

Real Estate and Housing Commentary — March 1, 2023

Mortgage Rate Revival or Recession Retrenchment?

Another Challenging Year Ahead for the Residential Sector

Summary

Housing Outlook 2023

- The recent rise in mortgage rates has deflated optimism for a robust recovery in home sales. Even if higher in the near-term, we currently expect mortgage rates to trend lower over the course of this year and next.
- Affordability stands to improve slightly this year. While financing costs are likely to remain elevated, easing inflation should help boost real income growth.
- Home prices declining should provide an additional boost to affordability. We continue
 to expect home prices to register year-over-year declines in 2023, with the national
 median existing single-family home price anticipated to fall 4.5% during the year.
- Slightly more favorable affordability conditions should help home sales stabilize and even improve a bit this year. That said, we expect the overall pace of activity to remain sluggish.
- While sales should be more lively in 2023 compared to the second half of last year, there is another potential challenge waiting down the road. Our current macroeconomic forecast calls for a mild recession to begin in the second half of 2023. Unfortunately, even mild downturns bring about rising unemployment, decreased job security and a slowdown in household formation, all of which would be formidable headwinds for housing.
- Builder incentives have proved successful in reigniting new home sales, however, single-family permits continue to trend lower. Stronger new home sales are not likely to translate into a turnaround new development until builder inventories move lower from their currently elevated levels. Consequently, we expect single-family construction to remain relatively slow this year.
- Weakening residential activity has not been experienced uniformly across the country.
 The affordability migration has given way to strong population and employment
 growth in the South, which has generally bolstered activity in those areas. Conversely,
 population outflows and tech industry turbulence have led Western markets like
 Seattle and San Francisco to experience declines in home sales and prices.
- Supply is tight almost everywhere, which is helping prevent sharp declines in home values. Broadly speaking, significant inventory shortfalls in the Northeast have helped to shore up prices in 2022. By contrast, higher inventory levels in Mountain West appear to be generating faster prices declines.

Economist(s)

Charlie Dougherty

Senior Economist | Wells Fargo Economics Charles.Dougherty@wellsfargo.com | 212-214-8984

Jackie Benson

Economist | Wells Fargo Economics Jacqueline.Benson@wellsfargo.com | 704-410-4468

Patrick Barley

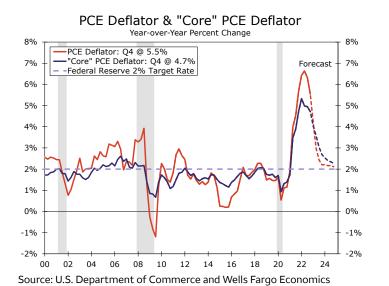
Economic Analyst | Wells Fargo Economics Patrick.Barley@wellsfargo.com | 704-410-1232

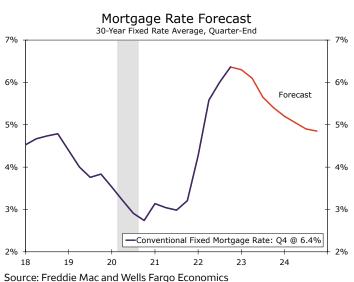
Persistent Inflation Stands to Deflate Housing's Renewed Optimism

Hopes that lower financing costs would breathe new life into the residential sector have been dashed by an uptick in mortgage rates. According to Freddie Mac, the average 30-year fixed mortgage rate rose to 6.5% during the week of February 23rd. The climb is the latest twist in a year full of turns for the housing sector. After peaking at just above 7% in November of last year, the weekly average for the 30-year mortgage rate steadily declined and, at one point, fell to 6.1%. The drop in rates throughout the final months of 2022 appeared sufficient to reignite housing activity. After falling for most of 2022, mortgage applications for purchase, pending home sales, new home sales and builder confidence have all picked up in recent months. The upswing was relatively modest and coming off a very low base, however it was an improvement that planted the seeds for a residential recovery in 2023.

That noted, the late-2022 fall in mortgage rates was mostly the result of easing inflation and the anticipation that less restrictive monetary policy was on the horizon. Inflation looks to be on a downward path, however, the road back to 2% inflation is proving to be long and winding. Recent revisions to inflation data show that price pressures have not receded as quickly as initially thought. The core PCE deflator, which is the Federal Reserve's preferred inflation gauge, rose at a 4.7% three-month annualized rate in January, ahead of the rate posted in the last month of 2022 and well above the Federal Reserve's 2% target.

What's more, inflation continues to run hot while most major economic indicators remain remarkably strong. In addition to the robust gain in hiring to start the year, consumer spending and service sector activity both rebounded solidly during the month. The buoyancy of the economy has led financial markets to reassess how high the Fed will take the fed funds target range. Our current macroeconomic forecast looks for only 50 bps of further rate hikes, but we acknowledge that 75 bps is a clear possibility and we do not have a great deal of conviction around the exact amount of further tightening that lies ahead. Nevertheless, 10-year Treasury yields have risen in recent weeks, and as a result, mortgage rates have drifted higher back to levels that prevailed during the throes of last year's housing correction.





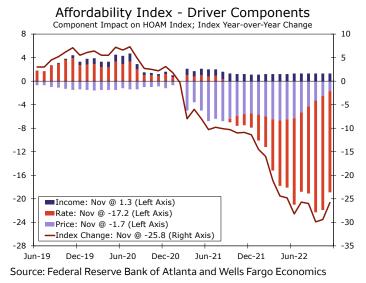
Affordability May Still Improve and Support Home Buying in 2023

So, what does the recent leg-up in financing costs mean for the fledgling residential recovery? The early evidence suggests buyers may already be heading back to the sidelines. The mortgage application for purchase index dropped about 10% over the past several weeks. Purchase applications tend to be volatile on a weekly basis, but the index is now at the lowest reading since 1995. While buyers may eventually become accustomed to a shift higher in financing costs, it is evident that they still are quite sensitive to sharp movements in interest rates. Our current forecast calls for mortgage rates to gradually descend over the course of this year and next, although the balance of risks to that forecast are probably skewed to the upside given the persistence of inflation and uncertainty in regard

to monetary policy. Even so, mortgage rates are still likely to trend lower this year and next, although they should remain elevated relative to recent history.

Elevated financing costs are likely to continue to weigh on affordability, the rapid deterioration of which has been the primary drag on buyer demand. That noted, it seems unlikely that housing activity will experience a similar contraction in 2023 as it did last year. For one, housing affordability stands to be a bit better this year, even if mortgage rates remain elevated. Inflation is not subsiding as quickly as hoped, however price pressures are still running at a slower pace. What's more, a tight labor market has resulted in sturdy income growth, which is now outpacing inflation. Income gaining the upper hand on inflation will likely provide a boost to consumer purchasing power and bolster overall housing affordability.



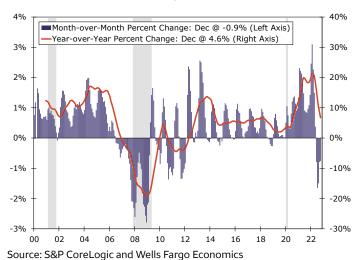


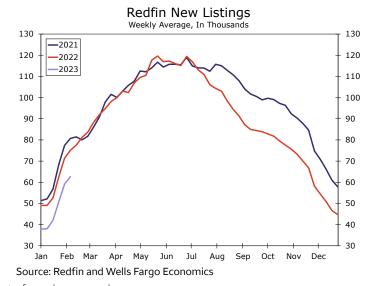
Lower home prices should also provide a boost to affordability. We continue to expect home prices to register year-over-year declines in 2023, with the national median existing single-family home price anticipated to fall 4.5% during the year. Since peaking in June 2022, the S&P CoreLogic Home Price Index declined 4.4% through December. Further declines appear in the offing. According to Redfin, the median home price for new listings is slightly above January of last year. That said, the average sale price continues to run below the original list price, indicating sellers are lowering prices to bring buyers to the table. Furthermore, 5.4% of active listings registered a price drop during January, up from 2.2% during the same period last year. The recent rise in mortgage rates means sellers will likely need to adjust prices lower in order to bridge the affordability gap and attract or retain prospective buyers. All told, the combination of easing inflation, rising real income and lower prices should prevent affordability conditions from worsening to the unfavorable state experienced in 2022 and may even bring on a slight improvement.

One reason why we are not expecting a more substantial correction in home prices this year is that the supply of homes for sale remains extremely low. The degree of tightness in the resale market, which has prevailed for the past several years, is virtually unprecedented. In January, existing single-family inventories totaled just 870K units, up 18% year-over-year, but down almost 30% from January 2020 levels. For historical context, inventories never dipped below 1 million units prior to the pandemic in records dating back to 1983. On the other side of the spectrum, inventories peaked at 3.4 million in 2007 during the housing bust.

A burst of new supply ahead of the spring selling season does not appear to be forthcoming. According to Redfin, new listings are running well below prior year levels through the first week of February. Inventory levels should rise over the course of the spring and summer, but any increase is likely to be moderate. The vast majority of homeowners with a mortgage hold a rate that is lower than current rate. Many sellers are simply unwilling to trade into a higher cost mortgage unless forced to do so. The growing prevalence of the single-family rental market presents an easy option for sellers that are forced to move.

S&P/Case-Shiller 20-City Home Price Index, NSA

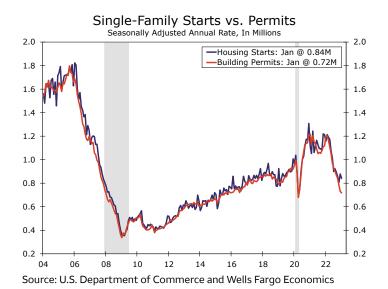




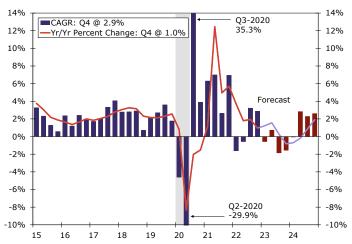
Some new inventory could come by way of new construction. The count of new homes under construction which have yet to be sold stands at 273K, which is elevated compared to recent norms. However, these units represent only a marginal increase to potential supply. At the same time, home builders are quickly scaling back production plans. Single-family building permits were down 40% off their peak in January, suggesting that the recent uptick in new home sales is not yet translating to a similar upshift in new development. New home sales have bucked the trend and strengthened recently. The improvement appears owed to builder incentives such as rate buy-down and price discounts, which have proved to be successful strategies in attracting buyer traffic. Lower input prices may help preserve builder profit margins as builders continue to implement incentive programs. Residential construction material prices, as measured by the Producer Price Index, have moderated to 1% year-over-year in January. Notably, lumber prices have dropped significantly over the past year and are now more-or-less back to pre-COVID levels.

Supply remains constrained while underlying demand for homes appears quite strong. As mentioned previously, the modest decline in mortgage rates in November and December spurred a solid uptick in mortgage applications for purchase and pending home sales. Pending home sales surged by 8.1% in January, the largest gain since June 2020. An improvement in consumer home purchase plans only adds to the evidence. Plans to purchase a home in the next six months, as measured by the Conference Board's Consumer Confidence survey, rebounded strongly in the second half of 2022. While higher financing costs may create additional frictions for home buyers, the general improvement in demand is a sign that, while still depressed relative to recent history, buyer demand has not completely evaporated. Buyers appear to be waiting for improved buying conditions, whether it be from lower prices, lower financing costs or higher inventories of homes for sale.

Overall, we expect home buying activity to stabilize and improve modestly alongside gradually diminishing affordability headwinds. Inventory should also rise alongside the return of some buyers, many of whom have been patiently waiting for the market to improve to sell their own home. While activity as a whole should be more lively in 2023, there is another potential challenge waiting down the road. Our current macroeconomic forecast calls for a mild recession to begin in the second half of 2023. Unfortunately, even mild downturns bring about rising unemployment, decreased job security and a slowdown in household formation, all of which would be formidable headwinds for housing. If accelerated economic activity in the first few weeks of the year is any indication, the odds the economy avoids a recession have increased. Still, a recession would almost certainly weigh on the housing sector and prolong the residential recovery.



U.S. Real GDP Growth



Source: U.S. Department of Commerce and Wells Fargo Economics

The Diverging Regional Landscape

Although the housing sector may face additional challenges this year, we expect there to be significant regional variation across the country. Economic and demographic characteristics will determine how markets fare against intensifying macroeconomic headwinds. For example, housing activity in regions with above-average population growth are likely to outperform in the event of a cyclical slowdown. Historically, population growth has gone hand-in-hand with employment growth, and that association still appears to hold true in the current expansion. In the 10-year period leading up to 2021, the South and Mountain West each experienced above-average rates of population growth, outpacing the West Coast, Northeast and Midwest. These varying growth patterns look to have foreshadowed the pace of employment recoveries following the 2020 recession. As of December 2022, Idaho, Utah, Texas and Florida each sat comfortably above their pre-COVID employment levels. By contrast, New York, Minnesota and Pennsylvania have yet to fully recover the payroll losses they endured in the early months of the pandemic.

These trends appear to be carrying through to the current business cycle. Generally speaking, the Southeastern and Southern Central parts of the United States registered around 2% population growth between 2020 and 2022, according to Census. At the same time, these regions registered strong employment growth in the range of 3% to 4%. Conversely, New England and the West Coast each experienced weak or negative population and employment growth.

The pandemic accelerated longer-term migration patterns away from expensive coastal areas to more affordable locations in the Sun Belt and South. The map below, reflecting USPS change of address forms, demonstrates that this trend has largely persisted in 2022. Counties shaded purple recorded greater inflows than outflows, while counties shaded red experienced the opposite. Notably, some "Zoom towns"—areas generally in the Mountain West that saw an influx of remote workers —experienced inbound move rates of less than 50% in 2022, indicating some reversal of this trend. Fewer residents moving in and more residents moving out coincides with businesses beginning to call their workforces back to the office.

2022 Inbound Move Rate Inbound Nove Rate Inbound Nove Paties Inbound (Inbound - Outbound) 47%-45% 47%-45% 49%-51%

Most/Least Popular Destinations for Movers in 2022

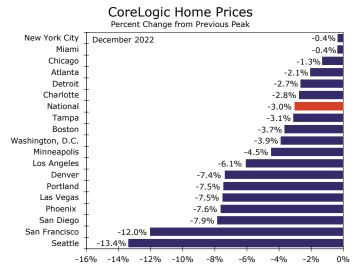
Source: National Association of Realtors and Wells Fargo Economics

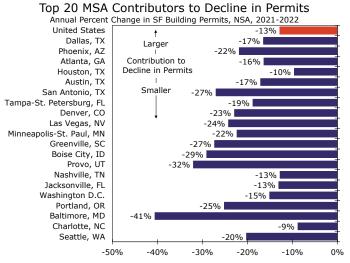
The West stands out as a region where housing activity has weakened considerably in recent months. In addition to a higher mortgage rates, population outflows have weighed heavily on home sales across the region. According to Redfin, home sales were down 45.6% in Washington, 45.2% in Oregon and 43.9% in California on a year-over-year basis as of December. Sales in the Mountain West have also subsided as migration to smaller mountain areas now appears to be slowing. Nevada posted the steepest year-over-year decline in transactions of any state in December (-48.8%), led by a 51.1% drop in Las Vegas. Nevada's regression comes after home sales swelled as high as 87.2% year-over-year in May 2021. Sales in Utah, Idaho, Colorado and Arizona similarly downshifted between 42.2% and 44.3% in December compared to the year prior. The Mountain West is also home to several popular second-home markets, where demand is now receding alongside the surge in financing costs.

Turmoil in the tech industry has been another setback for Western housing markets. Silicon Valley is a prime example. At the end of 2022, CoreLogic's home price indices measured between 12% and 14% below their peaks in Bay Area markets surrounding San Jose, Oakland, San Rafael and San Francisco. Seattle, a long-standing tech giant, and Boise City, an up-and-coming tech center, also registered roughly 13% price declines from the peaks reached earlier in 2022. Similar price depreciation has unfolded in tech markets outside the West. A flood of new tech investment into Austin brought along soaring population growth, which ultimately led to a 48.3% run up in home prices in the 16 months following January 2021. Since peaking in June, however, home prices in Austin have declined 11.5%,an outsized drop compared to the 3.4% dip registered in Texas as a whole during roughly the same time frame.

By contrast, the affordability migration continues to support price growth in lower-cost areas. In January 2023, the median price of a single-family home fell 4.7% below its January 2022 measure in the West and 1.2% in the Northeast. In contrast, median prices remain elevated 2.6% year-over-year in the Midwest and 2.9% in the South. These dynamics are also apparent at the market level. Over 90% of local markets registered month-over-month declines in average CoreLogic home prices by the end of 2022, but the markets that continued to experience home price appreciation are disproportionately located in the South and Midwest. The South has arguably demonstrated the greatest resilience, where median single-family home prices ended 2022 still 43.5% above their December 2019 levels—the largest surge of any region. Yet the South's draw goes beyond affordability. The swell in housing

demand in early-reopening states like Florida helped to shore up prices in hotspots like Naples and Miami, where average prices were on the upswing until the last month of 2022.





Source: CoreLogic Inc. and Wells Fargo Economics

Source: U.S. Department of Commerce and Wells Fargo Economics

We expect that further price declines are in store for 2023. A scarcity of housing supply, however, is likely to stave off a complete collapse. The Northeast provides a compelling example of how relatively low inventories are supporting prices. According to CoreLogic, New Jersey and Vermont were the only states to end 2022 without registering price declines from their peaks at the state level. Similarly, home price declines in New Hampshire, Maine, Connecticut and New York have been modest, with each state registering declines within a range of 1.6% to 2.2% off their peaks. Supply is remarkably tight in these states. As of December, the number of active listings recorded by Realtor.com was down between 70% and 80% for nearly all of these states compared to the three-year average leading up to 2019. New York is the only exception, where listings were down by 48%.

Southern states are also entering 2023 with a relative dearth of inventory. Despite inching up through the last half of 2022, the number of active listings in southern states like North Carolina, Mississippi, Arkansas and Alabama remain between 50% and 55% below recent averages. Conversely, states in the Mountain West ended the year with a healthier supply of listings. Nevada was the only state in the nation to (record) more active listings in December 2022 than its average listing count from 2017 to 2019. Active listings in Idaho, Utah and Colorado stood between 20% to 37% below recent averages, a milder shortfall than most other states. Relatively more supply in the Mountain West is likely to apply additional downward pressure on prices.

Low inventory is unlikely to be supplemented by new construction anytime in the foreseeable future. Builders across the country have pulled back quickly in response to lower demand. During 2022, permits buckled 33% in the South, 40% in the West, 38% in the Midwest and 26% in the Northeast. The South and West, where the vast majority of new single-family construction takes place, were responsible for over 80% of the overall decline.

As one of the largest markets for single-family home building, the Dallas MSA was the single largest contributor to the overall downshift in permits. The 16.5% annual drop in Dallas was responsible for 6.0% of the national downswing. The Houston, Austin, and San Antonio areas also topped the list. Even after declining, permitting activity in these Texas markets measured higher in 2022 than their prepandemic levels in 2019.

Steep permitting drops in other areas have delivered a disproportionate impact relative to their size. Despite not ranking in the top 15 largest markets for single-family permits, Boise City, ID and Provo-Orem, UT ranked among the top 15 largest contributors to the national decline. A 41% year-over-year decline similarly led Baltimore to rank in the top 20 largest contributors despite not cracking the top 50 in terms of market size. In contrast to the Texas markets highlighted in the chart-above, declines in these smaller markets led the level of single-family permits in 2022 to dip below their 2019 levels.

Only three of the top 50 largest markets for single family construction registered more permits in 2022 than in 2021. Two of these metro areas, Charleston and Myrtle Beach, sit on the Southeastern Atlantic coast. The third metro is the Inland Empire, which recently recorded the fifth fastest population growth in the nation. This expansion stands in stark contrast to California metros like Los Angeles and San Francisco, where populations are shrinking.

Summary and Outlook

Another challenging year awaits the residential sector. Mortgage rates are likely to remain elevated in the near term and a looming recession could be the next hurdle. That noted, there are plenty of signs that home sales are stabilizing. The recent improvement in builder confidence, new home sales, mortgage applications for purchase and pending home sales shows that prospective buyers have not disappeared entirely and are instead waiting for better buying conditions. Higher mortgage rates in recent weeks have certainly removed some of the optimism for a robust recovery in the near term. That noted, easing inflation, sturdy real income growth and declining home prices means affordability conditions will likely be slightly more favorable in 2023, even if financing costs remain elevated.

Bearing all that in mind, we look for slightly improved affordability to help bolster home buying activity in 2023. Existing home sales started the year at a sluggish 4.0 million unit annualized pace. The recent uptick in mortgage applications and pending home sales suggests a modest turnaround in resales is forthcoming. That noted, higher financing costs and a potential recession are likely to keep the pace of activity relatively tepid and prevent a robust recovery. Overall, we look for existing home sales to average 4.325 million-unit pace in 2023. A still-sluggish pace of buying activity should pressure prices lower, although extremely tight supplies will likely prevent an all-out collapse. We continue to expect home prices to register year-over-year declines in 2023, with the national median existing single-family home price anticipated to fall 4.5% during the year.

New home sales are likely to take a similar trajectory. Builder incentives have proved successful in reigniting demand, however, an economic slowdown would likely to weigh on sales. We anticipate new home sales to average a 618K-unit pace this year. Home builders are quickly scaling back production plans. Single-family building permits were down 40% off their peak in January, suggesting that the recent uptick in new home sales is not yet generating a similar upshift in new development. Stronger new home sales are not likely to translate into a turnaround new development until builder inventories move lower from their current elevated levels. Consequently, we expect single-family construction to remain relatively depressed this year. We expect single-family starts to total 790K in 2023. Lower input prices may help preserve builder profit margins as builders continue to implement incentive programs.

Mortgage Rate Revival or Recession Retrenchment?

National Housing Outlook											
										Forec	ast
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Real GDP, Percent Change	2.3	2.7	1.7	2.2	2.9	2.3	-2.8	5.9	2.1	0.6	0.5
Residential Investment, Percent Change	3.8	10.2	6.6	4.0	-0.6	-1.0	7.2	10.7	-10.7	-15.5	-0.5
Nonfarm Payroll Change (Avg. Monthly)	249.8	226.4	193.8	176.1	190.3	163.3	-774.1	606	401	45.0	35.0
Unemployment Rate	6.2	5.3	4.9	4.4	3.9	3.7	8.1	5.4	3.6	4.0	4.6
Home Construction											
Total Housing Starts, in Thousands	1,003.3	1,111.9	1,173.7	1,202.9	1,250.0	1,289.9	1,379.6	1,601	1,555	1,280	1,300
Single-Family Starts, in Thousands	647.8	714.6	781.5	848.9	875.7	887.7	990.5	1,127	1,005	790	825
Multifamily Starts, in Thousands	355.5	397.3	392.2	354.0	374.3	402.2	389.1	474	550	490	475
Home Sales											
New & Existing Home Sales, in Thousands	5,379	5,751	6,011	6,123	5,957	6,022	6,461	6,891	5,671	4,943	5,245
New Home Sales, Single-Family, in Thousands	439	501	561	613	617	682	821	771	645	618	645
Total Existing Home Sales, in Thousands	4,940	5,250	5,450	5,510	5,340	5,340	5,640	6,120	5,026	4,325	4,600
Existing Single-Family Home Sales, in Thousands	4,344	4,646	4,838	4,892	4,742	4,765	5,066	5,413	4,480	3,850	4,100
Existing Condominium & Co-op Sales, in Thousands	591	608	614	619	601	579	578	707	546	475	500
Manufactured Homes											
Total Shipments, in Thousands	64.3	70.5	81.1	92.9	96.6	94.6	94.4	105.8	112.9	110.0	112.0
Percent Change	6.8	9.7	15.0	14.5	3.9	-2.0	-0.2	12.1	6.7	-2.6	1.8
Home Prices											
Median New Home, \$ Thousands	288.5	294.2	307.8	323.1	326.4	321.5	336.9	397.1	454.9	421.0	435.0
Percent Change	7.3	2.0	4.6	5.0	1.0	-1.5	4.8	15.8	16.8	-7.5	3.3
Median Existing Single-Family Home, \$ Thousands	208.9	223.9	235.5	248.8	261.6	274.6	300.2	357.1	392.8	375.0	384.0
Percent Change	5.8	7.2	5.2	5.6	5.1	5.0	9.3	19.0	10.0	-4.2	2.4
FHFA Purchase Only Index, Percent Change (Annual Average)	4.9	5.2	5.6	6.2	6.2	5.1	7.9	16.8	14.1	-4.3	2.4
S&P Case-Shiller National Home Price Index, Percent Change	6.6	4.5	5.1	5.8	5.8	3.5	6.1	17.1	15.0	-4.5	2.5
S&P Case-Shiller C-20 Home Price Index, Percent Change	7.9	5.0	5.2	5.9	5.7	2.4	5.5	16.9	15.1	-4.5	2.5
Interest Rates - Annual Averages											
Federal Funds Target Rate	0.25	0.27	0.52	1.13	1.96	2.25	0.50	0.25	2.02	5.19	3.25
Prime Rate	3.25	3.26	3.51	4.10	4.90	5.28	3.54	3.25	4.86	8.19	6.25
10-Year Treasury Note	2.54	2.14	1.84	2.33	2.91	2.14	0.89	1.45	2.95	3.41	2.94
Conventional 30-Year Fixed Rate, Commitment Rate	4.29	3.98	3.76	4.09	4.64	4.08	3.18	3.03	5.38	5.86	5.00
Forecast as of: March 01, 2023											

Forecast as of: March 01, 2023

Source: U.S. Departments of Commerce and Labor, Federal Reserve Board, FHFA, FHLMC, National Association of Realtors, S&P CoreLogic and Wells Fargo Economics

Subscription Information

To subscribe please visit: www.wellsfargo.com/economicsemail

Via The Bloomberg Professional Services at WFRE

Economics Group

Jay H. Bryson, Ph.D.	Chief Economist	704-410-3274	Jay.Bryson@wellsfargo.com
Sam Bullard	Senior Economist	704-410-3280	Sam.Bullard@wellsfargo.com
Nick Bennenbroek	International Economist	212-214-5636	Nicholas.Bennenbroek@wellsfargo.com
Tim Quinlan	Senior Economist	704-410-3283	Tim.Quinlan@wellsfargo.com
Sarah House	Senior Economist	704-410-3282	Sarah.House@wellsfargo.com
Azhar Iqbal	Econometrician	212-214-2029	Azhar.Iqbal@wellsfargo.com
Charlie Dougherty	Senior Economist	212-214-8984	Charles.Dougherty@wellsfargo.com
Michael Pugliese	Senior Economist	212-214-5058	Michael.D.Pugliese@wellsfargo.com
Brendan McKenna	International Economist	212-214-5637	Brendan.Mckenna@wellsfargo.com
Jackie Benson	Economist	704-410-4468	Jackie.Benson@wellsfargo.com
Shannon Seery	Economist	332-204-0693	Shannon.Seery@wellsfargo.com
Nicole Cervi	Economic Analyst	704-410-3059	Nicole.Cervi@wellsfargo.com
Jessica Guo	Economic Analyst	212-214-1063	Jessica.Guo@wellsfargo.com
Karl Vesely	Economic Analyst	704-410-2911	Karl.Vesely@wellsfargo.com
Patrick Barley	Economic Analyst	704-410-1232	Patrick.Barley@wellsfargo.com
Jeremiah Kohl	Economic Analyst	704-410-1437	Jeremiah.J.Kohl@wellsfargo.com
Coren Burton	Administrative Assistant	704-410-6010	Coren.Burton@wellsfargo.com

Required Disclosures

This report is produced by the Economics Group of Wells Fargo Bank, N.A. ("WFBNA"). This report is not a product of Wells Fargo Global Research and the information contained in this report is not financial research. This report should not be copied, distributed, published or reproduced, in whole or in part. WFBNA distributes this report directly and through affiliates including, but not limited to, Wells Fargo Securities, LLC, Wells Fargo & Company, Wells Fargo Clearing Services, LLC, Wells Fargo Securities International Limited, Wells Fargo Securities Europe S.A., and Wells Fargo Securities Canada, Ltd. Wells Fargo Securities, LLC is registered with the Commodity Futures Trading Commission as a futures commission merchant and is a member in good standing of the National Futures Association. WFBNA is registered with the Commodity Futures Trading Commission as a swap dealer and is a member in good standing of the National Futures Association. Wells Fargo Securities, LLC and WFBNA are generally engaged in the trading of futures and derivative products, any of which may be discussed within this report.

This publication has been prepared for informational purposes only and is not intended as a recommendation offer or solicitation with respect to the purchase or sale of any security or other financial product nor does it constitute professional advice. The information in this report has been obtained or derived from sources believed by WFBNA to be reliable, but has not been independently verified by WFBNA, may not be current, and WFBNA has no obligation to provide any updates or changes. All price references and market forecasts are as of the date of the report. The views and opinions expressed in this report are not necessarily those of WFBNA and may differ from the views and opinions of other departments or divisions of WFBNA and its affiliates. WFBNA is not providing any financial, economic, legal, accounting, or tax advice or recommendations in this report, neither WFBNA nor any of its affiliates makes any representation or warranty, express or implied, as to the accuracy or completeness of the statements or any information contained in this report and any liability therefore (including in respect of direct, indirect or consequential loss or damage) is expressly disclaimed. WFBNA is a separate legal entity and distinct from affiliated banks and is a wholly owned subsidiary of Wells Fargo & Company. © 2023 Wells Fargo Bank, N.A.

Important Information for Non-U.S. Recipients

For recipients in the United Kingdom, this report is distributed by Wells Fargo Securities International Limited ("WFSIL"). WFSIL is a U.K. incorporated investment firm authorized and regulated by the Financial Conduct Authority ("FCA"). For the purposes of Section 21 of the UK Financial Services and Markets Act 2000 ("the Act"), the content of this report has been approved by WFSIL, an authorized person under the Act. WFSIL does not deal with retail clients as defined in the Directive 2014/65/EU ("MiFID2"). The FCA rules made under the Financial Services and Markets Act 2000 for the protection of retail clients will therefore not apply, nor will the Financial Services Compensation Scheme be available. For recipients in the EFTA, this report is distributed by WFSIL. For recipients in the EU, it is distributed by Wells Fargo Securities Europe S.A. ("WFSE"). WFSE is a French incorporated investment firm authorized and regulated by the Autorité de contrôle prudentiel et de résolution and the Autorité des marchés financiers. WFSE does not deal with retail clients as defined in the Directive 2014/65/EU ("MiFID2"). This report is not intended for, and should not be relied upon by, retail clients.

SECURITIES: NOT FDIC-INSURED - MAY LOSE VALUE - NO BANK GUARANTEE