REEF REPORT

REAL ESTATE & ECONOMIC FORECAST

UNITED STATES

SUMMARY

Labor Market Trends:
The unemployment rate has shown improvement in recent months, though broader economic indicators remain mixed. Construction job openings continue to decline, suggesting potential shifts in the construction sector employment landscape despite current employment resilience in residential construction.

Housing Market Indicators:
The housing market presents complex dynamics. Building permits reached 1,475,000 in September but showed a year-over-year decline of 5.9 percent. Housing starts fell to 1,354,000, marking a 0.7 percent decrease from the previous year. The supply of new housing stands at 7.6 months, approximately 25 percent higher than historical levels, while existing housing supply increased to 4.3 months in September.

Affordability and Construction:
The Fair Value Variable (FVV) indicates homes are still 18 percent overvalued relative to historical trends, though this represents significant improvement from the nearly 40 percent overvaluation seen in recent years. The portion of median household income spent on mortgage payments decreased to 31.2 percent in October, showing an 11.3 percent year-over-year improvement but remaining 49.2 percent higher than five years ago.

Mortgage Rates and Housing Costs:
Mortgage rates have reversed course after the September Fed rate cut, currently standing at 6.54 percent. The nominal monthly mortgage payment decreased to $2,034, down 12.5 percent year-over-year but up 67.2 percent compared to five years ago. The median sales price of new houses was $426,300 in September, showing a leveling trend in recent months.

Consumer Finance and Economic Indicators:
Credit card interest rates have risen significantly to 21.76 percent in August 2024, up 49.5 percent since February 2022. Delinquency rates have increased to 3.25 percent in Q2 2024, surpassing pre-pandemic levels. Core inflation showed minimal improvement at 3.26 percent year-over-year in September, potentially influencing future Federal Reserve policy decisions. The Fed surprised markets with a 50 bps rate cut in September, with markets currently pricing in additional cuts for the remainder of the year.

KEY DEVELOPMENTS

The October Reef Report highlights three key developments: a reversal in mortgage rates despite Fed action, shifting housing supply dynamics, and concerning trends in consumer credit. These factors collectively point to evolving market conditions that could significantly impact housing market dynamics and broader economic health.

I

Mortgage Rate Reversal Despite Fed Cut

Despite the Federal Reserve's surprising 50 basis point rate cut in September, mortgage rates have completely erased any easing effects, rising back toward 7 percent with the current weekly rate at 6.54 percent. This unexpected reversal appears driven by the treasury market pushing back against Powell's outlook, suggesting higher structural rates than in previous years. This development challenges the primary argument for a housing comeback, which relied heavily on the assumption that mortgage rates would drop following Fed rate cuts.

II

Complex Housing Supply Dynamics

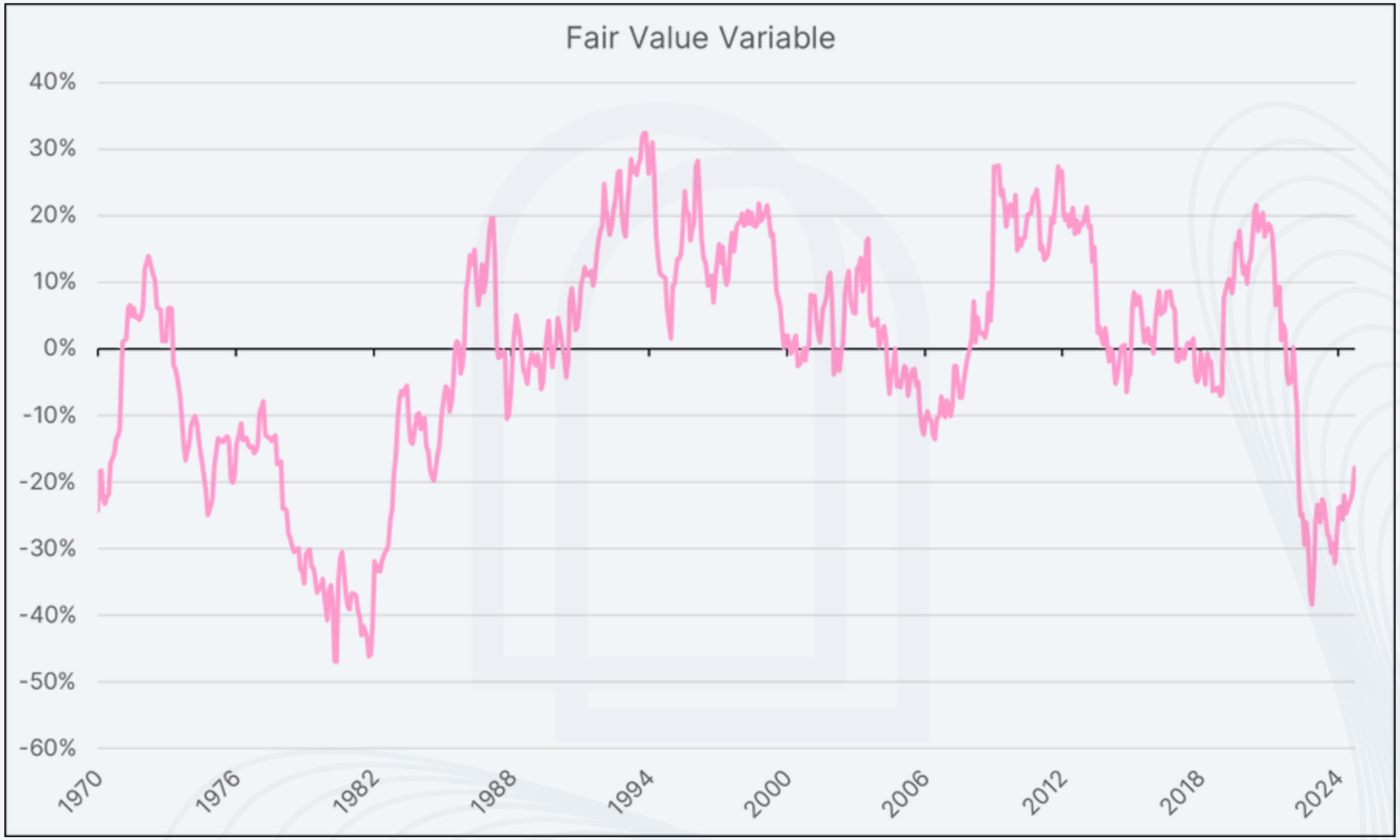
The housing market is experiencing notable supply divergences between new and existing homes. New housing supply has plateaued at an elevated 7.6 months, approximately 25 percent higher than historical levels, while existing housing supply continues to rise, reaching 4.3 months in September. This dichotomy suggests a market where builders are managing a significant pipeline of completions while existing homeowners appear to be losing patience with market conditions, potentially leading to increased inventory as mortgage rates remain elevated.

III

Deteriorating Consumer Credit Conditions

Credit card interest rates have surged to 21.76 percent in August 2024, representing a dramatic 49.5 percent increase since February 2022. More concerning is the rise in delinquency rates to 3.25 percent in Q2 2024, surpassing pre-pandemic levels. Card companies are not only passing through Fed rate increases but are requiring higher margins and potentially preparing for projected losses. This trend in consumer credit health could have significant implications for housing market demand and broader economic stability.

FAIR VALUE VARIABLE (FVV) RISES

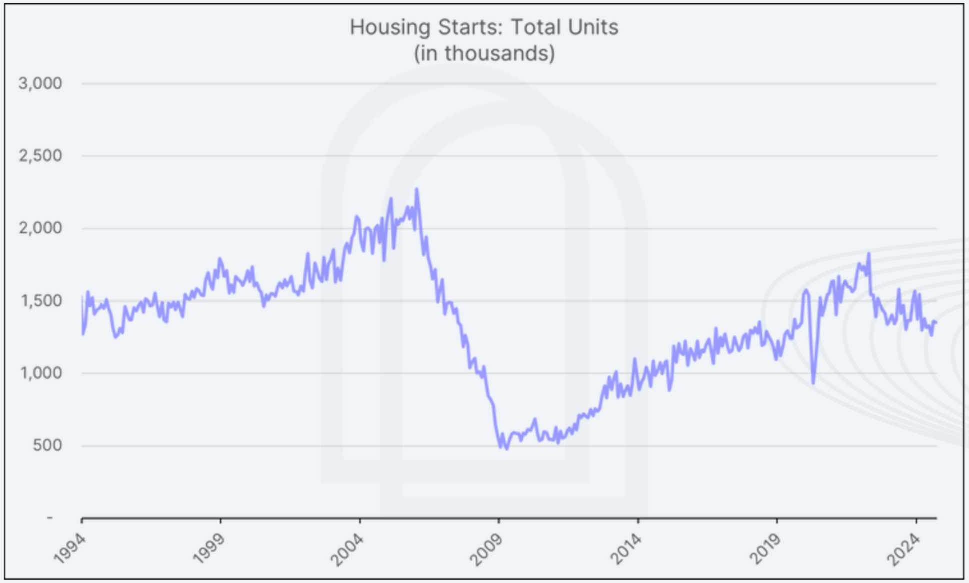


Source: Reef Insights LLC

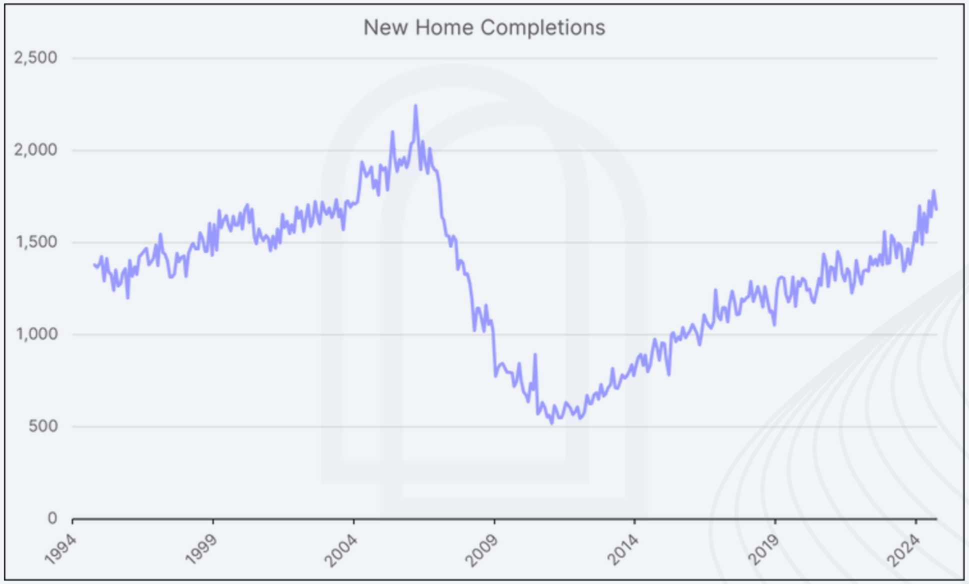
The FVV Index has shown substantial normalization of prices. While the metric still indicates that home prices are 18 percent overvalued given mortgages rates, incomes, and historical averages, this is down substantially from the almost 40 percent in recent years.

Our proprietary Fair Value Variable methodology evaluates housing affordability by calculating rolling 5, 10, and 15-year averages of the percentage of median income spent on mortgage payments. Dividing these averages by current income-to-payment ratios yields premiums/discounts which are then averaged and applied to median home prices.

COMPLETIONS CONTINUE TO OUTPACE STARTS



Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development



Source: U.S. Census Bureau

Looking at building activity, we see that housing starts continue to decline. This trend makes sense, given that real residential construction spending is down and permits show a similar decline.

What further complicates the building activity landscape is that completions have remained strong. Historically, there is a lag between starts and completions due to build time; however, with so many projects already in progress, this lag appears to be extended.

At some point, with fewer starts, there will likely be a lull in completions, which will impact new housing supply. New housing is a small part of the housing market, but it remains a significant indicator of where builders see the market heading and serves as a barometer for current demand levels.

HOUSING SUPPLY CONTINUES TO GROW

Source: U.S. Census Bureau, U.S. Department of Housing and Urban Development

Source: National Association of Realtors

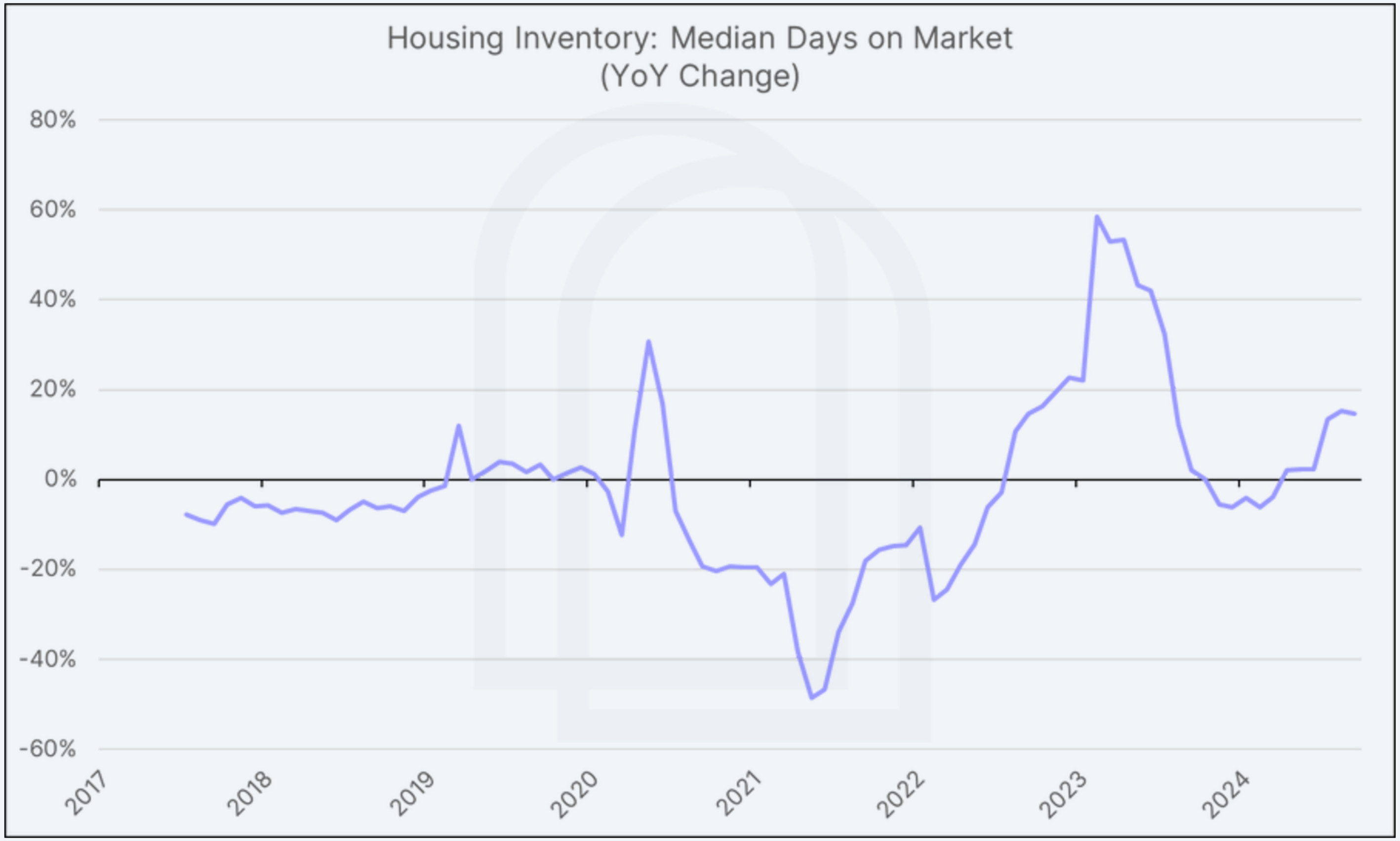
The supply of new houses has seemingly stalled out, this time at a higher level than we have seen historically. In the September data, the supply was at 7.6 months, which is about 30 percent higher than levels seen between 2014 and 2020. This level is most likely attributable to significantly lower demand as completions continue to complete.

The pipeline of new housing will slow as housing starts fall below the number of completions. In other words, the number of completed units exceeds new starts, and if supply remains high due to subdued demand, housing construction will likely slow as builders focus on reducing inventory.

Turning to existing housing supply, we continue to see levels increase. In September, supply increased to 4.3 months.

The increase in months' supply for existing homes is indicative of a trend that we have been seeing: owners have run out of patience on mortgages rates and are not waiting longer to sell.

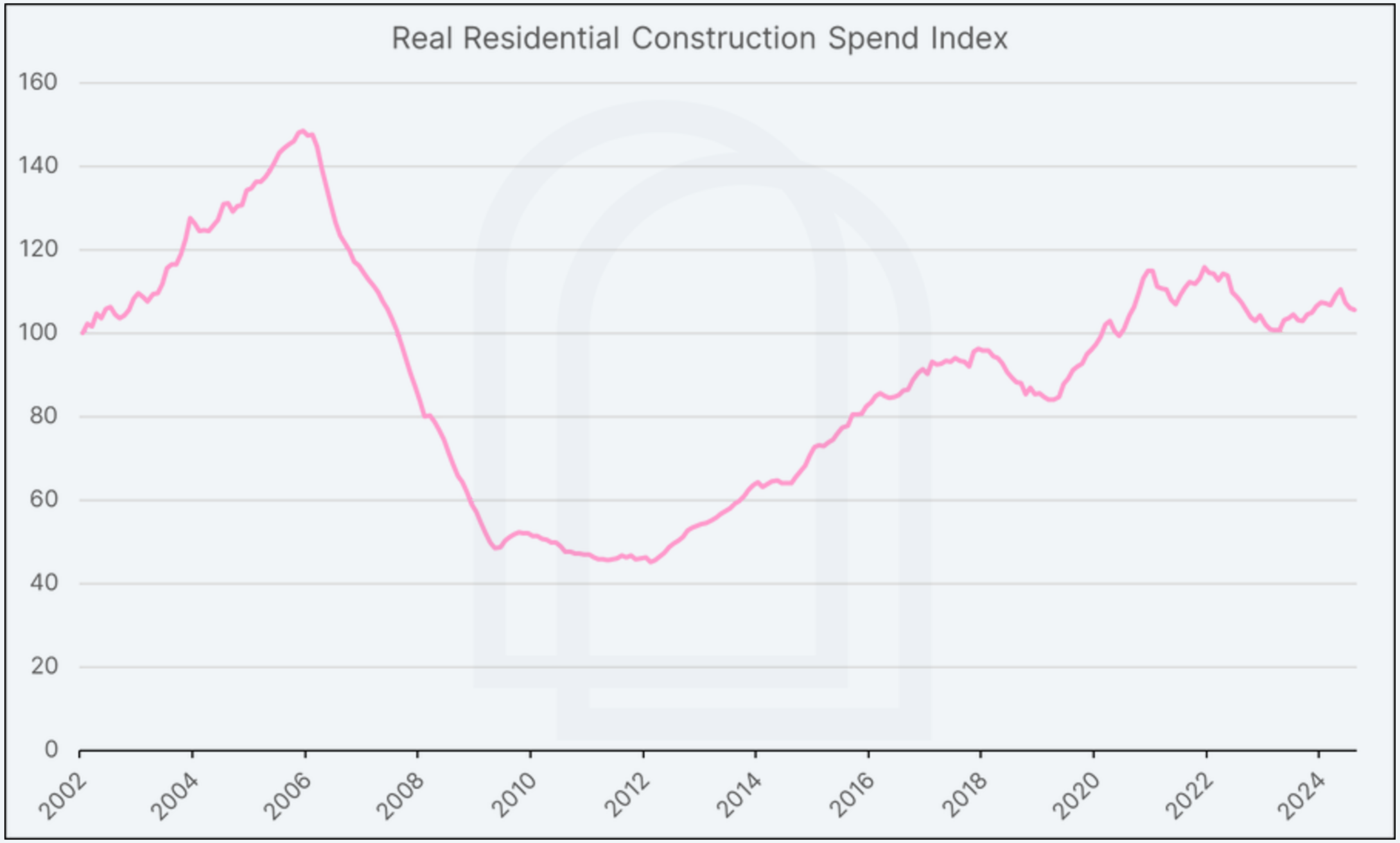
HOUSING INVENTORY: MEDIAN DAYS ON MARKET



Source: Realtor.com

When the demand for housing falls, the median days that houses spend on market often increases. The median days on market for housing inventory saw an increase month-over-month, with a median days on market of 55 being reported in September. Year-over-year, the median days on market was up 14.58 percent.

REAL CONSTRUCTION SPEND PLATEAUS

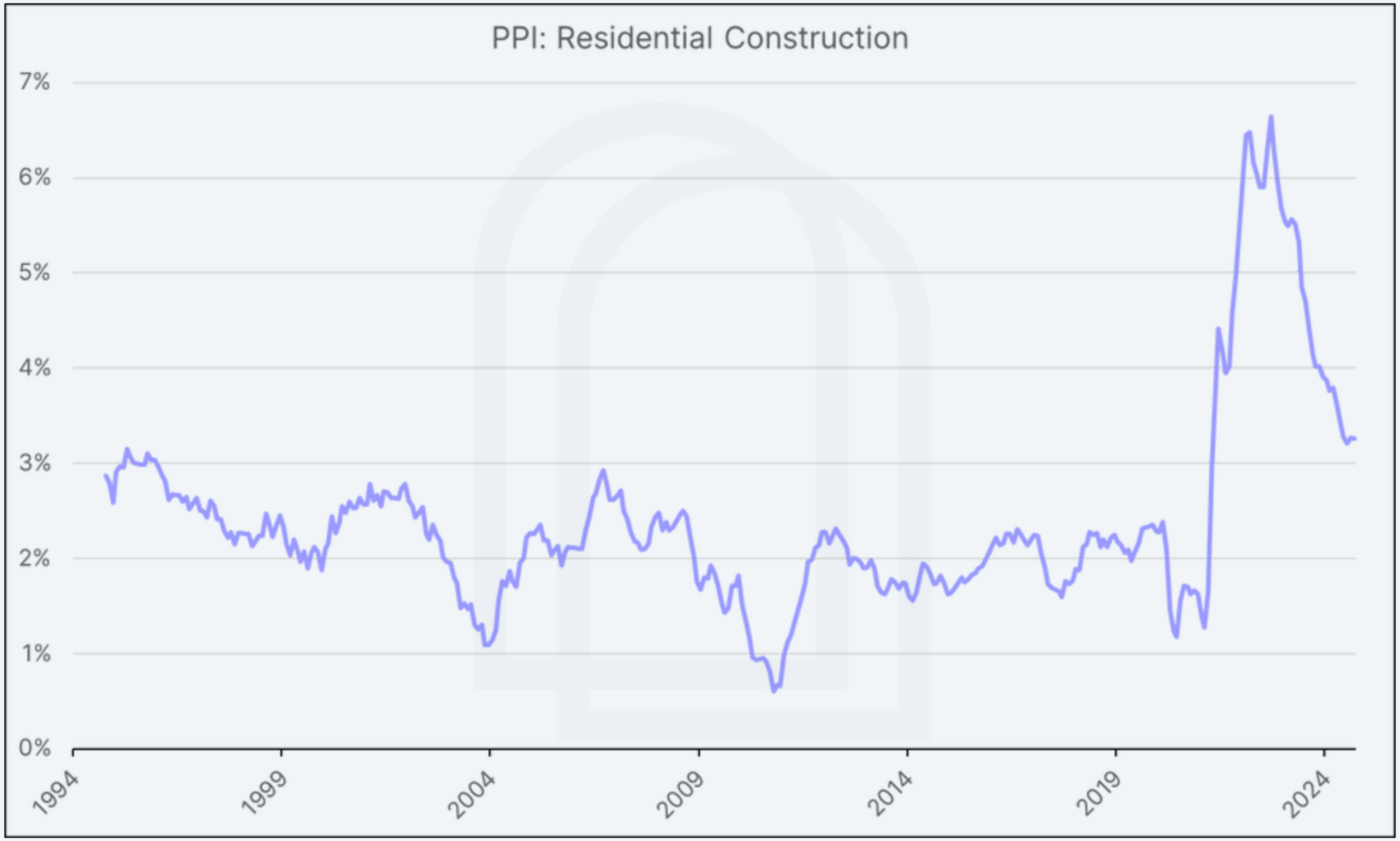


Source: Reef Insights

The Real Residential Construction Spend Index—which is a metric that attempts to showcase inflation-adjusted construction spending—is calculated by dividing the total residential construction spending by the Producer Price Index (PPI) for residential construction. As of August data, the index is at 106, slightly lower from the prior month and up 2.4 percent from the same month in the prior year.

Given the large pipeline of in-progress builds, current spend levels are likely to persist in the near future, however, we don't believe these levels are sustainable and will likely decline as developers and investors have a difficult time offloading properties at profitable levels.

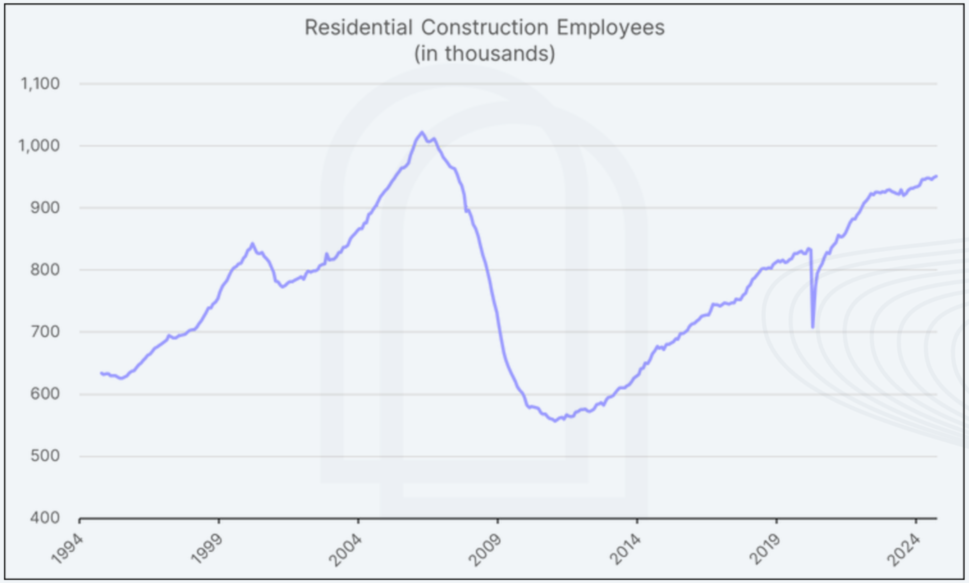
INFLATION OF RESIDENTIAL CONSTRUCTION COSTS REMAINS HIGH



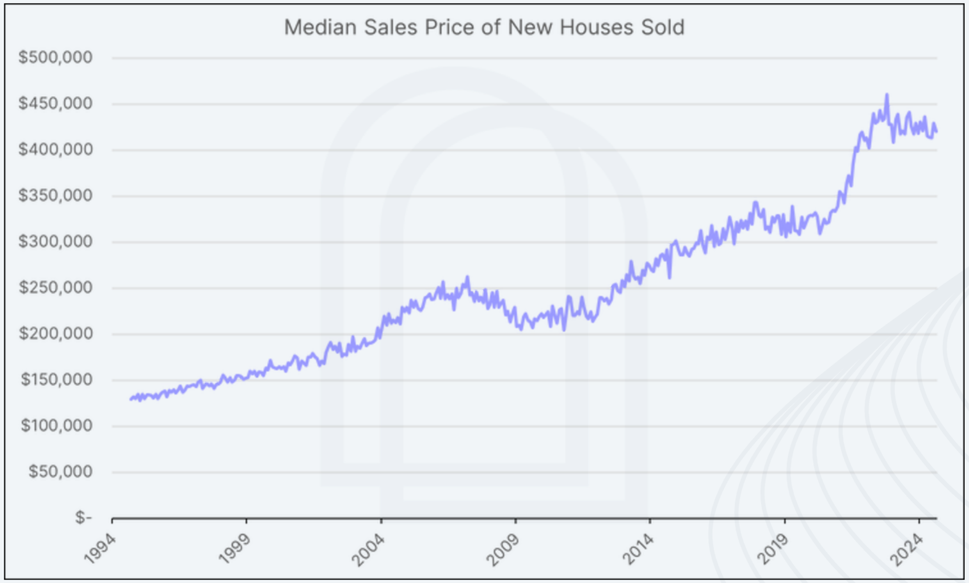
Source: U.S. Bureau of Labor Statistics

Another factor affecting the viability of many new construction projects is the high cost of residential construction, as indicated by the PPI index for residential construction, which has shown persistently elevated inflation. Recent data reveals a sustained inflation rate for residential construction costs above historical averages; as of September, the year-over-year increase was 3.26 percent, compared to a 20-year pre-pandemic average of 2.01 percent. This means that, for construction projects to remain feasible, their expected returns must offset these significantly higher costs.

CONSTRUCTION EMPLOYMENT DYNAMICS AND NEW HOME PRICES



Source: U.S. Bureau of Labor Statistics



Source: U.S. Census Bureau

Another twist, as mentioned earlier, is the resilience of residential construction employment, despite starts trending down and completions continuing to grow.

This resilience may partly be due to how the metric is calculated, as it includes all employees working in residential construction, including those in maintenance and remodeling. Remodeling activity appears strong, as owners who might typically sell and buy an upgraded property are instead choosing to renovate their current homes.

Hurricane damage repairs is also likely to impact employment in the industry and there is an uptick in demand for this type of work.

he median sales price of new houses sold in September was $426,300. This figure continues the trend observed over the past few years, as prices have seemingly leveled out.

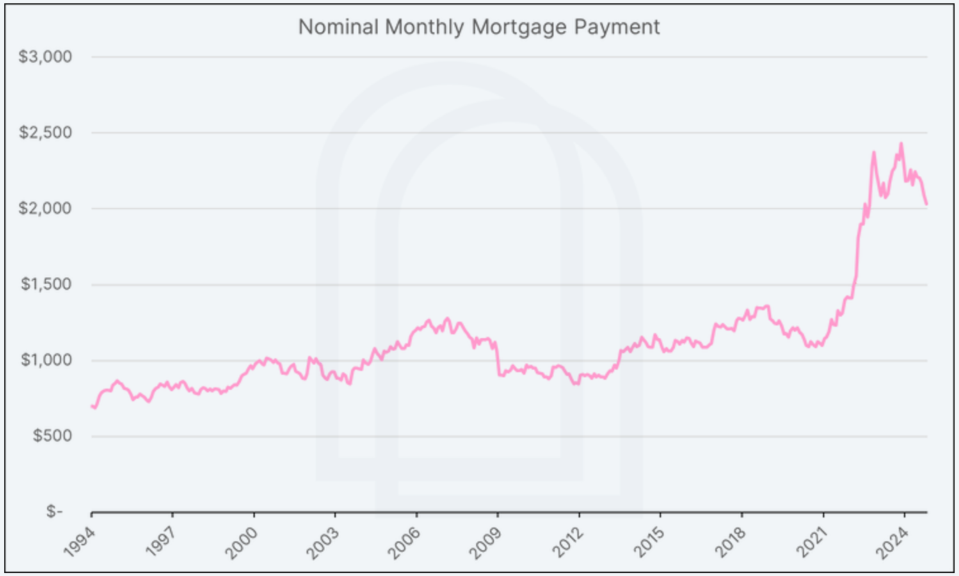
Some argue that the median price is skewed by home size, but as discussed in our write-up on *Housing Data Misconceptions*, this argument lacks basis.

What we observe is that buyers are still hitting an affordability wall due to elevated rates and current income levels. New homes appear to have a faster price-discovery cycle, with transactions happening in relatively higher volumes and motivated sellers—namely, builders—working to move properties off the books.

COSTS FOR POTENTIAL NEW HOMEOWNERS REMAIN HIGH

The nominal monthly mortgage payment is calculated assuming a 20 percent down payment, a 30-year mortgage term, and a fixed interest rate. This calculation uses the current mortgage rate and the median sales price of houses sold. In October, the estimated monthly mortgage payment decreased to $2,034. Notably, compared to the same period last year, the monthly payment has dropped by 12.5 percent.

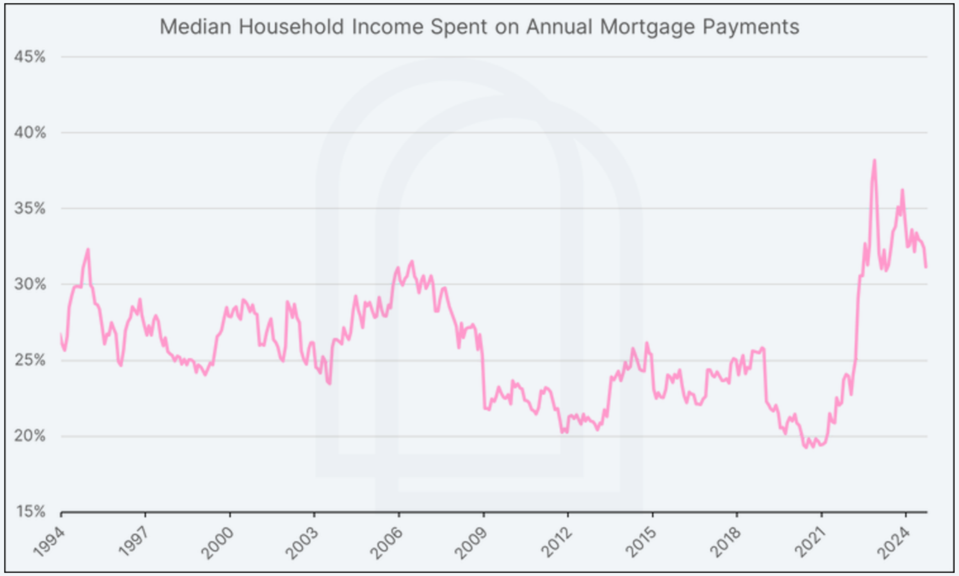
Over the past five years, the monthly mortgage payment has increased by 67.2 percent, underscoring the significant decline in affordability as a larger portion of household income is directed towards mortgage costs. This trend has been driven by the combination of higher interest rates and elevated home prices in recent years.



Source: Reef Insights LLC

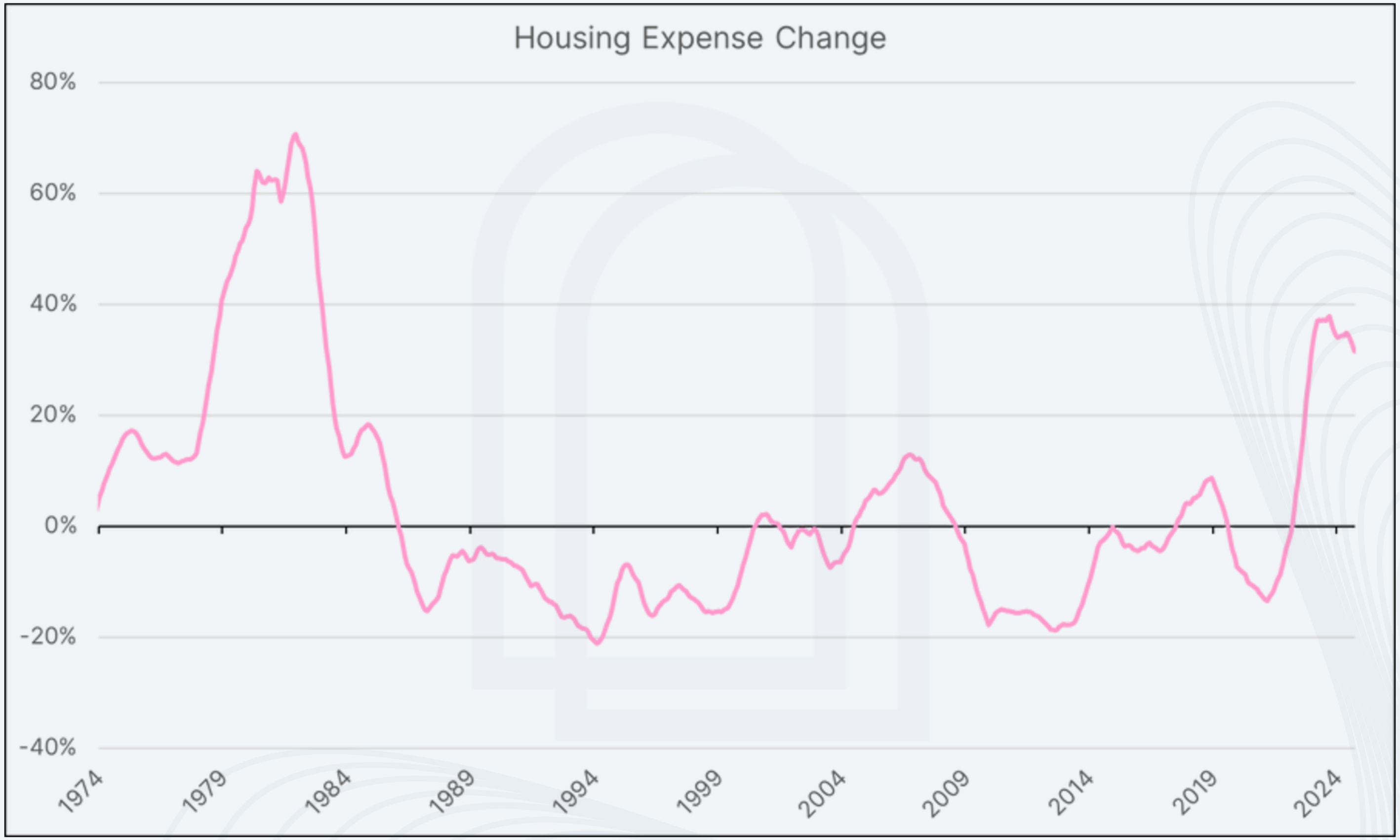
To calculate the median household income spent on annual mortgage payments, we annualized the current monthly mortgage payment and compared it to the previous year's median household income.

In October, the portion of median household income spent on mortgage payments for a potential homebuyer decreased to 31.2 percent, down from the previous month. This figure represents a year-over-year decrease of 11.3 percent, indicating an improvement in affordability compared to the same period last year. Over the past five years, however, this metric has surged by 49.2 percent.



Source: Reef Insights LLC

HOUSEHOLDS CONTINUE TO FEEL THE CHANGE IN COSTS



Source: Reef Insights LLC

The Housing Expense Change metric is intended to measure the volatility of housing costs for potential new homeowners. We do this by dividing the percentage of median household income spent on annual mortgage payments for prospective buyers rolling 1-year average by the 10-year average. We know that the rate of change is more impactful than the nominal level as people adjust over longer periods of time.

When the housing expense change is elevated, as it currently is at 31.5 percent, we can assume that the rapid increase people have experienced in recent years is substantial and impacting demand.

NOMINAL MORTGAGE RATES

Source: Freddie Mac

MORTGAGE RATES REVERSE COURSE, PUSH BACK HIGHER

As we discussed in previous reports, mortgage rates have remained higher than the market may have expected. Not only that, but they have reversed course and risen back toward 7 percent.

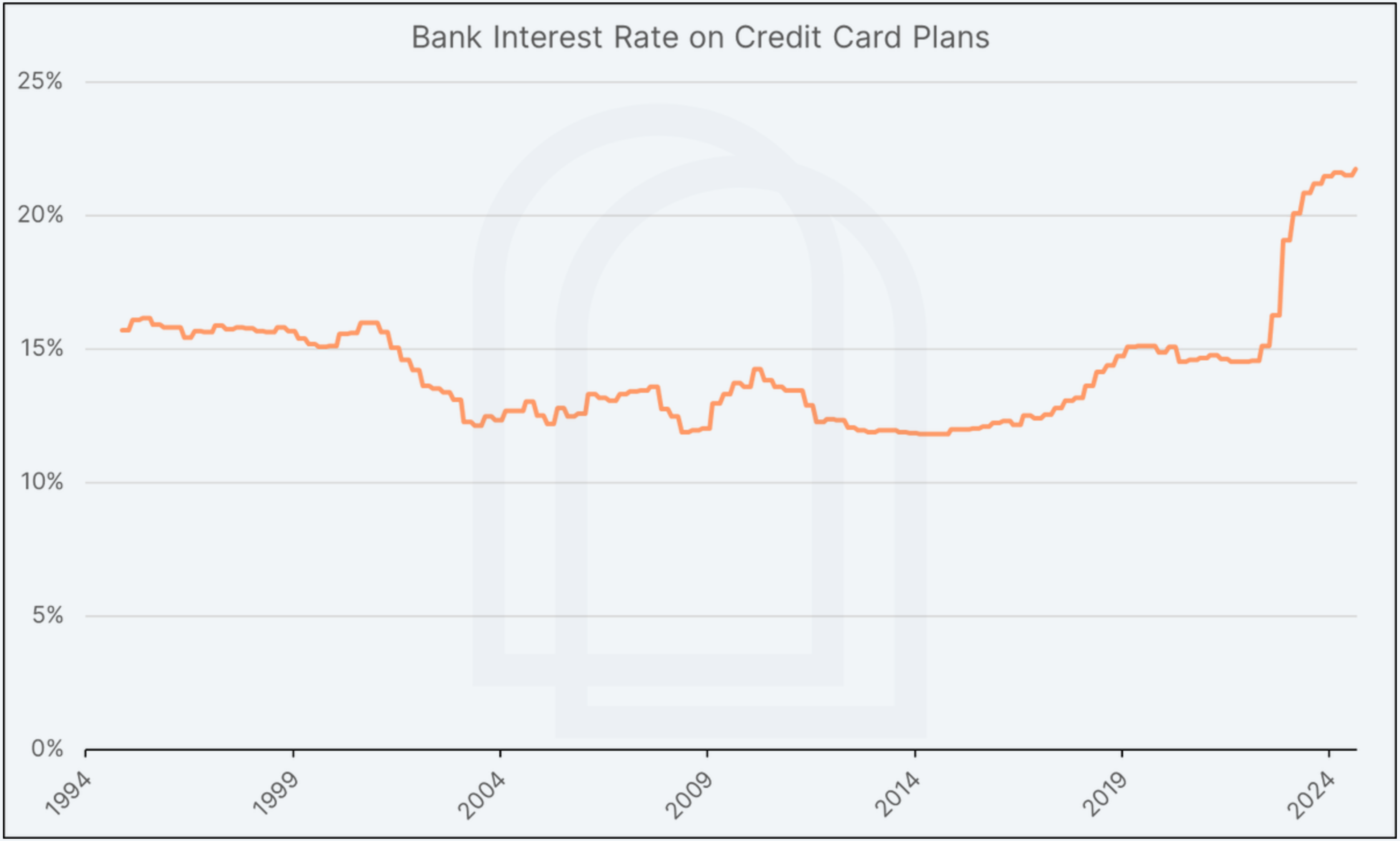
Currently, the weekly 30-year mortgage rate stands at 6.54 percent, completely erasing any easing from the Fed's rate cut in September. If you're wondering why this is happening, look no further than the treasury market. In the next week or two, this rate is going to be hitting 7 percent.

We'll address this in more detail in the section on the Fed Funds Rate, but the treasury market is essentially pushing back against Powell's outlook. Several factors are influencing the market, but what's critical for mortgage rates is that long-term structural rates are higher than they were a few years ago.

With higher structural rates, mortgage rates are following suit and staying elevated. As a result, much of the demand that was expected to return to the housing market may continue to sit on the sidelines. The primary argument for a housing comeback relied on mortgage rates dropping with Fed rate cuts; however, with rate cuts here, we see this hasn't materialized.

There was some revival in activity as mortgage rates approached 6 percent. Now that they're back up, we'll have to see how activity unfolds as we close out the year.

CREDIT CARD INTEREST RATES



Source: Board of Governors of the Federal Reserve System

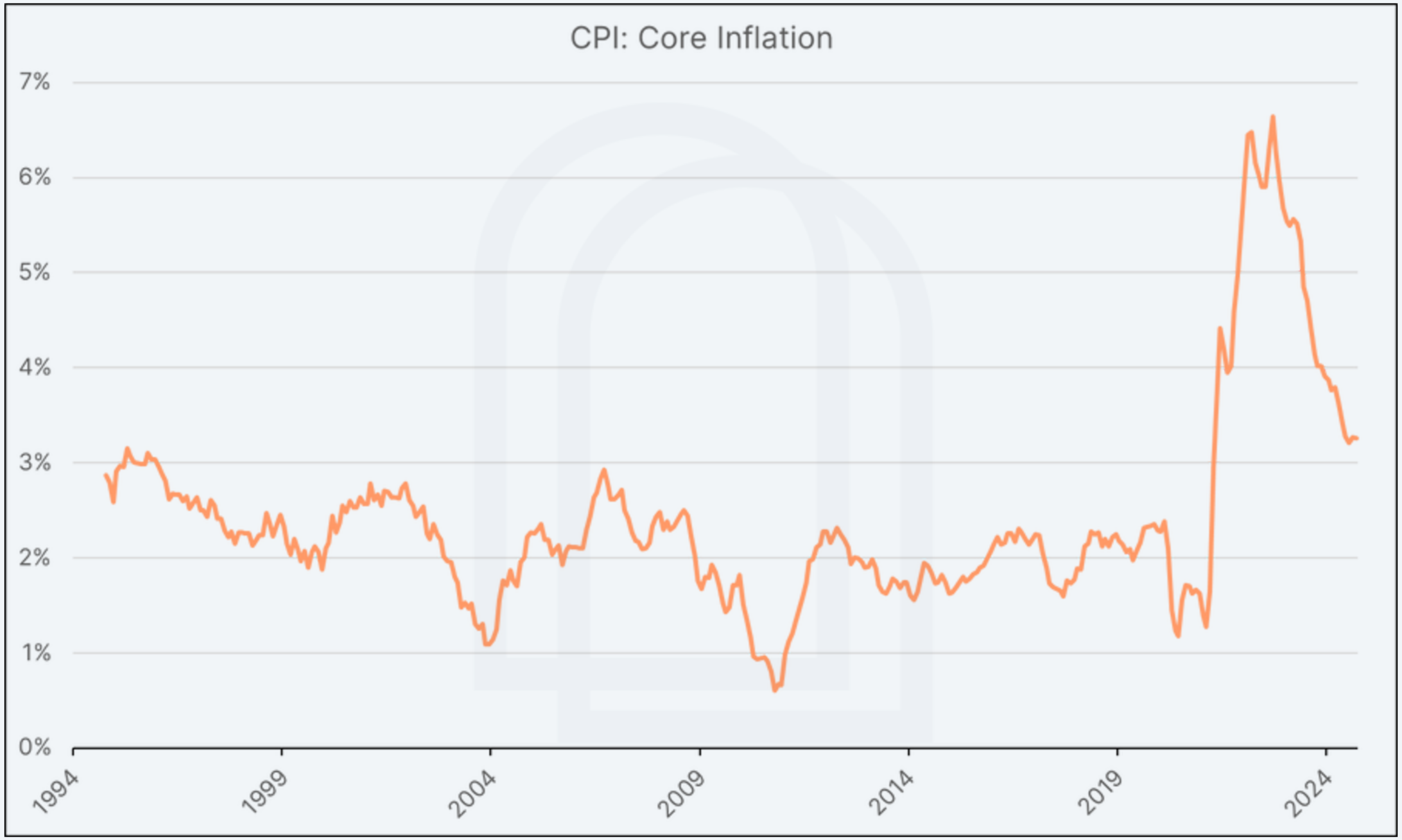
CREDIT CARD INTEREST RATES CONTINUE TO RISE

Credit card interest rates have continued to rise, from 14.56 percent in February 2022 to 21.76 percent in August 2024. This represents a 49.5 percent increase and, more importantly, a higher cost burden for consumers. Alongside rising interest rates, delinquency rates have also increased, climbing from 1.67 percent in the first quarter of 2022 to 3.25 percent in the second quarter of 2024.

This rise in delinquency rates has now surpassed pre-pandemic levels. While one might assume that higher credit card interest rates are solely due to the Fed's rate increases, that's only part of the story. Card companies are requiring higher margins compared to previous periods and may also be preemptively raising rates to offset projected losses.

Bottom line: with rising credit card interest rates, consumers carrying balances face higher debt costs, which could contribute to a continued rise in delinquency rates.

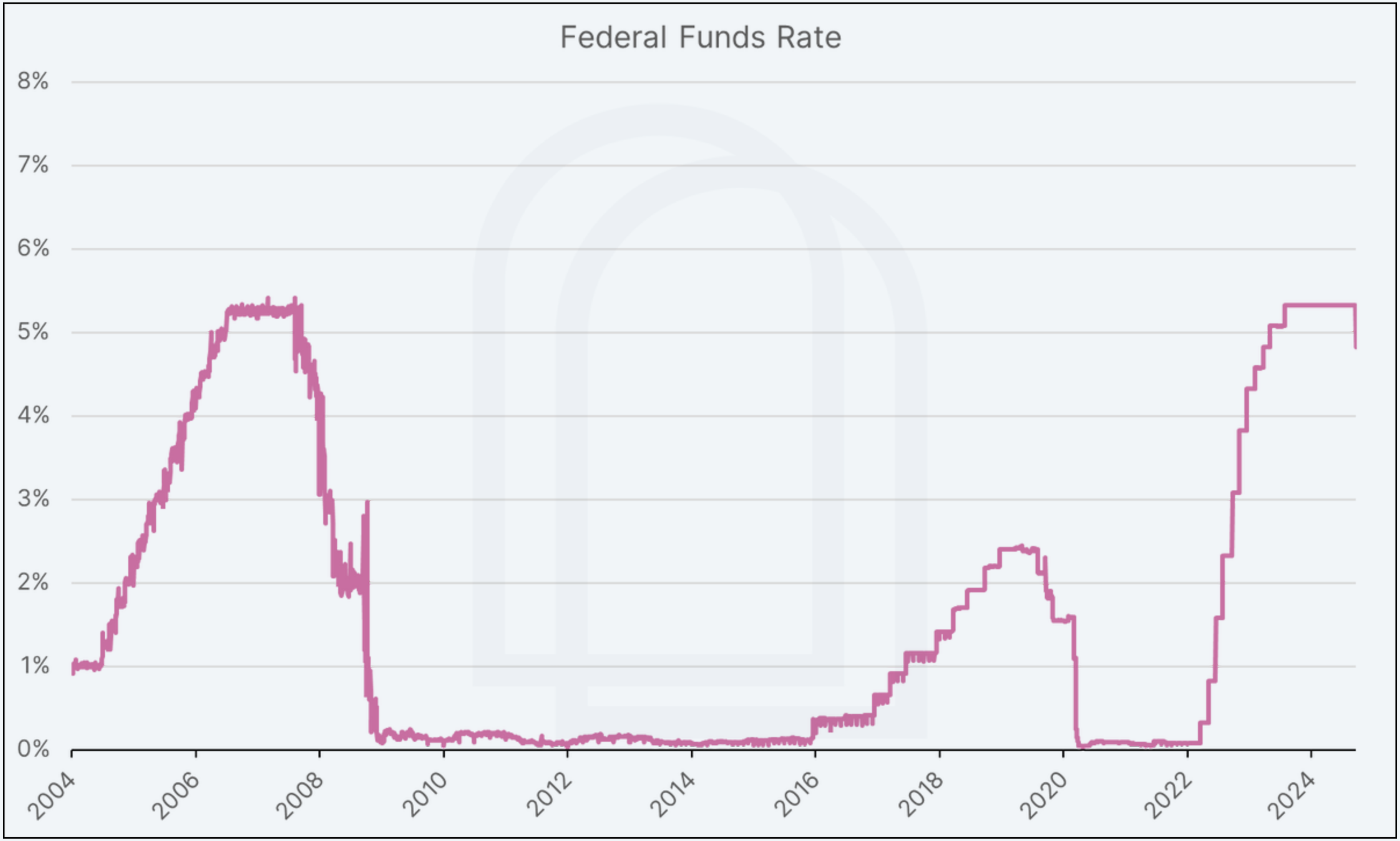
CPI: CORE INFLATION



Source: U.S. Bureau of Labor Statistics

Month-over-month, core inflation decreased slightly, with a year-over-year change of 3.26 percent reported in September, compared to 3.27 percent in August. This minimal decline could influence the Fed's decision on rate cuts for the remainder of the year. With unemployment ticking down over the past two months, it may be difficult for the Fed to overlook the stagnation in core inflation.

FEDERAL FUNDS RATE



Source: Federal Reserve Bank of New York

FEDERAL FUNDS RATE

At the September FOMC meeting, the committee decided to reduce the policy rate by 50 bps, surprising the market, which had anticipated an almost 50/50 probability of either a 25 bps or 50 bps reduction. While the exact rate change may not matter significantly—since the market also expects further cuts at the remaining meetings this year and into next—the decision provides insight into the Fed's current view of the economy.

This decision left the market pricing in some bold moves from the Fed, with some projections even suggesting an additional 75 or 100 bps in cuts this year. Currently, based on the CME FedWatch Tool, markets are pricing in a 97 percent probability of a 25 bps cut to 450-475 at the November meeting. This outlook sharply contrasts with market expectations from a month ago, which placed a 53 percent probability on a 50 bps cut to 425-450.

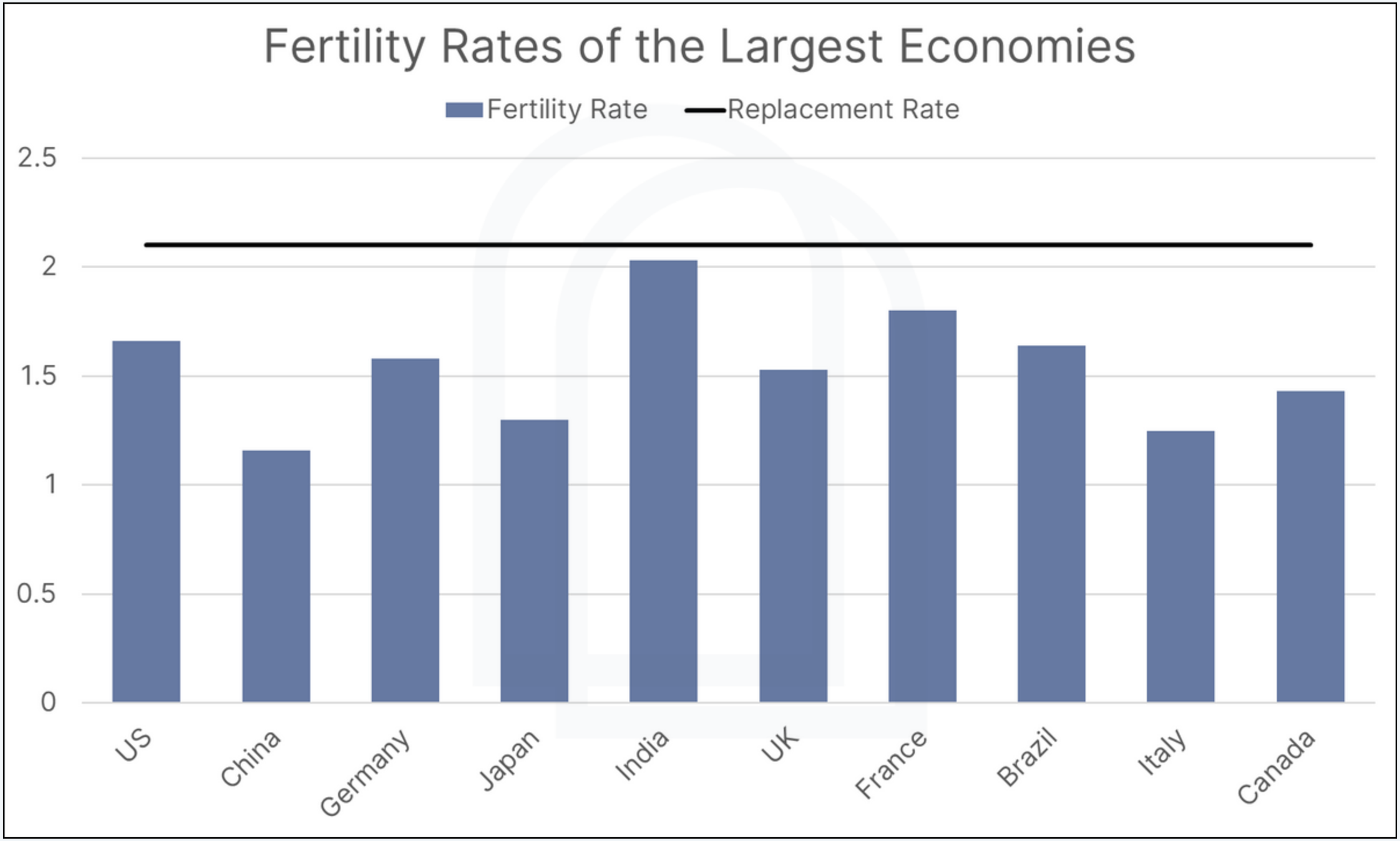
Furthermore, the market currently shows a 72 percent probability that we'll end the year in the 425-450 range, totaling 50 bps of cuts. Just a month ago, however, there was a 29 percent probability of 100 bps of cuts between the November and December meetings and a 50 percent probability of 75 bps.

With these market expectations, we can begin to construct a likely scenario for the rest of the year. Given that the current expectations form the "base case," this is probably reflected in mortgage rates and Treasuries. This assumption makes the recent yield movements even more intriguing, suggesting a structural shift in yield requirements for money to flow into U.S. securities.

Where does this leave us heading into the end of the year? First, there is a possibility of 0 or 25 bps in cuts for the remainder of the year. Second, mortgage rates and the long end of the yield curve are likely to remain higher than the market expected earlier this year.

While the election will probably not significantly impact the Fed's actions for the rest of the year, it is likely to influence next year's policies in response to the knock-on effects of various anticipated economic policies.

FERTILITY RATES BELOW REPLACEMENT RATE



Source: OECD

HOUSING CONCERN: FERTILITY RATES BELOW REPLACEMENT RATE

Out of the top ten countries with the largest economies, none have fertility rates that meet the replacement rate. Fertility rates — which measure the average number of children per woman — have been falling worldwide. Since 1950, global fertility rates have halved, from almost 5 children per woman to 2.3.

As a result, global population growth has slowed dramatically, and many countries' populations are expected to decline by the end of the century. This is because fertility rates in many countries have fallen below the "replacement level". This is the level at which a population replaces itself from one generation to the next. It's generally defined as a rate of 2.1 children per woman.

The countries with the lowest rates on this list are China, Italy, and Japan, with fertility rates of 1.16, 1.25, and 1.30, respectively.

The countries with the highest rates on this list are India, France, and Brazil, with fertility rates of 2.03, 1.80, and 1.64, respectively. This decline in fertility rates will have large economic and societal impacts over the next 50 years.

Why Does this Matter?

Many assumptions for long-term macro and real estate forecasts inherently include population growth. While this is probable due to factors beyond birthrates (e.g., immigration), it is important to consider how birthrates below replacement level will structurally impact demand. Does a household without children need the same type of housing as a household with children? The answer is most likely "no." Given this, we can begin to assess what demand might look like for various housing types and geographical areas. Additionally, we can draw assumptions about the affordability and buying power of different cohorts to project future property values.

FORECAST

Rates Continue to Trend Higher

“All roads lead to inflation," said Paul Tudor Jones in a recent segment on CNBC.

Fundamentally, the market is pricing in structurally moderate to high growth and elevated inflation. Fiscal deficits, ongoing spending by local, state, and federal governments, and the rising interest payments to service debt all contribute to fueling this extra heat in the system. For rates—driven by the pricing of Treasuries—this means they are likely to stay elevated, as the market will demand higher returns to offset increased inflation through greater yields.

If long-term Treasury yields rise, mortgage rates are likely to follow. It’s hard to imagine a bank wanting to subsidize a mortgage with rates below Treasuries, barring significant government intervention.

Continued Pressure on Home Prices

Based on our initial forecast, it can be concluded that the foundation of home prices is weakening. There is simply no sustainable path to affordability with rates remaining structurally high. Affordability hinges on three factors: incomes, rates, and prices. First, with incomes, it’s difficult to envision a scenario where they surge enough to meet affordability metrics. Second, rates are structurally higher and likely to continue rising in the near term. With these first two levers failing to support affordability, we are left with prices.

The strongest counterargument to this thesis is the possibility that supply and demand dynamics will support prices. This may indeed hold true in certain areas; however, this brings in personal assumptions about job markets, income trends in these regions, and the broader economic environment.

DATA TABLE

Metric	This Period	Last Period	Year Ago	Latest Release
Housing Starts: Total Units	1,354	1,361	1,363	Sep-24
New Housing Supply	7.60	7.90	7.50	Sep-24
Existing Housing Supply	4.30	4.20	3.40	Sep-24
Nominal Median Sales Price of Houses Sold	$ 420,400	$ 414,500	$ 435,400	Jul-24
New Building Permit Authorizations: Total Units	1,425	1,470	1,515	Sep-24
Case-Shiller Index	325.78	325.44	310.39	Jul-24
Residential Construction Employees	952	950	929	Sep-24
Nominal Mortgage Rates	6.08	6.35	7.31	Oct-24
Deliquency Rates: Single-Family	1.73	1.71	1.72	Apr-24
Deliquency Rates: Commercial	1.42	1.21	0.85	Apr-24
PPI: Residential Construction	321	320	311	Sep-24
Construction Spending: Residential	$ 911	$ 914	$ 888	Aug-24
Housing Inventory: Median Days on Market	55	53	50	Sep-24
Nominal Monthly Mortgage Payment	$ 2,034	$ 2,093	$ 2,323	Oct-24
Real Mortgage Payment Index	6.81	7.08	7.68	Sep-24
Median Household Income Spent on Annual Mortgage Payments	31.15	32.41	35.13	Sep-24
Fair Value Variable	(17.85)	(21.33)	(30.63)	Sep-24

DATA TABLE

Metric	This Period	Last Period	Year Ago	Latest Release
Housing Expense Change	31.50	33.09	37.95	Sep-24
Nominal Median Household Income	$ 80,610	$ 74,580	$ 74,580	2023
Headline Inflation	2.41	2.59	3.69	Sep-24
Core Inflation	3.26	3.27	4.14	Sep-24
Unemployment Rate	4.10	4.20	3.80	Sep-24
Federal Funds Rate	5.13	5.33	5.33	Sep-24
Personal Savings Rate	4.80	4.90	4.70	Aug-24
Jobless Claims	227,000	242,000	213,000	Oct-24
10-Year U.S. Treasury Yield Minus 2-Year U.S. Treasury	(0.34)	(0.26)	(0.48)	Oct-24
Residential Rental Vacancy Rate	6.60	6.60	6.30	Apr-24
Real Residential Construction Spend Index	105.72	106.09	103.22	Aug-24
Household Savings	$ 807	$ 2,207	$ 2,207	2022
Bank Credit: All Commercial Banks	$ 17,930	$ 17,903	$ 17,273	Oct-24
Delinquency Rates: Credit Card	3.25	3.15	2.77	Apr-24
Gross Domestic Product (GDP)	$ 29,017	$ 28,624	$ 27,454	Apr-24
M2 (Money Supply)	$ 21,221	$ 21,141	$ 20,681	Sep-24
Federal Reserve's Balance Sheet	$ 7,029	$ 7,039	$ 7,908	Oct-24

DATA TABLE

Metric	This Period	Last Period	Year Ago	Latest Release
PCE: Headline Inflation	2.24	2.45	3.39	Aug-24
PCE: Core Inflation	2.68	2.65	3.78	Aug-24
Debt-to-GDP	120.04	120.83	117.77	Apr-24
Real GDP	$ 23,224	$ 23,054	$ 22,539	Apr-24
Trucking Employees	1,544	1,544	1,551	Sep-24
Industrial Production	103	103	103	Sep-24
Credit Card Interest Rates	21.76	21.51	21.19	Aug-24
Charge-Off Rate: Credit Card Loans	4.73	4.65	3.38	Apr-24
Charge-Off Rate: Business Loans	0.48	0.43	0.31	Apr-24
Charge-Off Rate: Commercial Real Estate Loans	0.25	0.23	0.16	Apr-24
Yield Curve	(0.09)	(0.25)	(0.73)	Sep-24
Total Assets: Money Market Funds	$ 6,547,307	$ 6,440,700	$ 5,917,351	Apr-24
Federal Government Interest Payments	$ 1,097	$ 1,067	$ 897	Apr-24
CPI: Rent in U.S. City Average	424	422	404	Sep-24
Consumer Loans: Credit Card Debt	$ 1,074	$ 1,073	$ 1,020	Oct-24
New Single-Family Home Sales	738	709	694	Sep-24
New Housing Units Completed	1,680	1,781	1,466	Sep-24

DATA TABLE

Metric	This Period	Last Period	Year Ago	Latest Release
Job Openings: Construction	370	232	386	Aug-24
New Homes: Median Square Footage	2,104	2,175	2,244	Apr-24
Median Sales Price of New Houses Sold	$ 426,300	$ 410,900	$ 426,100	Sep-24

SOURCES

Metric	Frequency	Sources	Notes
Housing Starts: Total Units	Monthly	U.S. Census Bureau, U.S. Department of Housing and Urban Development	As provided by the Census, start occurs when excavation begins for the footings or foundation of a building. All housing units in a multifamily building are defined as being started when this excavation begins. Beginning with data for September 1992, estimates of housing starts include units in structures being totally rebuilt on an existing foundation.
New Housing Supply	Monthly	U.S. Census Bureau, U.S. Department of Housing and Urban Development	The months' supply is the ratio of new houses for sale to new houses sold. This statistic provides an indication of the size of the new for-sale inventory in relation to the number of new houses currently being sold. The months' supply indicates how long the current new for-sale inventory would last given the current sales rate if no additional new houses were built.
Existing Housing Supply	Monthly	National Association of Realtors	The National Association of Realtors monthly housing indicators are based on a representative sample of local boards and multiple listing services. Sales volume, inventory, and price levels for existing homes are measured for the US in aggregate and by census region. Existing homes, unlike new homes, are homes that are owned and occupied before coming onto the market. Inventory indicates the number of properties marked as "active" on the market or those pending sales. When a seller lists a property, it becomes counted as inventory.
Nominal Median Sales Price of Houses Sold	Quarterly	U.S. Census Bureau, U.S. Department of Housing and Urban Development	The purpose of the Survey of Construction (SOC) is to provide national and regional statistics on starts and completions of new single-family and multifamily housing units and statistics on sales of new single-family houses in the United States. The United States Code, Title 13, authorizes this survey and provides for voluntary responses. The Department of Housing and Urban Development partially funds this survey. The SOC also provides statistics on characteristics of new privately-owned residential structures in the United States. Data included are various characteristics of new single-family houses completed, new multifamily housing completed, new single-family houses sold, and new contractor-built houses started.
New Building Permit Authorizations: Total Units	Monthly	U.S. Census Bureau, U.S. Department of Housing and Urban Development	Starting with the 2005-02-16 release, the series reflects an increase in the universe of permit-issuing places from 19,000 to 20,000 places.
Case-Shiller Index	Monthly	S&P Dow Jones Indices LLC	The S&P CoreLogic Case-Shiller Home Price Indices measure the price level of existing single-family homes in the U.S.
Residential Construction Employees	Monthly	U.S. Bureau of Labor Statistics	Construction employees in the construction sector include: Working supervisors, qualified craft workers, mechanics, apprentices, helpers, laborers, and so forth, engaged in new work, alterations, demolition, repair, maintenance, and the like, whether working at the site of construction or in shops or yards at jobs (such as precutting and preassembling) ordinarily performed by members of the construction trades.
Nominal Mortgage Rates	Weekly	Freddie Mac	On November 17, 2022, Freddie Mac changed the methodology of the Primary Mortgage Market Survey® (PMMS®). The weekly mortgage rate is now based on applications submitted to Freddie Mac from lenders across the country. For more information regarding Freddie Mac's enhancement, see their research note.
Deliquency Rates: Single-Family	Quarterly	Board of Governors of the Federal Reserve System	The charge-off rates are annualized and are calculated net of recoveries. Delinquent loans and leases encompass those that are past due by thirty days or more and are still accruing interest, as well as those in nonaccrual status. This comprehensive approach provides insight into the financial health and performance metrics of these major banks, considering both charge-offs and delinquencies in their loan portfolios.

SOURCES

Metric	Frequency	Sources	Notes
Deliquency Rates: Commercial Real Estate	Quarterly	Board of Governors of the Federal Reserve System	The charge-off rates are annualized and are calculated net of recoveries. Delinquent loans and leases encompass those that are past due by thirty days or more and are still accruing interest, as well as those in nonaccrual status. This comprehensive approach provides insight into the financial health and performance metrics of these major banks, considering both charge-offs and delinquencies in their loan portfolios.
PPI: Residential Construction	Monthly	U.S. Bureau of Labor Statistics	The Producer Price Index (PPI) program measures the average change over time in the selling prices received by domestic producers for their output. The prices included in the PPI are from the first commercial transaction for many products and some services.
Construction Spending: Residential	Monthly	U.S. Census Bureau	Construction work done each month on new structures or improvements to existing structures for private and public sectors (in 50 states and the District of Columbia).
Housing Inventory: Median Days on Market	Monthly	Realtor.com	With the release of its September 2022 housing trends report, Realtor.com® incorporated a new and improved methodology for capturing and reporting housing inventory trends and metrics. The new methodology updates and improves the calculation of time on market and improves handling of duplicate listings. Most areas across the country will see minor changes with a smaller handful of areas seeing larger updates. As a result of these changes, the data released since October 2022 will not be directly.
Nominal Monthly Mortgage Payment	Monthly	Reef Insights LLC	The nominal monthly mortgage payment is determined based on the current prevailing mortgage rate and the median sales price of houses sold. Our calculations are grounded in the following assumptions: a 20 percent down payment, a 30-year maturity period, and a fixed interest rate.
Real Mortgage Payment Index	Monthly	Reef Insights LLC	The real mortgage payment index is calculated by dividing the nominal monthly mortgage payment by the prevailing CPI index value.
Median Household Income Spent on Annual Mortgage Payments	Monthly	Reef Insights LLC	To determine the median household income spent on annual mortgage payments, we have annualized the prevailing nominal monthly mortgage payment and divided that payment by the prior years' median household income.
Fair Value Variable	Monthly	Reef Insights LLC	The analysis incorporates three distinct rolling averages signifying the percentage of median household income allocated to annual mortgage payments. These averages span 5 years, 10 years, and 15 years, respectively. In the determination of a 'fair value' premium or discount for each period, the established averages are divided by the prevailing percentage of median household income dedicated to annual mortgage payments. The resultant values are subsequently averaged to ascertain a premium or discount, which is applicable to the prevailing median sales price of houses sold.
Housing Expense Change	Monthly	Reef Insights LLC	The computed values have been obtained through the division of the rolling 1-year average for the percentage of median household income allocated to annual mortgage payments by the rolling 10-year average.
Nominal Median Household Income	Annually	U.S. Census Bureau	The median divides the income distribution into two equal parts: one-half of the cases falling below the median income and one-half above the median. For households and families, the median income is based on the distribution of the total number of households and families including those with no income. The median income for individuals is based on individuals 15 years old and over with income. Median income for households, families, and individuals is computed on the basis of a standard distribution.

SOURCES

Metric	Frequency	Sources	Notes
CPI: Headline Inflation	Monthly	U.S. Bureau of Labor Statistics	The CPIs are based on prices for food, clothing, shelter, and fuels; transportation fares; service fees (e.g., water and sewer service); and sales taxes. Prices are collected monthly from about 4,000 housing units and approximately 26,000 retail establishments across 87 urban areas. To calculate the index, price changes are averaged with weights representing their importance in the spending of the particular group. The index measures price changes (as a percent change) from a predetermined reference date. In addition to the original unadjusted index distributed, the Bureau of Labor Statistics also releases a seasonally adjusted index. The unadjusted series reflects all factors that may influence a change in prices. However, it can be very useful to look at the seasonally adjusted CPI, which removes the effects of seasonal changes, such as weather, school year, production cycles, and holidays.
CPI: Core Inflation	Monthly	U.S. Bureau of Labor Statistics	The "Consumer Price Index for All Urban Consumers: All Items Less Food & Energy" is an aggregate of prices paid by urban consumers for a typical basket of goods, excluding food and energy. This measurement, known as "Core CPI," is widely used by economists because food and energy have very volatile prices.
Unemployment Rate	Monthly	U.S. Bureau of Labor Statistics	The unemployment rate represents the number of unemployed as a percentage of the labor force. Labor force data are restricted to people 16 years of age and older, who currently reside in 1 of the 50 states or the District of Columbia, who do not reside in institutions (e.g., penal and mental facilities, homes for the aged), and who are not on active duty in the Armed Forces.
Federal Funds Rate	Monthly	Board of Governors of the Federal Reserve System	The federal funds market consists of domestic unsecured borrowings in U.S. dollars by depository institutions from other depository institutions and certain other entities, primarily government-sponsored enterprises.
Personal Savings Rate	Monthly	U.S. Bureau of Economic Analysis	Personal saving as a percentage of disposable personal income (DPI), frequently referred to as "the personal saving rate," is calculated as the ratio of personal saving to DPI. Personal saving is equal to personal income less personal outlays and personal taxes; it may generally be viewed as the portion of personal income that is used either to provide funds to capital markets or to invest in real assets such as residences.
Jobless Claims	Weekly	U.S. Employment and Training Administration	An initial claim is a claim filed by an unemployed individual after a separation from an employer. The claim requests a determination of basic eligibility for the Unemployment Insurance program.
10-Year U.S. Treasury Yield Minus 2-Year U.S. Treasury	Weekly	Board of Governors of the Federal Reserve System	This particular yield curve is derived by subtracting the 10-year U.S. Treasury by the 2-Year U.S. Treasury.
Residential Rental Vacancy Rate	Quarterly	U.S. Census Bureau	The rental vacancy rate is the proportion of the rental inventory that is vacant for rent.
Real Residential Construction Spend Index	Monthly	Reef Insights LLC	This index is constructed by dividing the Total Construction Spending: Residential by the CPI: Residential Construction.
Household Savings	Annually	U.S. Bureau of Economic Analysis	To calculate the amount of household savings, the BEA starts with personal income, and then subtracts from that personal taxes to derive disposable personal income. Then, personal outlays are subtracted from disposable income. This results in an estimate of household savings.

SOURCES

Metric	Frequency	Sources	Notes
Bank Credit: All Commercial Banks	Weekly	Board of Governors of the Federal Reserve System	The H.8 release provides an estimated weekly aggregate balance sheet for all commercial banks in the United States. The release also includes separate balance sheet aggregations for several bank groups: domestically chartered commercial banks; large domestically chartered commercial banks; small domestically chartered commercial banks; and foreign-related institutions in the United States
Delinquency Rates: Credit Card	Quarterly	Board of Governors of the Federal Reserve System	For more information, check out the Charge-Off and Delinquency Rates on Loans and Leases at Commercial Banks release.
Gross Domestic Product (GDP)	Quarterly	U.S. Bureau of Economic Analysis	Gross domestic product (GDP), the featured measure of U.S. output, is the market value of the goods and services produced by labor and property located in the United States.
M2 (Money Supply)	Monthly	Board of Governors of the Federal Reserve System	Beginning May 2020, M2 consists of M1 plus (1) small-denomination time deposits (time deposits in amounts of less than $100,000) less IRA and Keogh balances at depository institutions; and (2) balances in retail MMFs less IRA and Keogh balances at MMFs. Seasonally adjusted M2 is constructed by summing savings deposits (before May 2020), small-denomination time deposits, and retail MMFs, each seasonally adjusted separately, and adding this result to seasonally adjusted M1.
Federal Reserve's Balance Sheet	Weekly	Board of Governors of the Federal Reserve System	For more information, check out the H.4.1 release.
PCE: Headline Inflation	Monthly	U.S. Bureau of Economic Analysis	Table 9.1U - Comparison of the PCE Price Index with the CPI reconciles the changes in the personal consumption expenditures (PCE) chain-type price index, prepared by the Bureau of Economic Analysis (BEA), with changes in the consumer price index for all urban consumers (CPI), prepared by the Bureau of Labor Statistics (BLS).
PCE: Core Inflation	Monthly	U.S. Bureau of Economic Analysis	Table 9.1U - Comparison of the PCE Price Index with the CPI reconciles the changes in the personal consumption expenditures (PCE) chain-type price index, prepared by the Bureau of Economic Analysis (BEA), with changes in the consumer price index for all urban consumers (CPI), prepared by the Bureau of Labor Statistics (BLS).
Debt-to-GDP	Quarterly	U.S. Office of Management and Budget	Federal Debt: Total Public Debt as Percent of Gross Domestic Product (GFDEGDQ188S) was first constructed by the Federal Reserve Bank of St. Louis in October 2012.
Real GDP	Quarterly	U.S. Bureau of Economic Analysis	Real gross domestic product is the inflation adjusted value of the goods and services produced by labor and property located in the United States.
Trucking Employees	Monthly	U.S. Bureau of Labor Statistics	Each month, CES surveys approximately 119,000 businesses and government agencies, representing approximately 629,000 individual worksites.
Industrial Production	Monthly	Board of Governors of the Federal Reserve System	The industrial production (IP) index measures the real output of all relevant establishments located in the United States, regardless of their ownership, but not those located in U.S. territories.

SOURCES

Metric	Frequency	Sources	Notes
Credit Card Interest Rates	Monthly	Board of Governors of the Federal Reserve System	This release is generally issued on the fifth business day of each month.
Charge-Off Rate: Credit Card Loans	Quarterly	Board of Governors of the Federal Reserve System	The 100 largest banks are measured by consolidated foreign and domestic assets. Charge-offs are the value of loans and leases removed from the books and charged against loss reserves. Charge-off rates are annualized, net of recoveries. Delinquent loans and leases are those past due thirty days or more and still accruing interest as well as those in nonaccrual status.
Charge-Off Rate: Business Loans	Quarterly	Board of Governors of the Federal Reserve System	The 100 largest banks are measured by consolidated foreign and domestic assets. Charge-offs are the value of loans and leases removed from the books and charged against loss reserves. Charge-off rates are annualized, net of recoveries. Delinquent loans and leases are those past due thirty days or more and still accruing interest as well as those in nonaccrual status.
Charge-Off Rate: Commercial Real Estate Loans	Quarterly	Board of Governors of the Federal Reserve System	The 100 largest banks are measured by consolidated foreign and domestic assets. Charge-offs are the value of loans and leases removed from the books and charged against loss reserves. Charge-off rates are annualized, net of recoveries. Delinquent loans and leases are those past due thirty days or more and still accruing interest as well as those in nonaccrual status.
Yield Curve	Daily	Federal Reserve Bank of St. Louis	Starting with the update on June 21, 2019, the Treasury bond data used in calculating interest rate spreads is obtained directly from the U.S. Treasury Department. Series is calculated as the spread between 10-Year Treasury Constant Maturity (BC_10YEAR) and 2-Year Treasury Constant Maturity (BC_2YEAR). Both underlying series are published at the U.S. Treasury Department.
Total Assets: Money Market Funds	Quarterly	Board of Governors of the Federal Reserve System	For more information about the Flow of Funds tables, see the Financial Accounts Guide.
Federal Government Interest Payments	Quarterly	U.S. Bureau of Economic Analysis	For more information about this series, please see http://www.bea.gov/national/.
CPI: Rent in U.S. City Average	Monthly	U.S. Bureau of Labor Statistics	The Consumer Price Index (CPI) is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services. Indexes are available for the U.S. and various geographic areas. Average price data for select utility, automotive fuel, and food items are also available.
Consumer Loans: Credit Card Debt	Monthly	Board of Governors of the Federal Reserve System	For further information, please refer to the Board of Governors of the Federal Reserve System's H.8 release.
New Single-Family Home Sales	Monthly	U.S. Census Bureau	For further further information, please refer to the New Residential Sales report that is published by the U.S. Census Bureau.
Hew Housing Unit Completed	Monthly	U.S. Census Bureau	This metric's official title is New Privately-Owned Housing Units Completed: Total Units, and further information can be found on the New Residential Construction report that is published by the U.S. Census Bureau.
Job Openings: Construction	Monthly	U.S. Bureau of Labor Statistics	This data can be found in the Job Openings and Labor Turnover Survey report that is published by the U.S. Bureau of Labor Statistics.
New Homes: Median Square Footage	Quarterly	U.S. Census Bureau, U.S. Department of Housing and Urban Development	For further information, please refer to the Quarterly Starts and Completions by Purpose of Design release.
Median Sales Price of New Houses Sold	Monthly	U.S. Census Bureau	For further further information, please refer to the New Residential Sales report that is published by the U.S. Census Bureau.

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Real Estate Economic Forecast - Monthly
Forecast Evaluation - Semi-Annual

On a semi-annual basis, we will be releasing a report that evaluates our past forecasts. We believe it's important to gauge our performance, and we intend to do it publicly so that you can determine if our forecasts are worth your consideration.

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