

## US Economic Weekly

## Ignore retail sales, the economy is cooling

## Weekly viewpoint

The bottom line? Outsized gains in December retail sales were more noise than news on account of changes in seasonal adjustment factors that overwhelmed any actual change in spending. Look for a reversal of December's strength in January. Consumer spending may be healthy, but it's not surging or slumping, and we don't think the report says much about the Fed's ability to cut rates beginning in March as we expect.

## Data preview: Trends in inflation remain favorable

In the December PCE inflation report, we look for headline and core inflation to both rise by 0.2% m/m (0.15% and 0.17% to two decimals, respectively), leaving the y/y rates of growth of headline and core PCE inflation to 2.6% and 2.9%, respectively. The Fed's confidence that inflation is returning to 2% should increase on the back of this report.

## Data Preview: The economy cooled at year-end

We expect the BEA's advance estimate of 4Q US GDP to come in at 1.5% q/q saar after rising by 4.9% in 3Q. We expect growth to be driven by consumer spending, but growth in nonresidential business fixed investment likely remained subdued. Finally, we look for a sizable drag from inventory accumulation.

## Thematic views: Structurally higher interest rates?

Our estimate of the neutral real policy rate is hovering around 40bp. If the post-pandemic surge in participation proves short lived and productivity does not accelerate, then any rise in the neutral rate of interest in the US economy is likely to be modest at best and could prove temporary. This would mean the zero lower bound remains a constraint on monetary policy and the terminal rate in any easing cycle could be lower than we expect (see [Structurally higher US interest rates? Think again](#)).

**Exhibit 1: We look for growth in real US GDP of only 1.5% q/q saar in 4Q 23**

Slowing consumer spending and a large inventory drag likely weighed on growth at year-end

	3Q23 actual		4Q23 forecast	
	% qoq saar	contrib, pp	% qoq saar	contrib, pp
Real GDP	4.9		1.5	
Consumer Spending	3.1	2.1	2.0	1.5
Residential Investment	6.7	0.3	1.0	0.0
Nonresidential Investment	1.5	0.2	3.0	0.4
Structures	11.2	0.3	3.5	0.1
Equipment	-4.4	-0.2	2.5	0.1
Intellectual Property	1.8	0.1	2.5	0.1
Government	5.8	1.0	2.0	0.4
Net Trade		0.0		0.1
Inventory Accumulation		1.3		-0.9

Source: BEA, Haver Analytics, BofA Global Research

ofA GLOBAL RESEARCH

19 January 2024

Economics  
United States

**Michael Gapen**  
US Economist  
BofAS  
+1 646 855 3270  
[michael.gapen@bofa.com](mailto:michael.gapen@bofa.com)

**Aditya Bhawe**  
US Economist  
BofAS  
+1 646 855 9929  
[aditya.bhawe@bofa.com](mailto:aditya.bhawe@bofa.com)

**Stephen Juneau**  
US Economist  
BofAS  
+1 202 442 7429  
[stephen.juneau@bofa.com](mailto:stephen.juneau@bofa.com)

**Shruti Mishra**  
US and Global Economist  
BofAS  
+1 646 855 1040  
[smishra44@bofa.com](mailto:smishra44@bofa.com)

**Jeseo Park**  
US Economist  
BofAS  
+1 646 855 8688  
[jeseo.park@bofa.com](mailto:jeseo.park@bofa.com)

**US Economics**  
BofAS

[See Team Page for List of Analysts](#)

PCE: Personal Consumption  
Expenditures

GDP: Gross Domestic Product

BofA Securities does and seeks to do business with issuers covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. Refer to important disclosures on page 14 to 15.

12647993

Timestamp: 19 January 2024 04:30AM EST

## **Ignore retail sales, the economy is cooling**

- December retail sales was more noise than news, as changes in seasonal factors overwhelmed any real change in spending.
- We look for another month of subdued PCE inflation in December, with headline and core rising by only 0.2%, respectively.
- In the advance estimate of 4Q US GDP, we expect the BEA to report that the economy grew by 1.5% q/q saar.

### **Outsized gains in retail sales more noise than news**

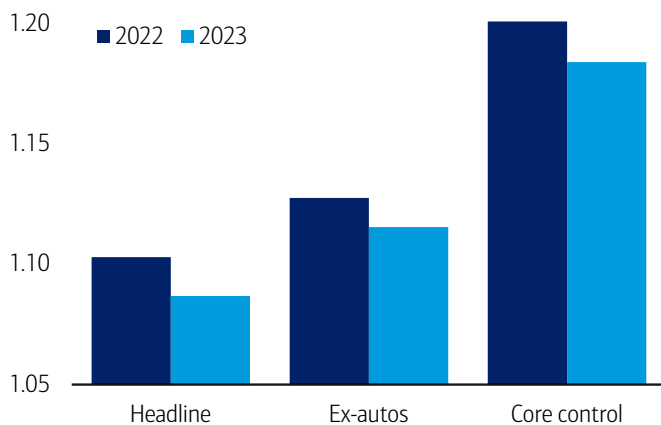
When the Fed can begin its long-anticipated policy normalization cycle is dependent in part on whether, or how quickly, the economy is cooling. Although most incoming data in 4Q 23 points to a slowdown in economic growth, the December retail sales report appeared to buck this trend with an above-consensus rise at the headline and core of 0.6% m/m and 0.8%, respectively. At face value, these numbers suggest consumer spending accelerated sharply into year-end and financial markets priced lower probability of a March rate cut, from roughly a 70% likelihood to closer to 50%.

That said, as we noted in our pre- and post-release reports (see [BofA on USA](#) and [US Watch](#), respectively), we expected changes in seasonal adjustment factors would overwhelm any signal from the actual change in spending. In recent years households have pulled forward holiday spending, partly in response to supply chain disruptions and lengthened delivery times, but also because of a greater share of online (eg. non-store) spending. As a result, holiday-related spending has become less concentrated in December. As seasonal factors gradually become adjusted to this reality, they will become more favorable for seasonally adjusted spending in December. Fortunately, the Census Bureau releases its seasonal adjustment factors ahead of time and the seasonals for December 2023 were 2.2 percentage points more favorable this December versus December 2022.

Seasonal factors are a zero-sum gain and what boosted seasonally adjusted sales in December is likely to take them away in January. The bottom line for us? Outsized gains in December retail sales were more noise than news. Consumer spending may be healthy, but it's not surging or slumping, and we don't think the report says much about the Fed's ability to cut rates beginning in March as we expect.

**Exhibit 2: Seasonal factors for December retail sales**

The seasonal adjustment process for December 2023 was favorable

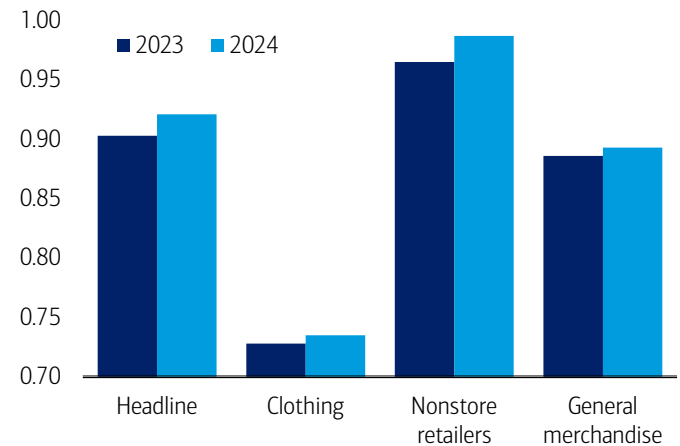


Source: Census Bureau, BofA Global Research

BofA GLOBAL RESEARCH

**Exhibit 3: Seasonal factors for select December retail sales categories**

Holiday-related spending categories were boosted by seasonality



Source: Census Bureau, BofA Global Research

BofA GLOBAL RESEARCH

**Fed remains coy on the start of cuts, but not the pace**

We continue to believe the combination of disinflationary trends, a cooling economy, and greater balance in the labor market make a March rate cut more likely than not. We think comments by Board Governor Waller, one of the more influential members in the FOMC decision-making process in our opinion, support our view. Based on the evolution of the data, Waller said he thinks “the FOMC will be able to lower the target range for the federal funds rate this year.” While not a ringing endorsement for our outlook, he added, “I am becoming *more confident* that we are *within striking distance* of achieving a sustainable level of 2 percent PCE inflation. *I think we are close...*” (italics ours). This language suggests he favors starting sooner than later. Governor Waller pointed to the upcoming revisions to historical seasonal adjustment factors for CPI on February 13 as an important determination in his outlook on inflation.

Governor Waller was firmer in views about the pace of rate cuts, saying the current environment is “unusual” with the economy experiencing moderate rates of growth and disinflation. He felt this gives the Fed “flexibility” to be methodical, assess the evolving economy, and reduce the policy rate early and gradually. Rather than easing policy to thwart a recession, he said the upcoming easing cycle is both about preserving a restrictive stance and guarding against overtightening. We read his comments as consistent with our baseline outlook for 25bp rate cuts on a quarterly basis, for 100bp of cuts this year and 100bp in 2025. If our expected soft landing is realized, the Fed should be cutting gradually, not rapidly.

**Inflation trends remain favorable as growth slowed in 4Q**

Investors should look to next week’s releases on December PCE inflation and the advance release of 4Q US GDP for accurate signals about the outlook. In the PCE inflation report, we look for headline and core inflation to both rise by 0.2% m/m (0.15% and 0.17% to two decimals, respectively), leaving the y/y rates of growth of headline and core PCE inflation to 2.6% and 2.9%, respectively. This would be the first sub-3.0% y/y reading for core PCE since March 2021, with 3m saar and 6m saar growth rates of 1.5% and 1.8%, respectively. We think the Fed would view these trends favorably.

We expect the advance print of 4Q US GDP to come in at 1.5% q/q saar after rising by at 4.9% in 3Q. We expect growth to be driven by consumer spending, which we forecast has having grown by an annualized 2.0% in the quarter. Growth in nonresidential business fixed investment likely remained subdued in the quarter and housing is likely to post its second consecutive quarterly increase, though we think headwinds from high

mortgage rates, low inventory, and lack of affordability continue to constrain activity. Finally, we look for a sizable drag from inventory accumulation.

#### Exhibit 4: We forecast the economy grew by 1.5% q/q saar in 4Q 2023

Slower consumer spending and a drag from inventory accumulation likely weighted on growth in 4Q

	3Q23 actual		4Q23 forecast	
	% qoq saar	contrib, pp	% qoq saar	contrib, pp
Real GDP	4.9		1.5	
Consumer Spending	3.1	2.1	2.0	1.5
Residential Investment	6.7	0.3	1.0	0.0
Nonesidential Investment	1.5	0.2	3.0	0.4
Structures	11.2	0.3	3.5	0.1
Equipment	-4.4	-0.2	2.5	0.1
Intellectual Property	1.8	0.1	2.5	0.1
Government	5.8	1.0	2.0	0.4
Net Trade		0.0		0.1
Inventory Accumulation		1.3		-0.9

Source: BEA, Haver Analytics, BofA Global Research

BofA GLOBAL RESEARCH

## US GDP Tracking

### 4Q GDP tracking up two-tenths to 1.5% q/q saar

The December PPI report was softer than expected. PPI is used as a deflator in our structures and inventory tracking. This print increased our 4Q structures and inventory estimates on the margin.

Core control retail sales in December came in slightly stronger than our above consensus forecast and increased our personal consumption expenditures (PCE) and residential investment estimate.

Meanwhile, in the December Industrial Production print, lower than expected mining, business equipment, utilities and retail inventories led to a decline in our structures, equipment and inventory estimates for 4Q.

Higher than expected import prices and lower than expected export prices led to an increase in our net exports tracking.

Also, housing starts and permits, despite ticking lower in December, came in stronger than expectations and increased our residential investment tracking for 4Q.

Overall, since our last weekly publication, our 4Q US GDP tracking estimate is up two-tenths to 1.5% q/q saar. Next week we get the advance print of 4Q US GDP.

#### Exhibit 5: BofA US GDP tracking estimate (% q/q saar)

Our 4Q GDP tracking estimate is up two-tenths to 1.5% q/q saar, largely due to higher than expected December retail sales, housing starts and permits, and import prices

Date	Data release	GDP	Final Sales	PCE	Res. Inv.	Struct	Equip	IPP	Gov.	Exports	Imports	Net exports (level)	CIPI (level)
1/11/24	CPI	1.3	2.0	1.9	-0.2	3.3	2.8	2.5	2.3	2.2	2.2	-935.5	26.5
1/12/24	PPI	1.3	2.0	1.9	-0.2	<b>3.6</b>	2.8	2.5	2.3	2.2	2.2	-935.5	<b>27.0</b>
1/17/24	Retail Sales	<b>1.4</b>	<b>2.1</b>	<b>2.0</b>	<b>0.2</b>	3.6	2.8	2.5	2.3	2.2	2.2	-935.5	27.0
1/17/24	Industrial Production, Business Inventories	<b>1.3</b>	2.1	2.0	0.2	<b>3.5</b>	<b>2.5</b>	2.5	2.3	2.2	2.2	-935.5	<b>26.3</b>
1/17/24	Import and Export Prices	<b>1.4</b>	2.1	2.0	0.2	3.5	2.5	2.5	2.3	<b>2.4</b>	<b>1.8</b>	<b>-930.8</b>	26.3
1/18/24	Housing Starts and Permits	<b>1.5</b>	2.1	2.0	<b>0.6</b>	3.5	2.5	2.5	2.3	2.4	1.8	-930.8	26.3
	GDP tracking	1.5	2.1	2.0	0.6	3.5	2.5	2.5	2.3	2.4	1.8	-930.8	26.3
	Contribution to GDP growth (pp)			1.3	0.0	0.1	0.1	0.1	0.4			0.0	-0.7
	BofA official GDP forecast	1.5	2.5	2.0	1.0	3.5	2.5	2.5	2.0	2.5	2.0	-929.0	29.5

Source: BofA Global Research. Our GDP tracking estimate reflects the mechanical aggregation of incoming data that directly informs the BEA's GDP calculations. The process is distinct from our official published GDP forecast. Boldface cells indicate where data have implications for tracking estimates.

**Exhibit 5: BofA US GDP tracking estimate (% q/q saar)**

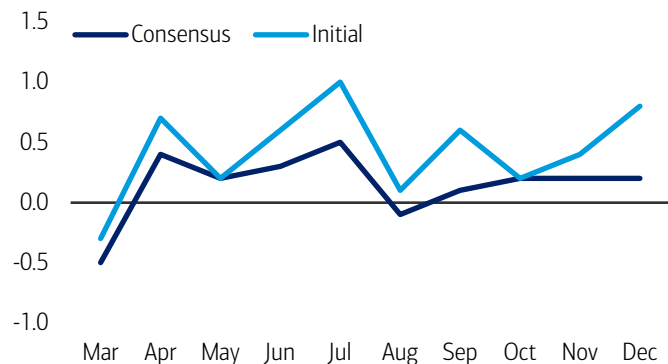
Our 4Q GDP tracking estimate is up two-tenths to 1.5% q/q saar, largely due to higher than expected December retail sales, housing starts and permits, and import prices

Net  
exports CIPI

BofA GLOBAL RESEARCH

**Exhibit 6: Core Control Retail Sales (m/m % change)**

Core control retail sales in December came in higher than expected

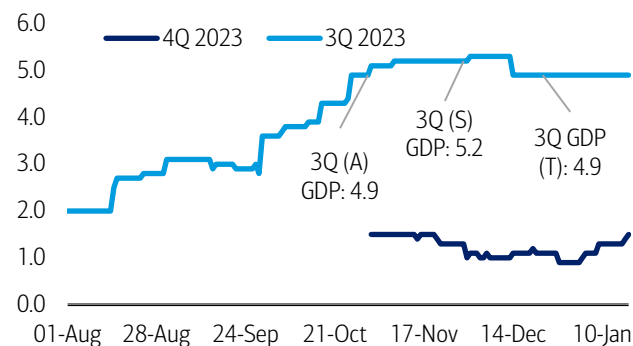


Source: Bloomberg

BofA GLOBAL RESEARCH

**Exhibit 7: 3Q and 4Q GDP tracking evolution (% q/q, SAAR)**

4Q GDP tracking is up two-tenths to 1.5% q/q saar since our last weekly publication, while 3Q GDP finalized at 4.9% q/q saar in the third estimate



Source: BofA Global Research

BofA GLOBAL RESEARCH

## Data in the past week

**January 16<sup>th</sup>- 19<sup>th</sup>**

This week the focus was on retail sales, industrial production and housing starts and permits

Date	Time	Indicator	Period	Actual	Consensus	Previous
1/16/24	8:30	Empire Manufacturing	Jan	-43.7	-5.0	-14.5
1/17/24	7:00	MBA Mortgage Applications	Jan 12	10.4%	—	9.9%
1/17/24	8:30	Import Price Index (mom)	Dec	0.0%	-0.5%	-0.5%
1/17/24	8:30	Import Price Index ex Petroleum (mom)	Dec	0.0%	0.1%	0.2%
1/17/24	8:30	Advance Retail Sales	Dec	0.6%	0.4%	0.3%
1/17/24	8:30	Retail Sales Less Autos	Dec	0.4%	0.2%	0.2%
1/17/24	8:30	Retail Sales Less Autos and Gas	Dec	0.6%	0.3%	0.6%
1/17/24	8:30	Core Control	Dec	0.8%	0.2%	0.4%
1/17/24	9:15	Industrial Production	Dec	0.1%	-0.1%	0.0%
1/17/24	9:15	Manufacturing Production	Dec	0.1%	0.0%	0.2%
1/17/24	9:15	Capacity Utilization	Dec	78.6%	78.7%	78.6%
1/17/24	10:00	Business Inventories	Nov	-0.1%	-0.1%	-0.1%
1/17/24	10:00	NAHB Housing Market Index	Jan	44	39	37
1/18/24	8:30	Housing Starts	Dec	1460k	1425k	1525k
1/18/24	8:30	Building Permits	Dec	1495k	1477k	1467k
1/18/24	8:30	Initial Jobless Claims	Jan 13	187k	205k	203k
1/19/24	10:00	Existing Home Sales	Dec	NR	3.83M	3.82M
1/19/24	10:00	U. of Michigan Sentiment	Jan P	NR	70.1	69.7

Source: Bloomberg, BofA Global Research. NR= Not Released

BofA GLOBAL RESEARCH

## Data in the week ahead

**January 22-26**

Next week's focus will be on GDP and personal income & spending

Date	Time	Indicator	Period	BofA Estimate	Consensus	Previous
1/24/24	7:00	MBA Mortgage Applications	Jan 19	—	—	10.4%
1/24/24	9:45	S&P Global US manufacturing PMI	Jan P	46.5	48.0	47.9
1/24/24	9:45	S&P Global US services PMI	Jan P	50.5	51.0	51.4
1/25/24	8:30	Initial Jobless Claims	Jan 20	184k	—	187k



**January 22-26**

Next week's focus will be on GDP and personal income &amp; spending

Date	Time	Indicator	Period	BofA Estimate	Consensus	Previous
1/25/24	8:30	GDP (qoq saar)	4Q A	1.5%	1.9%	4.9%
1/25/24	8:30	Personal consumption (qoq saar)	4Q A	2.0%	2.3%	3.1%
1/25/24	8:30	GDP Price Index (qoq saar)	4Q A	2.5%	2.3%	3.3%
1/25/24	8:30	Core PCE (qoq saar)	4Q A	2.0%	—	2.0%
1/25/24	8:30	Durable Goods Orders	Dec P	4.0%	1.0%	5.4%
1/25/24	8:30	Durables Ex Transportation	Dec P	0.2%	0.2%	0.4%
1/25/24	8:30	Core Capital Goods Orders	Dec P	0.3%	—	0.8%
1/25/24	8:30	Core Capital Goods Shipments	Dec P	0.2%	—	-0.2%
1/25/24	8:30	Wholesale Inventories	Dec P	—	-0.2%	-0.2%
1/25/24	8:30	Advance Goods Trade Balance	Dec	-\$87.5b	-\$88.4bn	-\$89.3b
1/25/24	10:00	New Home Sales	Dec	650k	650k	590k
1/26/24	8:30	Personal Income	Dec	0.3%	0.3%	0.4%
1/26/24	8:30	Personal Spending	Dec	0.6%	0.4%	0.2%
1/26/24	8:30	PCE Headline Prices (mom)	Dec	0.2%	0.2%	-0.1%
1/26/24	8:30	PCE Headline Prices (yoy)	Dec	2.6%	2.6%	2.6%
1/26/24	8:30	PCE Core Prices (mom)	Dec	0.2%	0.2%	0.1%
1/26/24	8:30	PCE Core Prices (yoy)	Dec	2.9%	3.0%	3.2%
1/26/24	8:30	Personal saving rate	Dec	3.8%	—	4.1%
1/26/24	10:00	Pending Home Sales	Dec	2.0%	1.5%	0.0%

**Source:** BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

# Federal Reserve Speakers

## Exhibit 8: Upcoming policy speakers

Key speaking engagements and news events\*

Date	Time	Speaker
Jan 22-26	-	Fed Blackout Period

Source: Bloomberg

BofA GLOBAL RESEARCH

## Exhibit 9: Summary of Fed speak in the previous week

Below is a summary of key quotes from Fed speakers over the past weeks

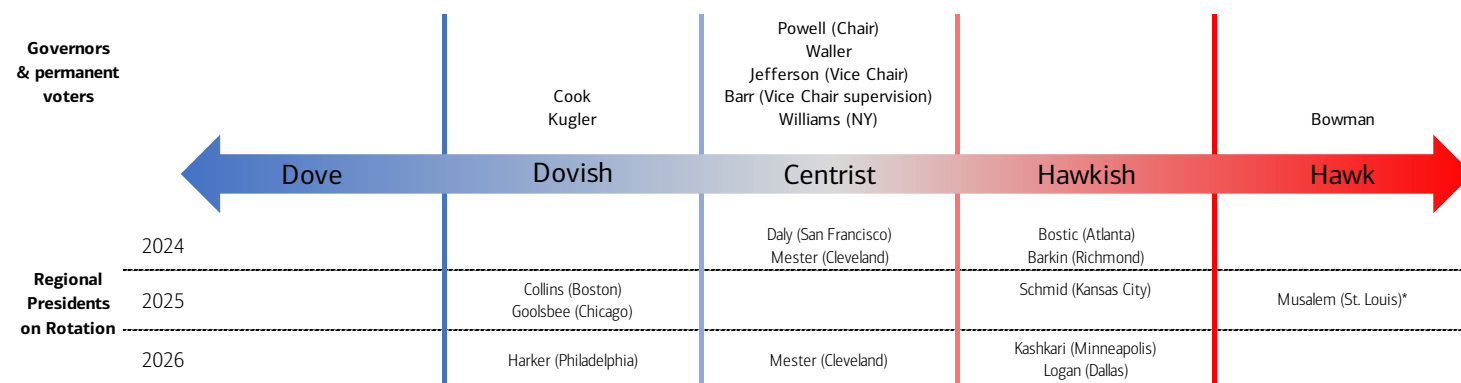
Speaker	Date	Quote
Waller (Governor)	16-Jan	"As long as inflation doesn't rebound and stay elevated, I believe the FOMC will be able to lower the target range for the federal funds rate this year." "When the time is right to begin lowering rates, I believe it can and should be lowered methodically and carefully."
Mester (Cleveland)	11-Jan	"I think March is probably too early in my estimation for a rate decline because I think we need to see some more evidence." "I think the December CPI report just shows there's more work to do, and that work is going to take restrictive monetary policy."
Williams (NY fed)	10-Jan	"My base case is that the current restrictive stance of monetary policy will continue to restore balance and bring inflation back to our 2% longer-run goal." "The timing of when [interest rates come down] that happens and the speed at which that happens will depend on how inflation evolves, how the economy evolves." "[FOMC] Intends to slow and then stop the decline in the size of the balance sheet when reserve balances are somewhat above the level it judges to be consistent with ample reserves. So far, we don't seem to be close to that point"
Barr (Vice Chair of Supervision)	9-Jan	Signals BTFP will end on March 11, when it expires
Bowman	8-Jan	"Should inflation continue to fall closer to our 2% goal over time, it will eventually become appropriate to begin the process of lowering our policy rate to prevent policy from becoming overly restrictive." "I will remain cautious in my approach to considering future changes in the stance of policy,"
Bostic (Atlanta)	8-Jan	"We are in a restrictive stance and I'm comfortable with that, and I just want to see the economy continue to evolve with us in that stance and hopefully see inflation continue to get to our 2% level Expects 2 rate cuts this year starting in 3Q "Open question" if and when the Fed should alter B/S reduction pace
Logan (Dallas)	7-Jan	"In my view, we should slow the pace of runoff as ON RRP balances approach a low level" "In light of the easing in financial conditions in recent months, we shouldn't take the possibility of another rate increase off the table just yet."

Source: Bloomberg

BofA GLOBAL RESEARCH

## Exhibit 10: BofA US Economics Dove-Hawk chart

This year the regional presidents voting on the FOMC (Federal Open Market Committee) will be Daly, Mester, Bostic and Barkin



Source: BofA Global Research

\*Musalem was recently announced as President of the St. Louis Fed. We have yet to hear him comment on monetary policy. Therefore, this is a preliminary placement.

BofA GLOBAL RESEARCH

# Federal Reserve Balance Sheet

## The balance sheet fell by \$50.1bn in the past four weeks

The Fed continues to let up to \$60bn of maturing Treasury securities roll off its balance sheet each month, while also reducing holdings of agency mortgage-backed securities by up to \$35bn. In the week ending January 17, the Fed's balance sheet fell by \$12.7bn (H.4.1 Exhibit 11). In the past four weeks, the balance sheet has shrunk by \$50.1bn. Balance sheet runoff continues to reduce take-up in the overnight reverse repo facility (ON RRP), which has fallen by \$187.9bn over the past four weeks.

### Expected expiration of the BTFP may be prompting precautionary usage:

Lending through the BTFP rose by \$14.3bn to \$161.5bn. In our view, the increase in lending through the BTFP is likely precautionary in nature and related to the expected expiration of the program this March. Usage of other emergency lending facilities (Discount Window lending, FDIC loans, and FIMA) has largely fallen off since the failure of Silicon Valley Bank last march.

### Exhibit 11: The balance sheet of the Federal Reserve (\$bn, Wednesday, end of period values)

Factors affecting reserve balances of depository institutions (H.4.1 Table 1)

\$bn, Wednesday, end of period values	17 Jan	7-day chg	4 week chg	Chg since June 1, 2022
<b>Supplying reserve funds (Federal Reserve assets)</b>				
Reserve Bank credit outstanding	7637.6	-12.7	-50.1	-1241.0
Securities held outright	7158.1	-27.6	-80.1	-1322.5
US Treasuries	4724.0	-27.5	-68.3	-1046.8
Federal Agency	2.3	0.0	0.0	0.0
Mortgage-backed securities	2431.7	-0.1	-11.8	-275.7
Unamortized premiums on securities held outright	277.6	-0.5	-2.5	-59.6
Unamortized discounts on securities held outright	-25.6	0.1	0.6	-1.1
Repurchase agreements	0.0	0.0	0.0	0.0
Foreign official (FIMA repo facility)	0.0	0.0	0.0	0.0
Others	0.0	0.0	0.0	0.0
Loans	167.2	14.5	29.9	146.5
of which:				
Discount window (primary and secondary credit)	2.3	0.2	-0.1	1.4
Paycheck protection program (PPPLF)	3.4	0.0	-0.1	-16.4
Bank Term Funding Program (BTFP)	161.5	14.3	30.2	161.5
Other credit extensions	0.0	0.0	0.0	0.0
Other factors supplying reserve funds	60.4	0.8	2.0	-4.3
Total factors supplying reserve funds	7724.6	-12.9	-50.3	-1239.8
<b>Absorbing reserve funds (Federal Reserve liabilities)</b>				
Currency in circulation	2336.0	-4.5	0.0	56.0
Reverse repo agreements	936.3	-104.8	-187.9	-1294.2
Foreign official accounts	346.1	-15.1	1.1	80.6
Others	590.2	-89.8	-189.0	-1374.8
Treasury cash holdings	0.4	0.0	0.0	0.3
Other deposits with Federal Reserve Banks	940.5	47.6	36.1	-87.9
of which:				
Treasury General Account	773.5	45.7	40.8	-7.0
Treasury contributions to credit facilities	7.4	0.0	-2.9	-10.5
Other Federal Reserve liabilities and capital	-88.4	-6.1	-10.7	-138.4
Factors absorbing reserves, other than reserves	4132.3	-67.9	-165.3	-1474.7
Reserve balances with Federal Reserve banks	3592.3	54.9	115.0	234.9

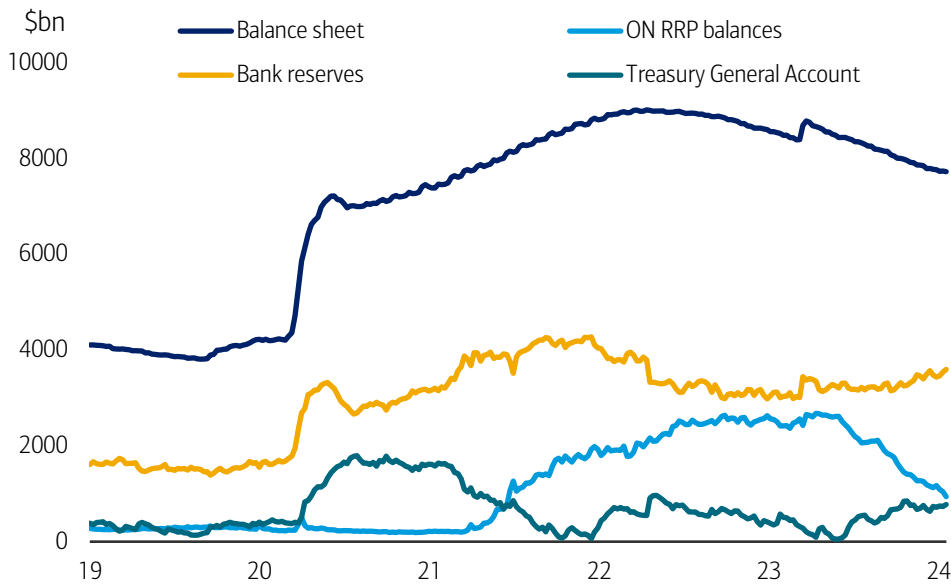
Source: Federal Reserve, Haver Analytics, BofA Global Research. Note: Quantitative tightening began on June 1, 2022.

BofA GLOBAL RESEARCH



**Exhibit 12: The balance sheet, ON RRP balances, bank reserves, and Treasury General Account (\$bn)**

Nearly all the drain in liquidity from balance sheet runoff has shown up in lower ON RRP balances while bank reserves have been largely stable



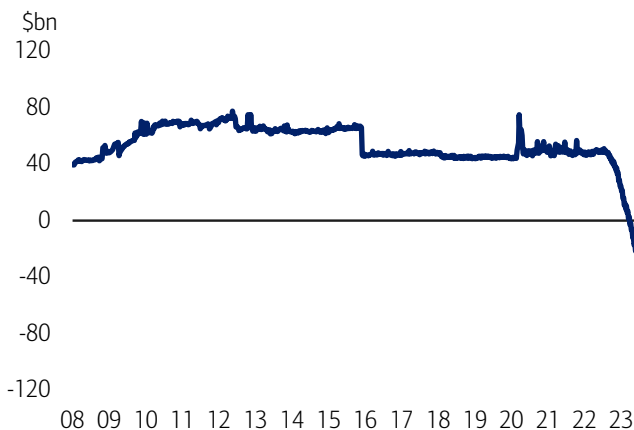
Source: Federal Reserve, Haver Analytics, BofA Global Research

BofA GLOBAL RESEARCH

**Losses on the Fed's balance sheet:** The Fed continues to pay more in interest on reserves than it earns on its securities holdings. Earnings that are retained to cover this loss are booked as a negative liability on the balance sheet under "interest on Federal Reserve Notes due to the US Treasury" in the line item "other Federal Reserve liabilities and capital". The cumulative value of the shortfall in earnings (the "deferred asset") is \$88.4bn.

**Exhibit 13: Other Federal Reserve Liabilities and Capital (\$bn)**

Federal Reserve losses are mounting

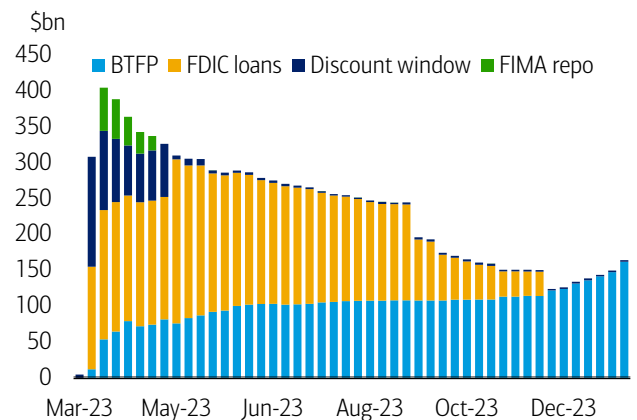


Source: Federal Reserve, Haver Analytics, BofA Global Research

BofA GLOBAL RESEARCH

**Exhibit 14: Federal Reserve Emergency Lending Facilities (\$bn)**

Lending through the BTFP has been ticking higher



Source: Federal Reserve, Haver Analytics, BofA Global Research

BofA GLOBAL RESEARCH

# Core views

## Growth: Soft landing

- We expect a soft landing for the US economy. We marked up growth in private consumption while maintaining a slowdown in non-consumer related components like residential investment, nonresidential investment, and government spending. We now expect growth in real US GDP of 1.2% 4Q/4Q in 2024, up 0.6pp, and 2.0% in 2025 (See [Sticking the landing](#)).

## Inflation: Moving in the right direction, but sticky

- PCE inflation falls to 2.0% y/y in 3Q25. Core PCE will now likely fall below 3% y/y by 1Q24. But the road to 2% will likely be slower due to sticky core services ex-housing inflation. We expect core PCE to fall to a slightly above target 2.5% y/y by 4Q24.

## Federal Reserve policy rates: Fewer cuts than the market expects

- We do not expect any further hikes from the Fed. We expect the first rate cut in March 2024, followed by quarterly 25bp reductions in the policy rate for a total of 100bp of rate cuts in 2024 and 100bp in 2025 (see [Sticking the landing](#)).

## Federal Reserve balance sheet: An end to runoff in June

- We expect the Fed to reduce the redemption caps on Treasury securities beginning in March and an end to quantitative tightening (QT) in June. We do not expect the Fed to alter redemption caps on MBS securities given its preference for an all-Treasury portfolio. When QT ends, maturing MBS securities will be reinvested back into Treasury securities (see [Logan and QT: QT taper now in March](#)). There is considerable uncertainty around the timing of the end of balance sheet runoff given the difficulty in estimating reserve demand.
- We look for the Bank Term Funding Program (BTFP) to expire as scheduled in March (see [BTFP to expire on schedule](#)).

## Fiscal policy: Caution: drag ahead

- Fiscal policy bills and other idiosyncratic factors contributed to resiliency of the economy in 2023. However, the impulse to growth should turn negative in 2024. Fiscal sustainability is an ongoing concern that could be exacerbated by higher interest rates (see [Fiscal impulse: running out of steam](#)).

## Labor markets: The virtuous cycle continues

- The post-pandemic surge in labor force participation has led to a surge in total hours, and supported growth in disposable income, helping to keep consumer spending elevated despite higher interest rates. We think this has some further room to run in 2024 but foresee the participation rate drifting down toward its underlying demographic trend in 2025 and beyond (see [Structurally higher US interest rates? Think again](#)).

## Structurally higher US interest rates? Think again.

- Our estimate of the neutral real policy rate is hovering around 40bp. During the decade following the global financial crisis, our estimate of the real neutral rate was negative or close to zero. If the post-pandemic surge in participation proves short lived and productivity does not accelerate, then any rise in the neutral rate of interest in the US economy is likely to be modest at best and could prove temporary. This would mean the zero lower bound remains a constraint on monetary policy and the terminal rate in any easing cycle could be lower than we expect (see [Structurally higher US interest rates? Think again](#)).

# Economic forecast summary

## Exhibit 15: BofA US economic outlook

We continue to expect a soft landing for the US economy

	1Q 23	2Q 23	3Q 23	4Q 23	1Q 24	2Q 24	3Q 24	4Q 24	1Q 25	2Q 25	3Q 25	4Q 25	2022	2023	2024	2025
<b>Real Economic Activity, % SAAR</b>																
Real GDP	2.2	2.1	4.9	1.5	1.0	1.0	1.5	1.5	2.0	2.0	2.0	2.0	1.9	2.4	1.7	1.8
% Change, Year Ago	1.7	2.4	2.9	2.7	2.3	2.1	1.2	1.2	1.5	1.8	1.9	2.0				
Final Sales	4.6	2.1	3.6	2.5	1.5	1.0	1.5	1.5	2.0	2.0	1.5	1.5	1.3	2.8	1.8	1.7
Domestic Demand	3.8	2.0	3.5	2.5	1.5	1.0	1.5	1.5	2.0	2.0	2.0	2.0	1.7	2.2	1.8	1.7
Consumer Spending	3.8	0.8	3.1	2.0	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.5	2.2	1.8	1.8
Residential Investment	-5.3	-2.2	6.7	1.0	-0.5	-0.5	1.5	2.0	2.5	2.5	2.5	2.5	-9.0	-10.7	1.0	2.2
Nonresidential Investment	5.7	7.4	1.5	3.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	5.2	4.4	2.0	2.0
Structures	30.3	16.1	11.2	3.5	-1.0	-1.0	1.0	1.0	1.5	1.5	2.0	2.0	-2.1	12.7	2.7	1.4
Equipment	-4.1	7.7	-4.4	2.5	1.0	1.0	1.5	1.5	2.0	2.0	2.0	2.0	5.2	0.0	1.2	1.9
Intellectual Property	3.8	2.7	1.8	2.5	2.0	2.0	2.0	2.5	2.5	2.5	3.0	3.0	9.1	4.4	2.3	2.5
Government	4.8	3.3	5.8	2.0	1.0	0.5	0.5	1.0	1.0	1.0	1.0	1.0	-0.9	3.9	1.8	0.8
Exports	6.8	-9.3	5.4	2.5	1.0	1.0	1.5	1.5	2.0	2.0	2.5	2.5	7.0	2.5	1.3	1.8
Imports	1.3	-7.6	4.2	2.0	1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0	8.6	-1.7	1.2	1.7
Net Exports (Bil 12\$)	-935	-928	-931	-929	-933	-938	-940	-943	-947	-951	-955	-958	-1051	-931	-938	-952
Contribution to growth (ppts)	0.6	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.5	0.5	0.0	0.0
Inventory Accumulation (Bil 12\$)	27.2	14.9	77.8	29.5	14.5	7.5	4.5	11.5	20.5	29.5	44.5	59.5	128.1	37.3	9.3	38.3
Contribution to growth (ppts)	-2.2	0.0	1.3	-0.9	-0.3	-0.1	-0.1	0.1	0.2	0.2	0.2	0.2	0.6	-0.4	-0.1	0.1
Nominal GDP (Bil \$, SAAR)	26814	27063	27610	27884	28114	28355	28650	28924	29257	29573	29881	30198	25744	27343	28511	29727
% SAAR	6.2	3.8	8.4	4.0	3.3	3.5	4.2	3.9	4.7	4.4	4.2	4.3	9.1	6.2	4.3	4.3
<b>Key Indicators</b>																
Fed Funds Rate (midpoint, % EOP)	4.875	5.125	5.375	5.375	5.125	4.875	4.625	4.375	4.125	3.875	3.625	3.375	4.375	5.375	4.375	3.375
Industrial Production (% SAAR)	-0.3	0.8	1.7	-2.9	-0.5	0.5	0.0	0.5	1.0	1.5	1.5	1.5	3.4	0.2	-0.3	0.8
Capacity Utilization (%)	79.5	79.4	79.5	78.6	78.5	78.5	78.5	78.5	79.0	79.0	79.0	79.5	80.3	79.3	78.6	79.0
Nonfarm Payrolls (Avg mom ch, 000s)	312	201	221	135	100	75	75	100	100	125	125	150	399	217	88	125
Civilian Unemployment Rate (%)	3.5	3.6	3.7	3.8	4.3	4.4	4.5	4.6	4.6	4.6	4.6	4.5	3.6	3.6	4.4	4.6
Civilian Participation Rate (%)	62.5	62.6	62.7	62.7	62.8	62.8	62.8	62.8	62.8	62.8	62.8	62.7	62.2	62.6	62.8	62.8
Productivity (% SAAR)	-0.8	3.5	4.5	0.0	0.5	1.0	1.0	1.0	1.5	1.0	1.5	1.0	-1.9	1.8	0.9	1.3
Personal Saving Rate (%)	4.8	5.2	3.8	3.8	4.0	4.2	4.5	4.7	5.0	5.2	5.4	5.6	3.5	4.4	4.4	5.3
Light Vehicle Sales (Millions SAAR)	15.0	15.8	15.7	15.5	16.0	16.2	16.3	16.5	16.7	17.0	17.4	17.8	13.8	15.5	16.2	17.2
Housing Starts (Thous. SAAR)	1385	1450	1370	1455	1450	1440	1505	1555	1555	1575	1585	1595	1551	1415	1490	1580
Current Account (% of GDP)													-3.7	-3.6	-3.4	-3.3
US Budget Balance (\$bn, Fiscal Year)													-1375	-1695	-1800	-1900
<b>Inflation</b>																
GDP Price Index (% SAAR)	3.9	1.7	3.3	2.5	2.3	2.4	2.7	2.3	2.6	2.3	2.2	2.3	7.1	3.7	2.5	2.4
% Change, Year Ago	5.3	3.5	3.2	2.9	2.5	2.6	2.5	2.4	2.5	2.5	2.4	2.4				
PCE Chain Prices (% SAAR)	4.2	2.5	2.9	1.9	2.0	2.3	2.3	2.0	2.4	2.0	1.8	1.9	6.5	3.8	2.2	2.1
% Change, Year Ago	5.0	3.9	3.4	2.9	2.3	2.3	2.1	2.1	2.3	2.2	2.0	2.0				
Core PCE Chain Prices (% SAAR)	5.0	3.7	2.4	2.1	2.6	2.5	2.5	2.3	2.5	2.2	2.0	2.0	5.2	4.1	2.5	2.3
% Change, Year Ago	4.8	4.6	3.9	3.3	2.7	2.4	2.4	2.5	2.4	2.4	2.2	2.2				
CPI, Consumer Prices (% SAAR)	3.8	2.7	3.6	2.8	2.2	2.5	2.6	2.0	2.5	2.1	2.8	2.4	8.0	4.1	2.6	2.4
% Change, Year Ago	5.8	4.0	3.6	3.2	2.8	2.8	2.5	2.3	2.4	2.3	2.4	2.5				
CPI ex Food & Energy (% SAAR)	5.0	4.7	2.8	3.4	3.3	3.1	2.9	2.7	2.6	2.6	2.5	2.4	6.1	4.8	3.2	2.7
% Change, Year Ago	5.6	5.2	4.4	4.0	3.6	3.1	3.2	3.0	2.8	2.7	2.6	2.5				

Source: BofA Global Research

BofA GLOBAL RESEARCH

# Rates and dollar forecast

**Table 1: Rates and dollar forecast**

We think the Fed is done hiking and will start cutting in March

	Spot	24-Mar	24-Jun	24-Sep	24-Dec	25-Mar	25-Jun	25-Sep	25-Dec
<b>Interest rates</b>									
Fed Funds	5.33	5.00-5.25	4.75-5.00	4.50-4.75	4.25-4.50	4.00-4.25	3.75-4.00	3.50-3.75	3.25-3.50
Fed Effective Rate	5.33	5.13	4.88	4.63	4.38	4.13	3.88	3.63	3.38
2-Year T-Note	4.35	4.75	4.50	4.25	4.00	-	-	-	3.75
5-Year T-Note	4.05	4.50	4.40	4.25	4.15	-	-	-	4.00
10-Year T-Note	4.14	4.40	4.30	4.25	4.25	-	-	-	4.25
30-Year T-Bond	4.37	4.70	4.65	4.65	4.75	-	-	-	4.75
<b>Dollar</b>									
EUR-USD	1.09	1.07	1.10	1.15	1.15	1.16	1.17	1.18	1.20
USD-JPY	148	145	143	142	142	140	138	136	136
USD-CAD	1.35	1.35	1.34	1.32	1.30	1.30	1.30	1.30	1.30
AUD-USD	0.66	0.66	0.68	0.71	0.71	0.71	0.71	0.71	0.71
NZD-USD	0.61	0.60	0.62	0.63	0.63	0.63	0.63	0.63	0.63
GBP-USD	1.27	1.23	1.26	1.31	1.31	1.33	1.34	1.37	1.40
USD-CHF	0.87	0.90	0.87	0.84	0.84	0.84	0.84	0.84	0.83
USD-SEK	10.49	10.93	10.36	9.74	9.65	9.57	9.40	9.24	9.00
USD-NOK	10.53	10.84	10.27	9.57	9.48	9.40	9.23	9.07	8.83
USD-CNY	7.20	7.55	7.40	7.10	6.90	6.90	6.80	6.80	6.70
USD-MXN	17.18	17.80	17.90	18.30	18.50	18.70	18.90	19.10	19.50

Source: BofA Global Research

BofA GLOBAL RESEARCH

## Rolling calendar of business indicators

### Key economic data over the next three weeks

Next week the focus will be on GDP and personal income & outlays

Monday	Tuesday	Wednesday	Thursday	Friday
Jan 22	Jan 23	Jan 24	Jan 25	Jan 26
		7:00 am: MBA Mortgage Applications – week ending 1/19/2024 9:45 am: S&P Global US Manufacturing and Services PMI – Jan (P)	8:30 am: Initial Jobless Claims – week ending 1/20/2024 8:30 am: GDP - 4Q (A) 8:30 am: Durable Goods Orders – Dec (P) 8:30 am: Advance Goods Trade Balance – Dec 8:30 am: GDP - 4Q (A) 10:00 am: New Home Sales –Dec	8:30 am: Personal Income & Outlays – Dec 10:00 am: Pending Home Sales - Dec
Jan 29	Jan 30	Jan 31	Feb 1	Feb 2
	9:00 am: S&P CoreLogic CS HPI – Nov 10:00 am: Conference Board Confidence – Jan	7:00 am: MBA Mortgage Applications – week ending 1/26/2024 8:15 am: ADP Employment – Jan 8:30 am: Employment Cost Index - 4Q 9:45 am: Chicago PMI – Jan <b>2:00 pm: FOMC Rates Decision</b>	8:30 am: Initial Jobless Claims – week ending 1/27/2024 8:30 am: Productivity & Costs - 4Q (P) 9:45 am: S&P Global US Manufacturing PMI – Jan F 10:00 am: ISM manufacturing – Jan 10:00 am: Construction Spending – Dec All Day: Wards Auto Sales - Jan	8:30 am: Employment Report – Jan 10:00 am: Factory orders – Dec 10:00 am: U. of Mich Sentiment – Jan (F)
Feb 5	Feb 6	Feb 7	Feb 8	Feb 9
9:45 am: S&P Global US Services PMI – Jan F 10:00 am: ISM services– Jan 2:00 pm: Senior Loan Officer Survey		7:00 am: MBA Mortgage Applications – week ending 2/2/2024 8:30 am: Trade Balance – Dec	8:30 am: Initial Jobless Claims – week ending 2/3/2024 10:00 am: Wholesale Inventories – Dec F	

\*Projections- subject to revision as additional data become available. P - preliminary reading, S - second reading, T - third reading, F - final reading

Source: Bloomberg

BofA GLOBAL RESEARCH



# CPI Forecast table

## Exhibit 16: CPI monthly forecast table

We expect CPI inflation to moderate over the course of our forecast horizon given our expectations for restrictive monetary policy and a soft landing

	Non-seasonally Adjusted						Seasonally Adjusted									
	Headline CPI			Energy			Headline CPI					Core CPI				
	Level	m/m	y/y	Level	m/m	y/y	Level	m/m	y/y	q/q saar	y/y (quarterly)	Level	m/m	y/y	q/q saar	y/y (quarterly)
2022: Jan	281.15	0.8	7.5	260.65	1.7	27.0	282.60	0.6	7.6			286.79	0.6	6.1		
2022: Feb	283.72	0.9	7.9	267.77	2.7	25.6	284.61	0.7	8.0			288.15	0.5	6.4		
2022: Mar	287.50	1.3	8.5	298.25	11.4	32.0	287.47	1.0	8.5	9.2	8.0	289.05	0.3	6.5	6.7	6.3
2022: Apr	289.11	0.6	8.3	298.47	0.1	30.3	288.61	0.4	8.2			290.41	0.5	6.1		
2022: May	292.30	1.1	8.6	316.76	6.1	34.6	291.27	0.9	8.5			292.25	0.6	6.0		
2022: Jun	296.31	1.4	9.1	340.92	7.6	41.6	294.73	1.2	8.9	9.7	8.6	294.02	0.6	5.9	6.0	6.0
2022: Jul	296.28	0.0	8.5	325.41	-4.5	32.9	294.63	0.0	8.4			294.93	0.3	5.9		
2022: Aug	296.17	0.0	8.3	305.37	-6.2	23.8	295.32	0.2	8.2			296.64	0.6	6.3		
2022: Sep	296.81	0.2	8.2	297.34	-2.6	19.8	296.54	0.4	8.2	5.5	8.3	298.34	0.6	6.6	6.2	6.3
2022: Oct	298.01	0.4	7.7	300.36	1.0	17.6	297.99	0.5	7.8			299.33	0.3	6.3		
2022: Nov	297.71	-0.1	7.1	292.95	-2.5	13.1	298.60	0.2	7.1			300.26	0.3	6.0		
2022: Dec	296.80	-0.3	6.5	274.94	-6.1	7.3	298.99	0.1	6.4	4.2	7.1	301.46	0.4	5.7	5.1	6.0
2023: Jan	299.17	0.8	6.4	283.33	3.1	8.7	300.54	0.5	6.3			302.70	0.4	5.5		
2023: Feb	300.84	0.6	6.0	281.67	-0.6	5.2	301.65	0.4	6.0			304.07	0.5	5.5		
2023: Mar	301.84	0.3	5.0	279.08	-0.9	-6.4	301.81	0.1	5.0	3.8	5.8	305.24	0.4	5.6	5.0	5.6
2023: Apr	303.36	0.5	4.9	283.35	1.5	-5.1	302.92	0.4	5.0			306.49	0.4	5.5		
2023: May	304.13	0.3	4.0	279.82	-1.2	-11.7	303.29	0.1	4.1			307.82	0.4	5.3		
2023: Jun	305.11	0.3	3.0	283.85	1.4	-16.7	303.84	0.2	3.1	2.7	4.1	308.31	0.2	4.9	4.7	5.2
2023: Jul	305.69	0.2	3.2	284.83	0.3	-12.5	304.35	0.2	3.3			308.80	0.2	4.7		
2023: Aug	307.03	0.4	3.7	294.33	3.3	-3.6	306.27	0.6	3.7			309.66	0.3	4.4		
2023: Sep	307.79	0.2	3.7	296.00	0.6	-0.5	307.48	0.4	3.7	3.6	3.6	310.66	0.3	4.1	2.8	4.4
2023: Oct	307.67	0.0	3.2	286.75	-3.1	-4.5	307.62	0.0	3.2			311.37	0.2	4.0		
2023: Nov	307.05	-0.2	3.1	277.03	-3.4	-5.4	307.92	0.1	3.1			312.25	0.3	4.0		
2023: Dec	306.75	-0.1	3.4	269.38	-2.8	-2.0	308.85	0.3	3.3	2.8	3.2	313.22	0.3	3.9	3.4	4.0
2024: Jan	307.83	0.4	2.9	268.01	-0.5	-5.4	309.18	0.1	2.9			313.99	0.2	3.7		
2024: Feb	308.94	0.4	2.7	266.31	-0.6	-5.5	309.71	0.2	2.7			314.79	0.3	3.5		
2024: Mar	310.47	0.5	2.9	273.10	2.6	-2.1	310.43	0.2	2.9	2.2	2.8	315.63	0.3	3.4	3.3	3.6
2024: Apr	311.67	0.4	2.7	277.00	1.4	-2.2	311.15	0.2	2.7			316.42	0.2	3.2		
2024: May	312.45	0.3	2.7	280.11	1.1	0.1	311.51	0.1	2.7			317.21	0.2	3.0		
2024: Jun	313.94	0.5	2.9	286.97	2.4	1.1	312.51	0.3	2.9	2.5	2.8	318.00	0.2	3.1	3.1	3.1
2024: Jul	314.41	0.1	2.9	283.79	-1.1	-0.4	312.91	0.1	2.8			318.79	0.2	3.2		
2024: Aug	314.86	0.1	2.6	284.28	0.2	-3.4	313.98	0.3	2.5			319.52	0.2	3.2		
2024: Sep	314.70	-0.1	2.2	278.77	-1.9	-5.8	314.32	0.1	2.2	2.6	2.5	320.24	0.2	3.1	2.9	3.2
2024: Oct	314.77	0.0	2.3	273.79	-1.8	-4.5	314.65	0.1	2.3			320.94	0.2	3.1		
2024: Nov	314.25	-0.2	2.3	269.03	-1.7	-2.9	315.07	0.1	2.3			321.65	0.2	3.0		
2024: Dec	313.94	-0.1	2.3	266.07	-1.1	-1.2	316.10	0.3	2.3	2.0	2.3	322.35	0.2	2.9	2.7	3.0
2025: Jan	315.36	0.5	2.4	269.90	1.4	0.7	316.76	0.2	2.5			323.05	0.2	2.9		
2025: Feb	316.42	0.3	2.4	268.72	-0.4	0.9	317.22	0.1	2.4			323.74	0.2	2.8		
2025: Mar	317.82	0.4	2.4	275.19	2.4	0.8	317.75	0.2	2.4	2.5	2.4	324.44	0.2	2.8	2.6	2.8
2025: Apr	318.91	0.3	2.3	279.02	1.4	0.7	318.36	0.2	2.3			325.12	0.2	2.7		
2025: May	319.64	0.2	2.3	282.89	1.4	1.0	318.67	0.1	2.3			325.80	0.2	2.7		
2025: Jun	321.15	0.5	2.3	291.13	2.9	1.4	319.67	0.3	2.3	2.1	2.3	326.48	0.2	2.7	2.6	2.7
2025: Jul	321.67	0.2	2.3	290.27	-0.3	2.3	320.11	0.1	2.3			327.15	0.2	2.6		
2025: Aug	322.28	0.2	2.4	293.52	1.1	3.3	321.37	0.4	2.4			327.82	0.2	2.6		
2025: Sep	322.25	0.0	2.4	290.46	-1.0	4.2	321.86	0.2	2.4	2.8	2.4	328.49	0.2	2.6	2.5	2.6
2025: Oct	322.42	0.1	2.4	287.35	-1.1	5.0	322.30	0.1	2.4			329.15	0.2	2.6		
2025: Nov	322.00	-0.1	2.5	284.55	-1.0	5.8	322.84	0.2	2.5			329.81	0.2	2.5		
2025: Dec	321.77	-0.1	2.5	283.12	-0.5	6.4	323.98	0.4	2.5	2.4	2.5	330.47	0.2	2.5	2.4	2.5

Source: Bureau of Labor Statistics, BofA Global Research

BofA GLOBAL RESEARCH

# Disclosures

## Important Disclosures

BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall profitability of Bank of America Corporation, including profits derived from investment banking. The analyst(s) responsible for this report may also receive compensation based upon, among other factors, the overall profitability of the Bank's sales and trading businesses relating to the class of securities or financial instruments for which such analyst is responsible.

## Other Important Disclosures

Prices are indicative and for information purposes only. Except as otherwise stated in the report, for any recommendation in relation to an equity security, the price referenced is the publicly traded price of the security as of close of business on the day prior to the date of the report or, if the report is published during intraday trading, the price referenced is indicative of the traded price as of the date and time of the report and in relation to a debt security (including equity preferred and CDS), prices are indicative as of the date and time of the report and are from various sources including BofA Securities trading desks.

The date and time of completion of the production of any recommendation in this report shall be the date and time of dissemination of this report as recorded in the report timestamp.

Recipients who are not institutional investors or market professionals should seek the advice of their independent financial advisor before considering information in this report in connection with any investment decision, or for a necessary explanation of its contents.

Officers of BofAS or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments.

Individuals identified as economists do not function as research analysts under U.S. law and reports prepared by them are not research reports under applicable U.S. rules and regulations.

Macroeconomic analysis is considered investment research for purposes of distribution in the U.K. under the rules of the Financial Conduct Authority.

Refer to [BofA Global Research policies relating to conflicts of interest](#).

**"BofA Securities" includes BofA Securities, Inc. ("BofAS") and its affiliates. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor if they have questions concerning this report or concerning the appropriateness of any investment idea described herein for such investor. "BofA Securities" is a global brand for BofA Global Research.**

**Information relating to Non-US affiliates of BofA Securities and Distribution of Affiliate Research Reports:**

BofAS and/or Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by The Financial Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no 842 602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code), BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at [www.bofam.com/BofASEdisclaimer](http://www.bofam.com/BofASEdisclaimer); BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSF); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada Inc, regulated by the Canadian Investment Regulatory Organization; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; BofAS Japan: BofA Securities Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; BofAS India: BofA Securities India Limited, regulated by the Securities and Exchange Board of India (SEBI); Merrill Lynch (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority.

This information: has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSF; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by BofAS India; and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distributes this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of Bank of America N.A., Australia Branch, neither MLEA nor any of its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil and its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information prepared and issued by Merrill Lynch (DIFC) is done so in accordance with the requirements of the DFSA conduct of business rules. BofA Europe (Frankfurt) distributes this information in Germany and is regulated by BaFin, the ECB and the CBI. BofA Securities entities, including BofA Europe and BofASE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BofA Securities group. You may be contacted by a different BofA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider. Please refer to the [Electronic Communications Disclaimers](#) for further information.

This information has been prepared and issued by BofAS and/or one or more of its non-US affiliates. The author(s) of this information may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so. BofAS and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofAS and/or MLPF&S clients in the US by its non-US affiliates. Any US person receiving this information and wishing to effect any transaction in any security discussed herein should do so through BofAS and/or MLPF&S and not such foreign affiliates. Hong Kong recipients of this information should contact Merrill Lynch (Asia Pacific) Limited in respect of any matters relating to dealing in securities or provision of specific advice on securities or any other matters arising from, or in connection with, this information. Singapore recipients of this information should contact Merrill Lynch (Singapore) Pte Ltd in respect of any matters arising from, or in connection with, this information. For clients that are not accredited investors, expert investors or institutional investors Merrill Lynch (Singapore) Pte Ltd accepts full responsibility for the contents of this information distributed to such clients in Singapore.

### General Investment Related Disclosures:

Taiwan Readers: Neither the information nor any opinion expressed herein constitutes an offer or a solicitation of an offer to transact in any securities or other financial instrument. No part of this report may be used or reproduced or quoted in any manner whatsoever in Taiwan by the press or any other person without the express written consent of BofA Securities.

This document provides general information only, and has been prepared for, and is intended for general distribution to, BofA Securities clients. Neither the information nor any opinion expressed constitutes an offer or an invitation to make an offer, to buy or sell any securities or other financial instrument or any derivative related to such securities or instruments (e.g., options, futures, warrants, and contracts for differences). This document is not intended to provide personal investment advice and it does not take into account the specific investment objectives,

financial situation and the particular needs of, and is not directed to, any specific person(s). This document and its content do not constitute, and should not be considered to constitute, investment advice for purposes of ERISA, the US tax code, the Investment Advisers Act or otherwise. Investors should seek financial advice regarding the appropriateness of investing in financial instruments and implementing investment strategies discussed or recommended in this document and should understand that statements regarding future prospects may not be realized. Any decision to purchase or subscribe for securities in any offering must be based solely on existing public information on such security or the information in the prospectus or other offering document issued in connection with such offering, and not on this document.

Securities and other financial instruments referred to herein, or recommended, offered or sold by BofA Securities, are not insured by the Federal Deposit Insurance Corporation and are not deposits or other obligations of any insured depository institution (including, Bank of America, N.A.). Investments in general and, derivatives, in particular, involve numerous risks, including, among others, market risk, counterparty default risk and liquidity risk. No security, financial instrument or derivative is suitable for all investors. Digital assets are extremely speculative, volatile and are largely unregulated. In some cases, securities and other financial instruments may be difficult to value or sell and reliable information about the value or risks related to the security or financial instrument may be difficult to obtain. Investors should note that income from such securities and other financial instruments, if any, may fluctuate and that price or value of such securities and instruments may rise or fall and, in some cases, investors may lose their entire principal investment. Past performance is not necessarily a guide to future performance. Levels and basis for taxation may change.

BofA Securities is aware that the implementation of the ideas expressed in this report may depend upon an investor's ability to "short" securities or other financial instruments and that such action may be limited by regulations prohibiting or restricting "shortselling" in many jurisdictions. Investors are urged to seek advice regarding the applicability of such regulations prior to executing any short idea contained in this report.

Foreign currency rates of exchange may adversely affect the value, price or income of any security or financial instrument mentioned in this report. Investors in such securities and instruments effectively assume currency risk.

BofAS or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BofAS or one of its affiliates may, at any time, hold a trading position (long or short) in the securities and financial instruments discussed in this report.

BofA Securities, through business units other than BofA Global Research, may have issued and may in the future issue trading ideas or recommendations that are inconsistent with, and reach different conclusions from, the information presented herein. Such ideas or recommendations may reflect different time frames, assumptions, views and analytical methods of the persons who prepared them, and BofA Securities is under no obligation to ensure that such other trading ideas or recommendations are brought to the attention of any recipient of this information.

In the event that the recipient received this information pursuant to a contract between the recipient and BofAS for the provision of research services for a separate fee, and in connection therewith BofAS may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofAS has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofAS). If such recipient uses the services of BofAS in connection with the sale or purchase of a security referred to herein, BofAS may act as principal for its own account or as agent for another person. BofAS is and continues to act solely as a broker-dealer in connection with the execution of any transactions, including transactions in any securities referred to herein.

#### Copyright and General Information:

Copyright 2024 Bank of America Corporation. All rights reserved. iQdatabase® is a registered service mark of Bank of America Corporation. This information is prepared for the use of BofA Securities clients and may not be redistributed, retransmitted or disclosed, in whole or in part, or in any form or manner, without the express written consent of BofA Securities. BofA Global Research information is distributed simultaneously to internal and client websites and other portals by BofA Securities and is not publicly-available material. Any unauthorized use or disclosure is prohibited. Receipt and review of this information constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion, or information contained herein (including any investment recommendations, estimates or price targets) without first obtaining express permission from an authorized officer of BofA Securities.

Materials prepared by BofA Global Research personnel are based on public information. Facts and views presented in this material have not been reviewed by, and may not reflect information known to, professionals in other business areas of BofA Securities, including investment banking personnel. BofA Securities has established information barriers between BofA Global Research and certain business groups. As a result, BofA Securities does not disclose certain client relationships with, or compensation received from, such issuers. To the extent this material discusses any legal proceeding or issues, it has not been prepared as nor is it intended to express any legal conclusion, opinion or advice. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BofA Global Research personnel's knowledge of legal proceedings in which any BofA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public information. Facts and views presented in this material that relate to any such proceedings have not been reviewed by, discussed with, and may not reflect information known to, professionals in other business areas of BofA Securities in connection with the legal proceedings or matters relevant to such proceedings.

This information has been prepared independently of any issuer of securities mentioned herein and not in connection with any proposed offering of securities or as agent of any issuer of any securities. None of BofAS any of its affiliates or their research analysts has any authority whatsoever to make any representation or warranty on behalf of the issuer(s). BofA Global Research policy prohibits research personnel from disclosing a recommendation, investment rating, or investment thesis for review by an issuer prior to the publication of a research report containing such rating, recommendation or investment thesis.

Any information relating to the tax status of financial instruments discussed herein is not intended to provide tax advice or to be used by anyone to provide tax advice. Investors are urged to seek tax advice based on their particular circumstances from an independent tax professional.

The information herein (other than disclosure information relating to BofA Securities and its affiliates) was obtained from various sources and we do not guarantee its accuracy. This information may contain links to third-party websites. BofA Securities is not responsible for the content of any third-party website or any linked content contained in a third-party website. Content contained on such third-party websites is not part of this information and is not incorporated by reference. The inclusion of a link does not imply any endorsement by or any affiliation with BofA Securities. Access to any third-party website is at your own risk, and you should always review the terms and privacy policies at third-party websites before submitting any personal information to them. BofA Securities is not responsible for such terms and privacy policies and expressly disclaims any liability for them.

All opinions, projections and estimates constitute the judgment of the author as of the date of publication and are subject to change without notice. Prices also are subject to change without notice. BofA Securities is under no obligation to update this information and BofA Securities ability to publish information on the subject issuer(s) in the future is subject to applicable quiet periods. You should therefore assume that BofA Securities will not update any fact, circumstance or opinion contained herein.

Certain outstanding reports or investment opinions relating to securities, financial instruments and/or issuers may no longer be current. Always refer to the most recent research report relating to an issuer prior to making an investment decision.

In some cases, an issuer may be classified as Restricted or may be Under Review or Extended Review. In each case, investors should consider any investment opinion relating to such issuer (or its security and/or financial instruments) to be suspended or withdrawn and should not rely on the analyses and investment opinion(s) pertaining to such issuer (or its securities and/or financial instruments) nor should the analyses or opinion(s) be considered a solicitation of any kind. Sales persons and financial advisors affiliated with BofAS or any of its affiliates may not solicit purchases of securities or financial instruments that are Restricted or Under Review and may only solicit securities under Extended Review in accordance with firm policies.

Neither BofA Securities nor any officer or employee of BofA Securities accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this information.

## Research Analysts

---

**Aditya Bhave**

US Economist

BofAS

[aditya.bhave@bofa.com](mailto:aditya.bhave@bofa.com)

**Michael Gapen**

US Economist

BofAS

[michael.gapen@bofa.com](mailto:michael.gapen@bofa.com)

**Stephen Juneau**

US Economist

BofAS

[stephen.juneau@bofa.com](mailto:stephen.juneau@bofa.com)

**Shruti Mishra**

US and Global Economist

BofAS

[smishra44@bofa.com](mailto:smishra44@bofa.com)

**Jeseo Park**

US Economist

BofAS

[jeseo.park@bofa.com](mailto:jeseo.park@bofa.com)