or information change. Past results do not guarantee future performance. Business and market conditions, laws, regulations, and other factors affecting performance all change over time, which could change the status of the information in this publication. Using any graph, chart, formula, model, or other device to assist in making investment decisions presents many difficulties and their effectiveness has significant limitations, including that prior patterns may not repeat themselves and market participants using such devices can impact the market in a way that changes their effectiveness. GIC believes that no individual graph, chart, formula, model, analysis or other device should be used as the sole basis for any investment decision.

GIC and its affiliated companies or their respective shareholders, directors, officers and/or employees, may have long or short positions in the securities discussed herein and may purchase or sell such securities without notice.

Neither Gamma Investment Consulting LLC nor the author is rendering investment, tax, or legal advice, nor offering individualized advice tailored to any specific portfolio or to any individual's particular suitability or needs. Investors should seek professional investment, tax, legal, and accounting advice prior to making investment decisions.

GIC's publications do not constitute an offer to sell any security, nor a solicitation of an offer to buy any security. They are designed to provide information, data and analysis believed to be accurate, but they are not guaranteed and are provided "as is" without warranty of any kind, either express or implied.

GIC DISCLAIMS ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY, SUITABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE.

Gamma Investment Consulting LLC, its affiliates, officers, or employees, and any third-party vendors or data providers shall not have any liability for any loss sustained by anyone relying on the information contained in any GIC publication, and they shall not be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs in connection with any use of the information or opinions contained in their publications even if advised of the possibility of such damages.