



Inflation Roundup

Special Housing and Rents Edition

June 3, 2021

Benjamin Breitholtz and Anthony Rizzo

datascience.arborresearch.com

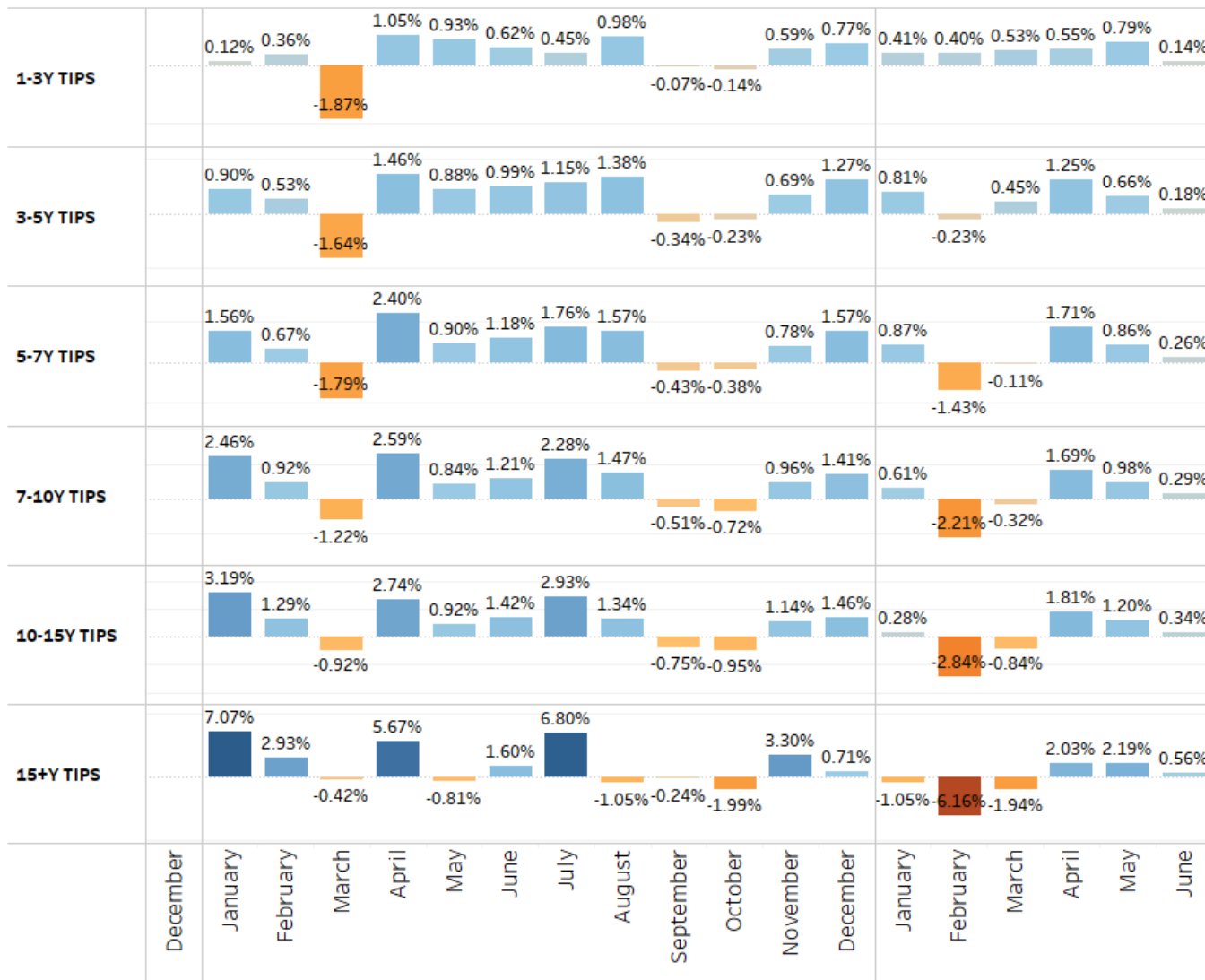


A Division of  Research & Trading, LLC

	Conditions Fueling an Inflation Premium	Aug '20	Sep '20	Oct '20	Nov '20	Dec '20	Jan '21	Feb '21	Mar '21	Apr '21	May '21	Notes
Wider TIPS Breakevens	Commodities ex-energy and gold: 50+% produce + YOY return	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	85+% of commodities rallying YOY. In addition, spot prices have risen the most on record during a global recovery.
	Global econ data releases: 50+% economies growing above one-year trend	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	85% of economies growing above trend led by Asia Pacific and the US.
	Investors pricing in 2+% YOY headline CPI next 10 years	N	N	N	Y	Y	Y	Y	Y	Y	Y	Inflation swap caps/floor place a very firm floor in for TIPS breakevens at 200 bps
	TIPS breakeven curve inversion confirms committal to AIT	N	N	N	N	Y	Y	Y	Y	Y	Y	Curve inversion confirms Federal Reserve's FAIT is in action.
	Fed purchases diminishing liquidity premium	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Fed purchases (25% of total outstanding) have added nearly 80 bps to 10-year TIPS breakevens' YOY change.
	Search activity forecasts rising OER YOY	N	N	N	N	N	N	N	Y	Y	Y	Search activity synonymous w/ higher rents swung higher in Feb and Mar. Probabilities now 88% OER YOY will be higher 1y ahead into April 2022.
Impairs Risk Assets	VIX and US 10 year TIPS breakeven positively correlated	N	N	N	N	Y	N	N	N	N	Y	Brief push positive in December 2020, but making another attempt this month (45-day = 0.15). Risk assets on the verge of fearing inflation.
	Short-end swaption volatility shows tightening fears	N	N	N	N	N	Y	Y	Y	Y	Y	Swaption vol for 2-year rates into 2023 finally pushing above pre-pandemic levels. Eurodollar curve prices in 75+ bps of tightening through Dec 2023. Rate hike fears percolating.
	TIPS breakevens reach fair value implied by risk assets	N	N	N	N	N	N	N	Y	Y	Y	10-year TIPS breakevens have finally caught up to fair value at 239 bps as implied by risk assets. Above here, inflation expectations likely become hot, hot, hot.
	Investors pricing in 2.5% YOY headline CPI next 10 years	N	N	N	N	N	N	N	N	Y	Y	Inflation swap caps/floors pricing in headline CPI above 2.5% YOY for the next 10 years have moderated to 57%.

TIPS TOTAL RETURNS:

U.S. TIPS: Monthly Returns

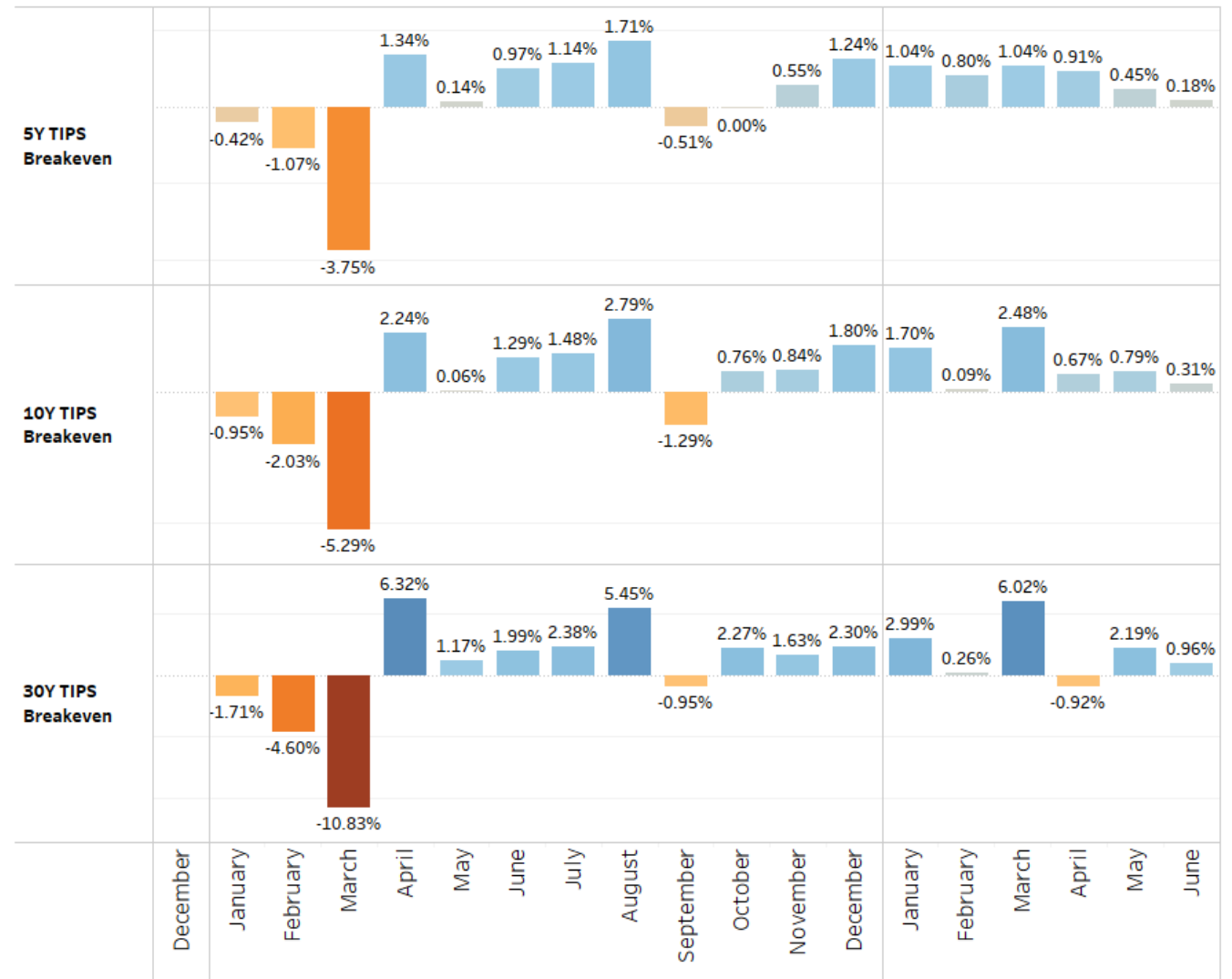


Data Source: Bloomberg LP © 2021 Arbor Research & Trading, LLC. All Rights Reserved

datascience.arborresearch.com

TIPS BREAKEVENS TOTAL RETURNS:

U.S. Inflation Expectations (duration weighted): Monthly Returns

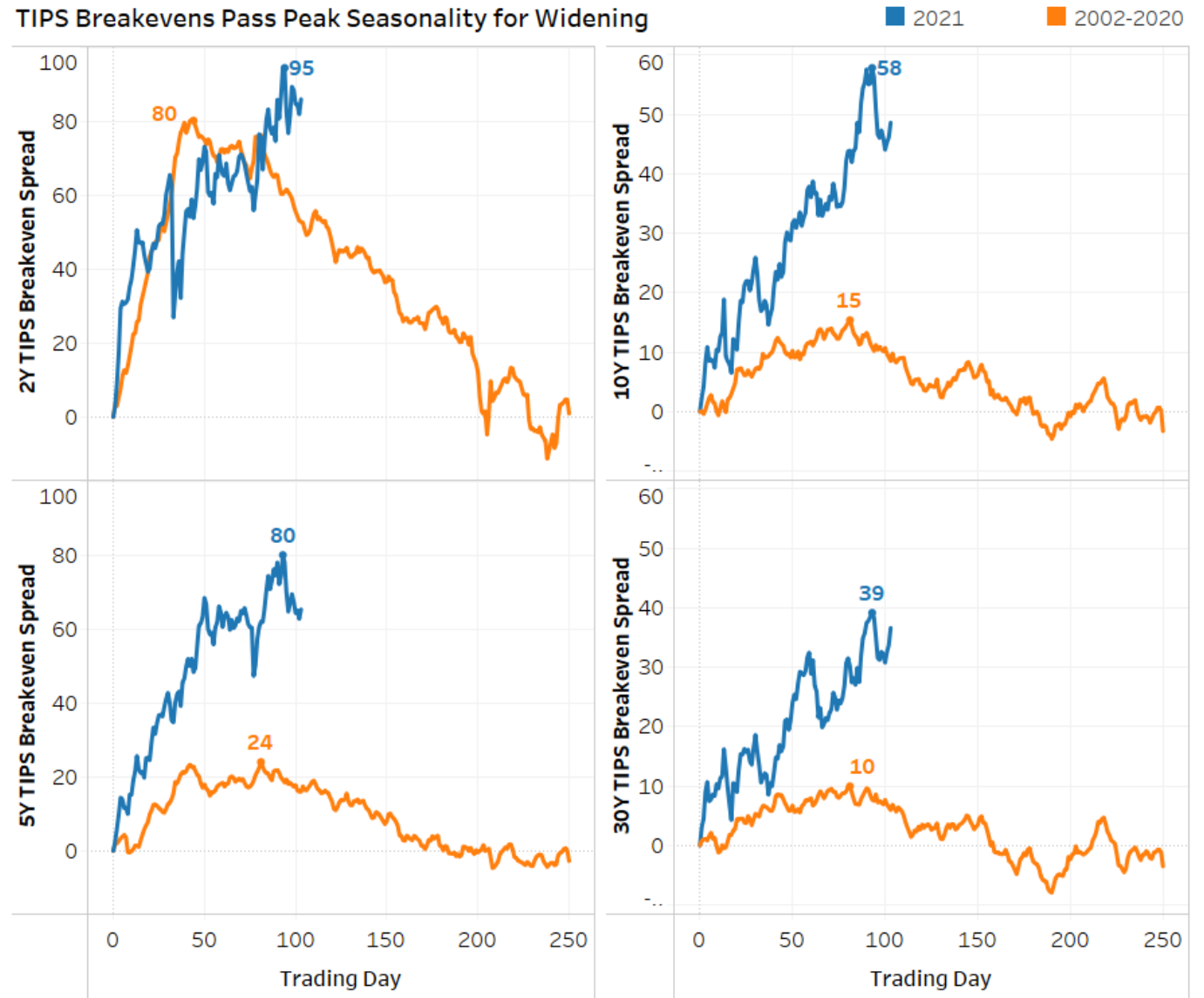


Data Source: Bloomberg LP © 2021 Arbor Research & Trading, LLC. All Rights Reserved

datascience.arborresearch.com

TIPS BREAKEVENS SEASONALITY: *Favorable Widening Seasonal Comes to an End*

TIPS Breakevens Pass Peak Seasonality for Widening



Data Source: Bloomberg LP © 2021 Arbor Research & Trading, LLC. All Rights Reserved

ARBOR DATA SCIENCE datascience.arborresearch.com

Inflation Expectations in a Holding Pattern



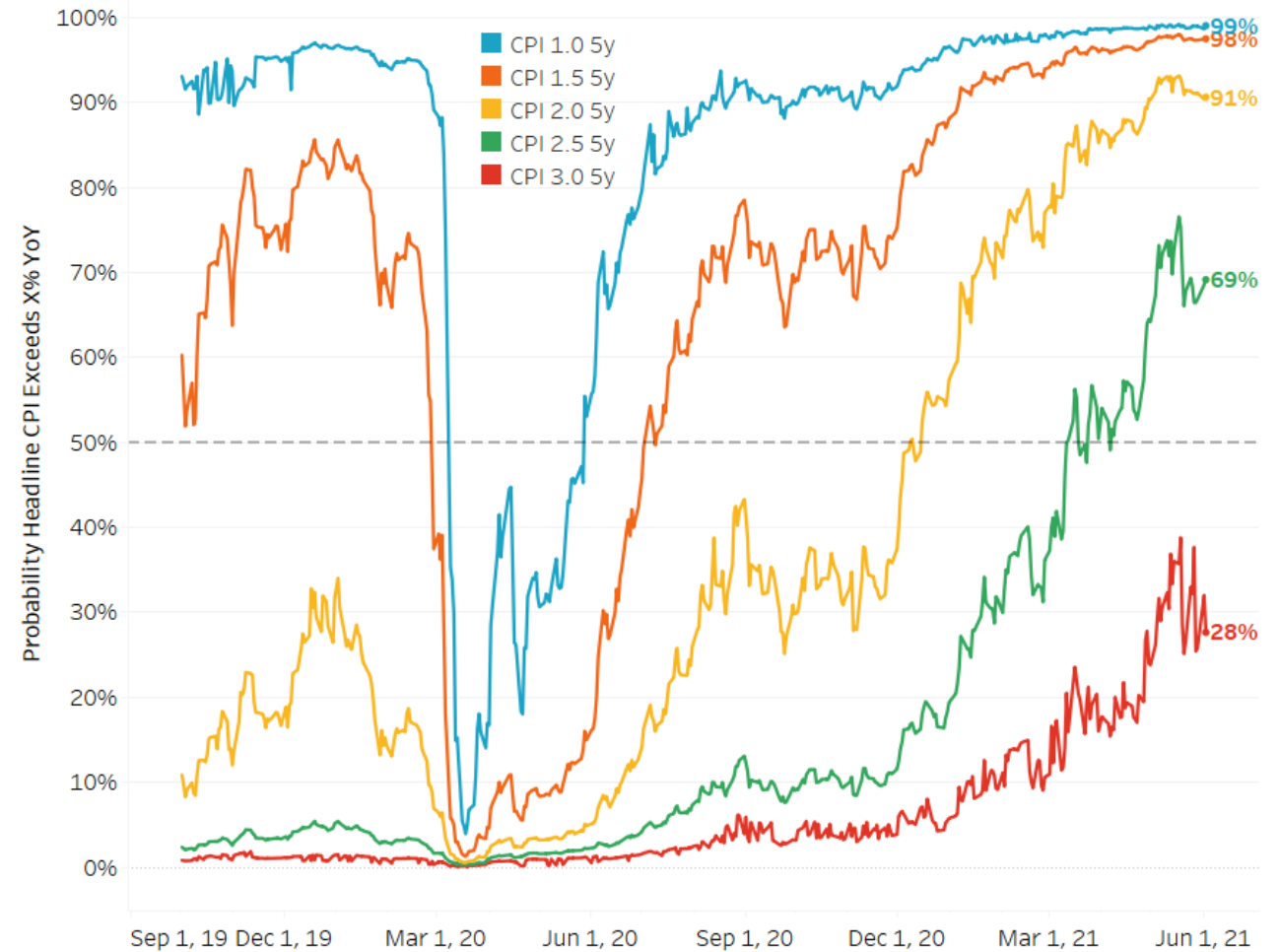
Expectations for a Right-Side Tail Dampen

- Inflation swap caps and floors show investors giving a 69% probability headline CPI exceeds 2.5% YoY over the next 5 years.
- We have added the 3.0% YOY strike, which has pulled back to 28% probability.
- **Watch the 2.5% YoY strike very closely! Any drop back below 50% would confirm investors are cooling on the inflation outlook.**

U.S. Headline CPI Expectation for the Next FIVE Years

Implied probabilities using 5-year inflation swap caps and floors with strikes from 1.0% to 3.0%

ARBOR DATA SCIENCE

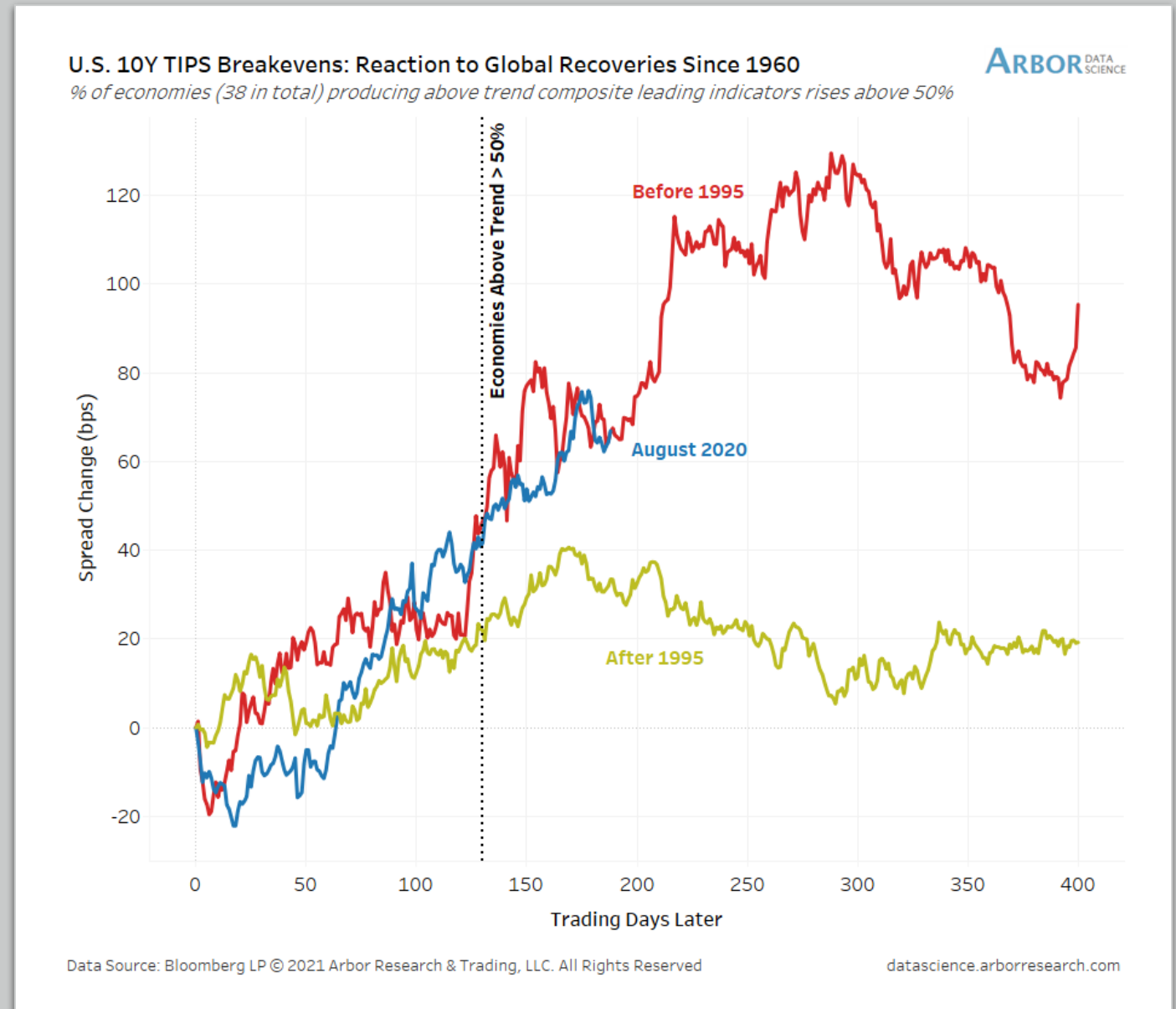


Source: Bloomberg LP ©2021 Arbor Research & Trading, LLC All Rights Reserved

datascience.arborresearch.com

Investors Looking to Pre-1995 Relationship Between Global Growth and Inflation

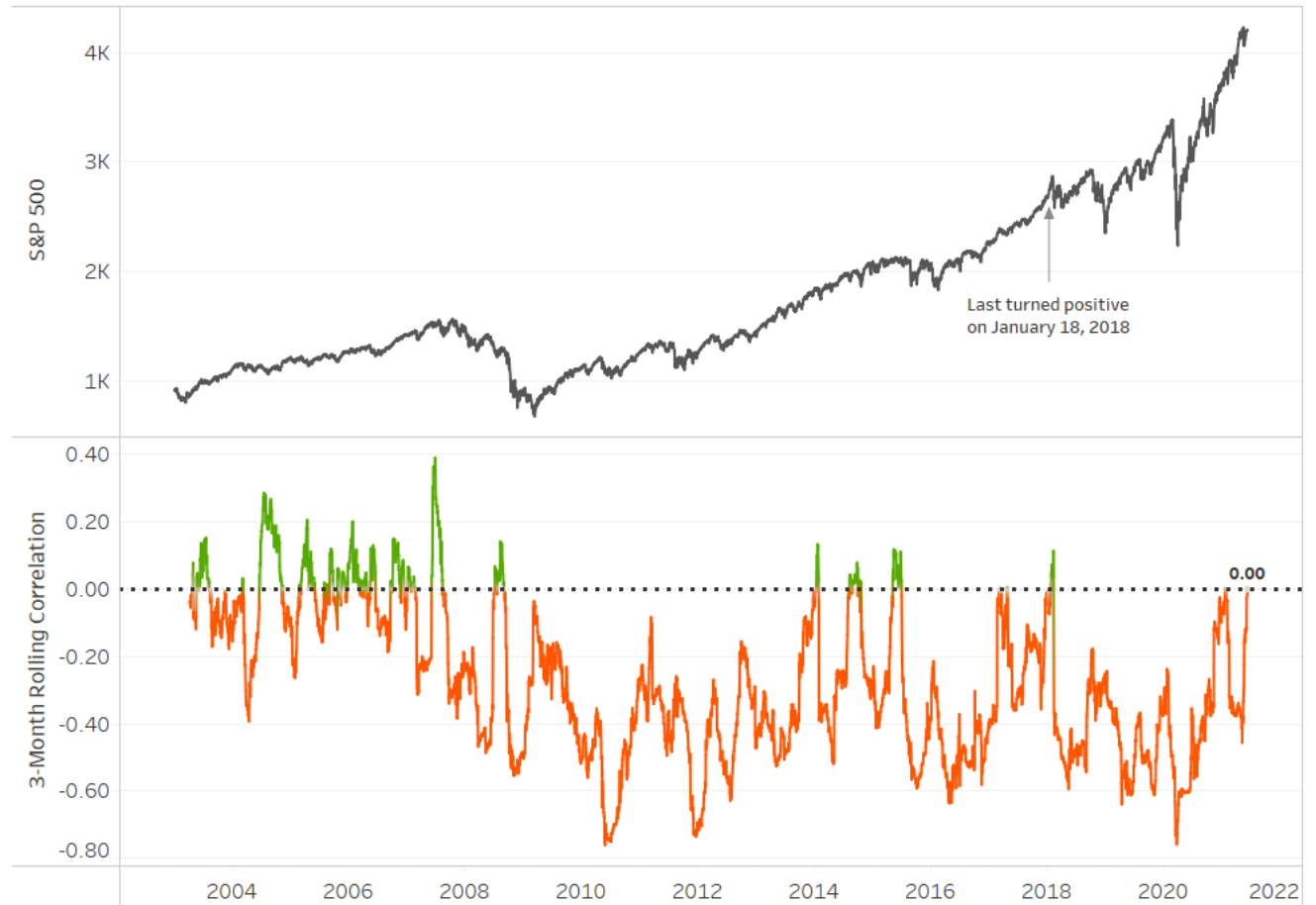
- The chart shows past changes in US 10-year TIPS breakevens into and after global recoveries since 1960.
- Thus far US 10-year TIPS breakevens have been in line with average widening seen pre-1995 after more than 50% of economies began growing above trend.
- **Inflation expectations before 1995 on average added another 50+ basis points.** On the flip side, inflation expectations after 1995 tended to stall and quickly lose momentum.



Yet Investors Show Little Fear of Inflation

- The rolling correlation between the VIX (i.e. S&P 500 implied volatility) and 10-year TIPS breakevens should reflect any fear over rising inflation expectations.
- The last period of positive correlation occurred in January 2018 as implied volatility blew out (known as 'vol-mageddon').

Equities Not Rattled by Rising Yields Until VIX and TIPS Breakevens Shed Negative Correlation **ARBOR** DATA SCIENCE
Bottom panel shows rolling 65 trading day correlation b/t VIX and U.S. 10-year TIPS breakevens



Data Sources: Bloomberg, LP © 2021 Arbor Research & Trading, LLC. All Rights Reserved

datascience.arborresearch.com

US Housing Market Begins to Cool

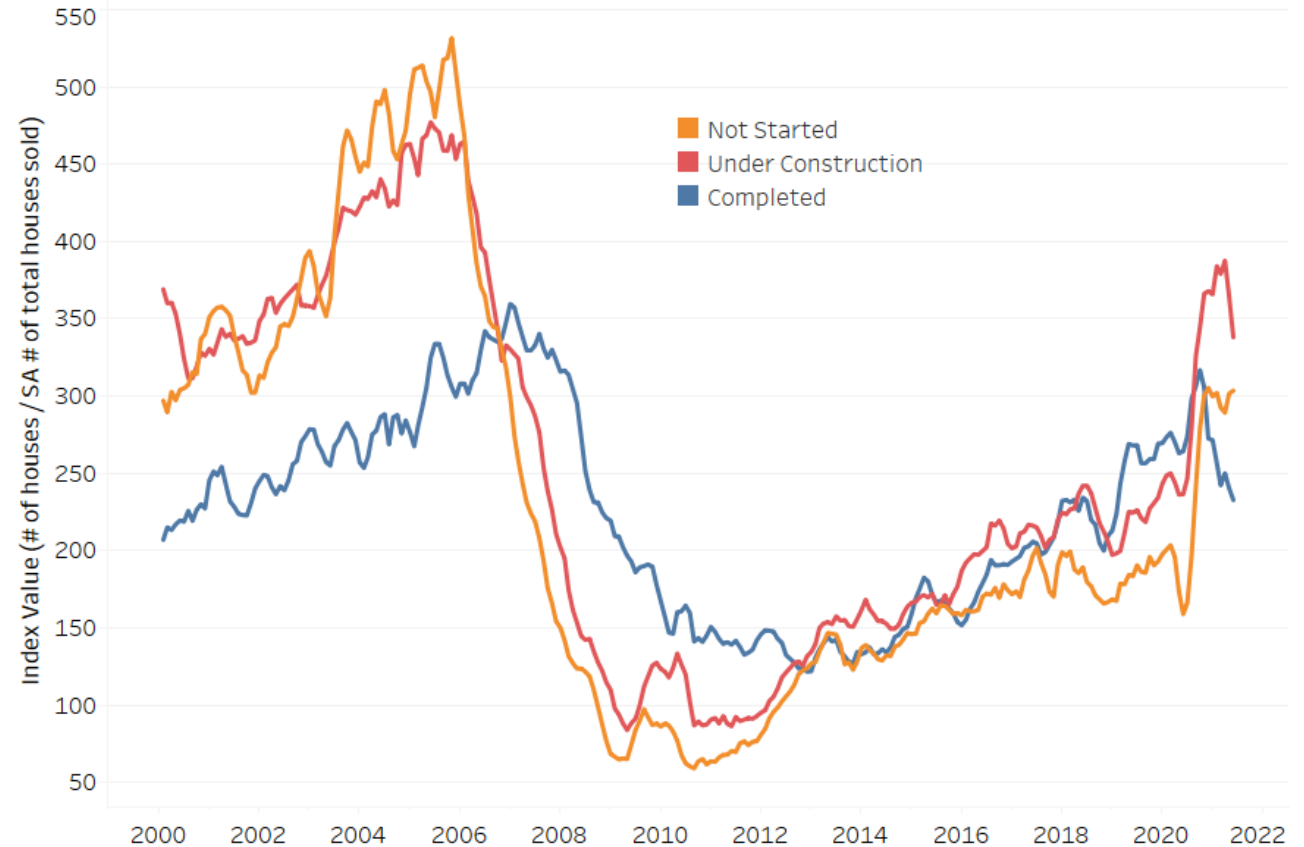


Housing Data Hits the Brakes

- New home sales peaked in January 2021 but has yet to follow existing home sales appreciably lower.
- Demand remained firm through April with 'not started' homes steady. However 'under construction' and 'completed' have suffered the largest setbacks since the financial crisis.
- Home prices have yet to let up with existing home sales at a median \$341.6k!

New Home Demand Remains High, but Construction Slows
3-month moving average

ARBOR DATA
SCIENCE



Data Source: U.S. Census Bureau © 2021 Arbor Research & Trading, LLC. All Rights Reserved

datascience.arborresearch.com

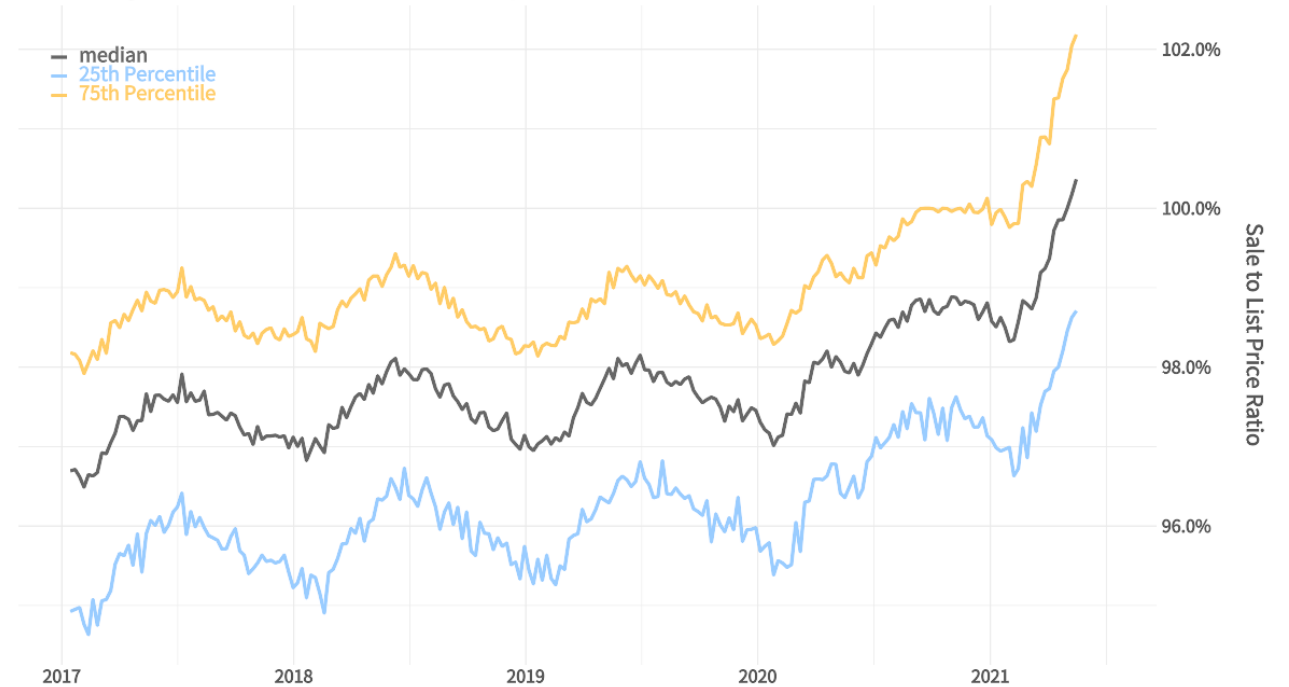
Median Home Selling ABOVE List Price



Sale Prices Increasingly Coming in Above List

Redfin - Avg Sale to List Ratio - US Metros thru May

ARBOR DATA
SCIENCE



Data Source: Redfin <https://www.redfin.com/blog/data-center/> datascience.arborresearch.com

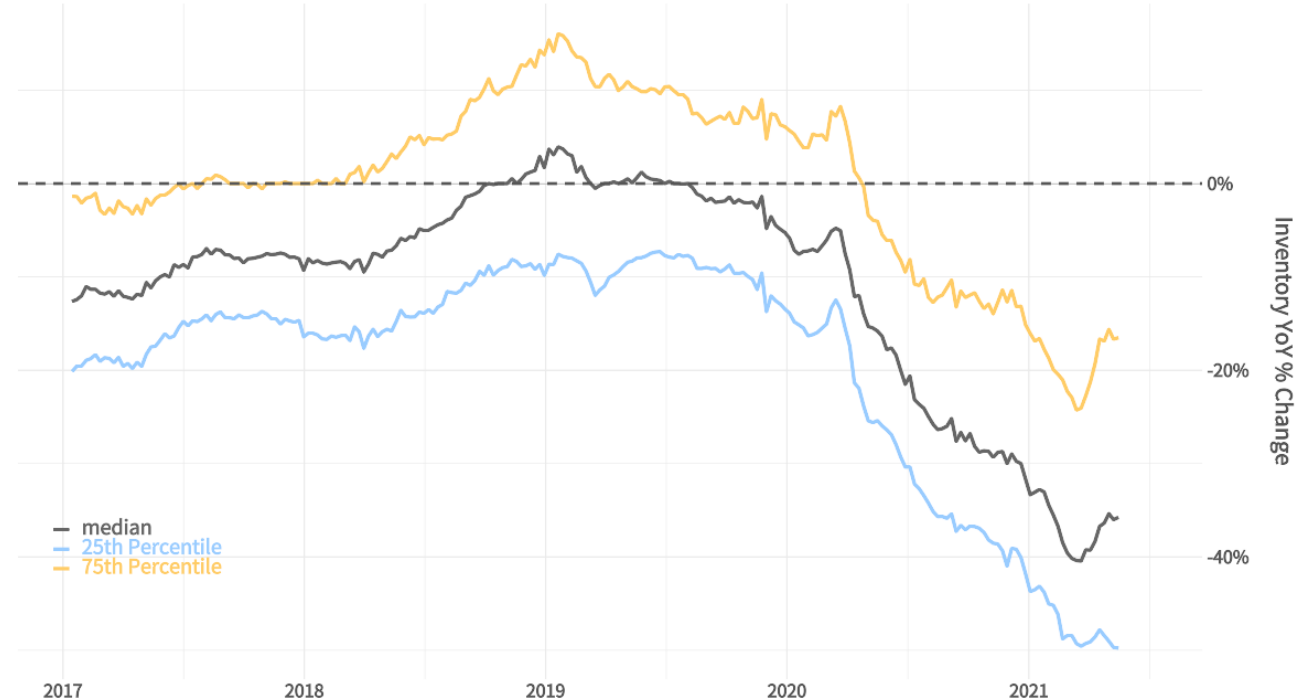
Housing Inventory Collapse Finally Slows



- The median YoY change in active inventory has abated by the largest degree since the pandemic got underway.
- Be aware this is only a trickle of new inventory, meaning its impact on prices is likely scant at the moment.

US Housing Inventory Collapse Slows
Redfin - YoY Change in Active Inventory - US Metros thru May

ARBOR DATA SCIENCE



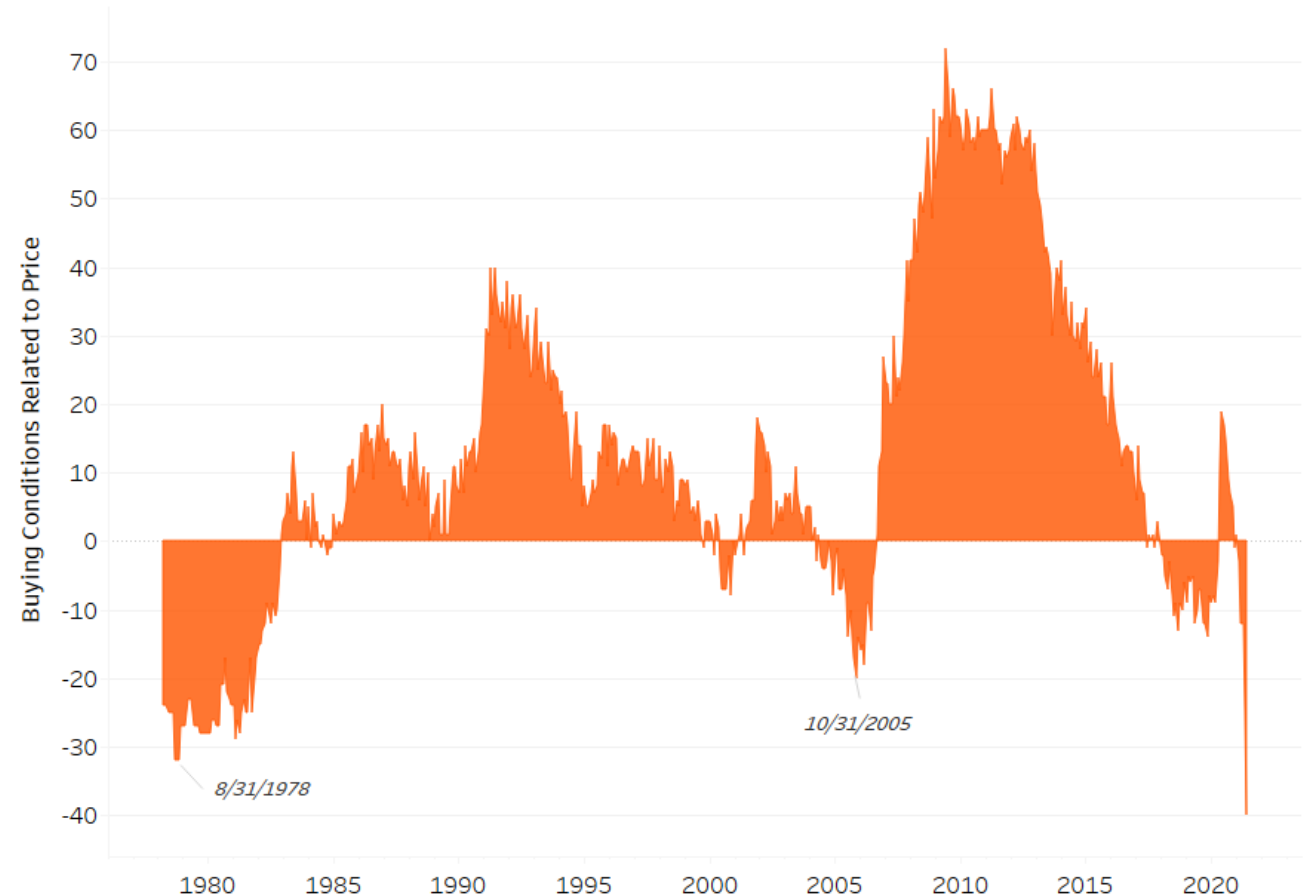
Data Source: Redfin <https://www.redfin.com/blog/data-center/> datascience.arborresearch.com

Would-Be Buyers Suddenly Concerned Above Elevated Prices

- The UMich Consumer Survey indicates buying conditions related to price has become the worst on record.
- Consumers have never adjusted their views on housing prices so quickly, even during the lead up to the housing bubble and financial crisis.

High Prices the Biggest Obstacle to Home Buying on Record

ARBOR DATA
SCIENCE

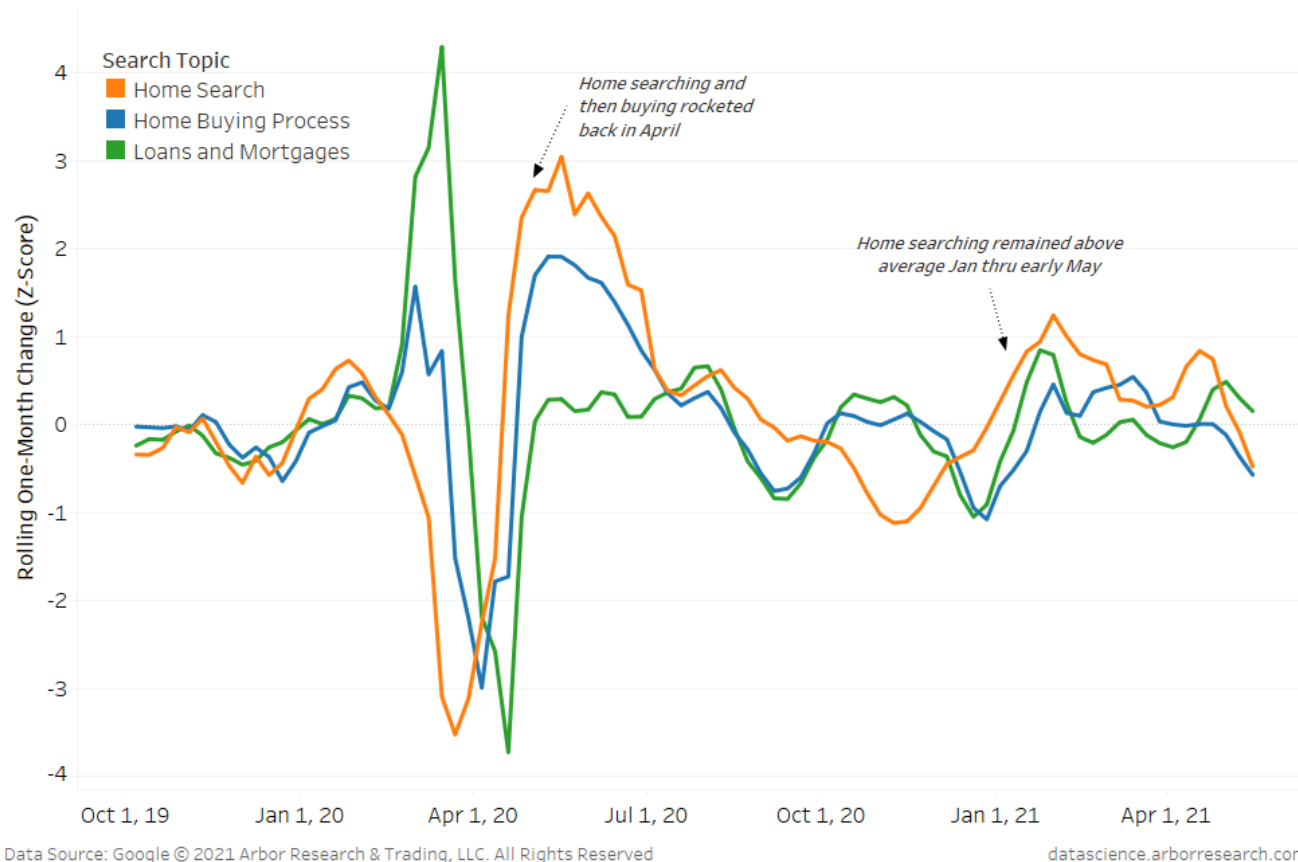


Data Source: UMich © 2021 Arbor Research & Trading, LLC. All Rights Reserved

datascience.arborresearch.com

Searches for Homes and the Buying Process Cools After a Strong Start to 2021

ARBOR DATA
SCIENCE



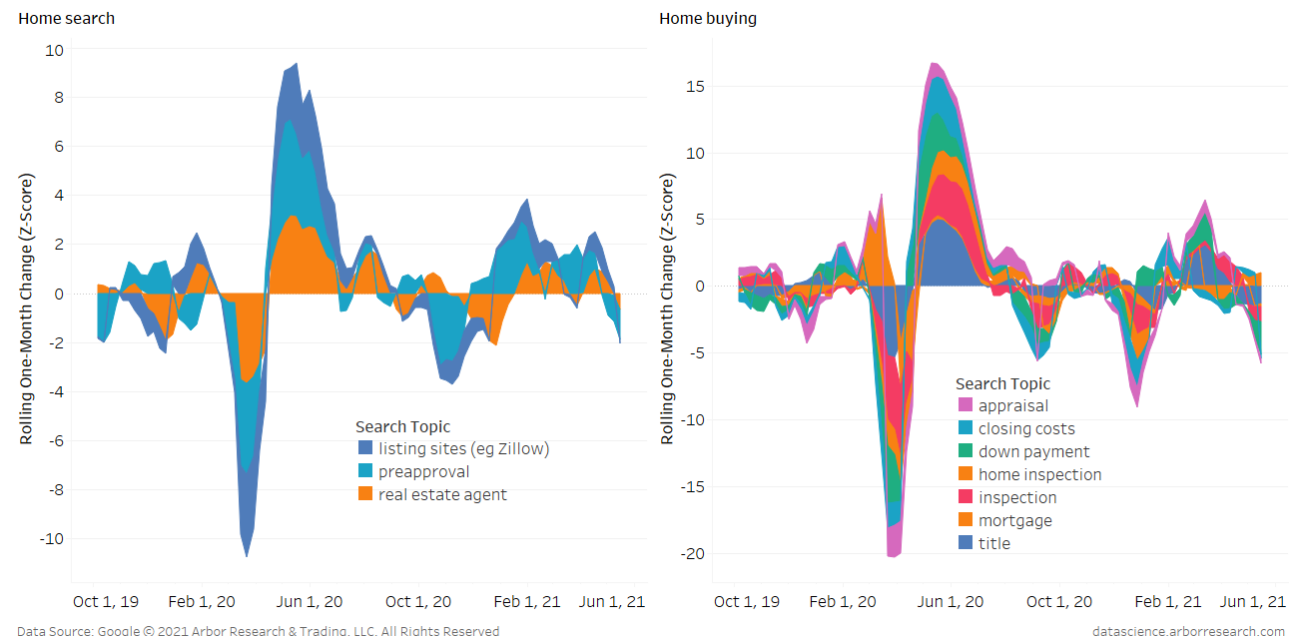
Searches for Homes and the Buying Process Fall

- Searches for homes and home websites have suffered the first setback in 2021. A continued drop in activity into the favorable summer months would cement a housing slowdown.
- Searches for loans and mortgages remains strong, especially cash-out refinancing, thanks to elevated home prices and still low interest rates.

More Granular Look at Home Searches and the Buying Process

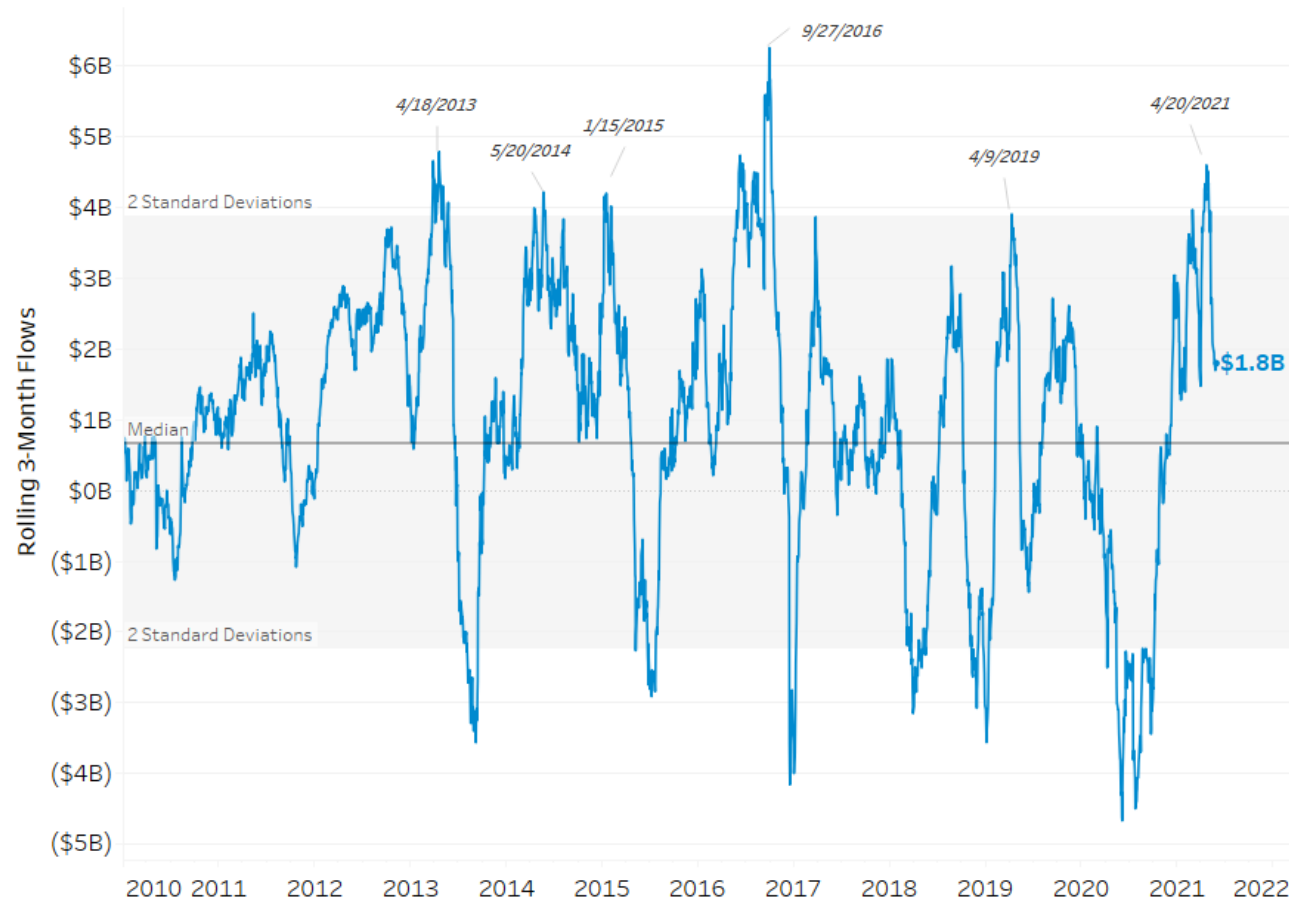
- Searches about the preapproval process have skid the most among those entertaining buying.
- All search topics, but mortgages, about the home buying process have receded over the past month.
 - *Appraisals and closing costs tend to lead, which have quickly fallen since May.*
 - *Instpections and down payment losing interest reflect a slowing number of realized purchases.*

Home Buying Tasks Following the Slowdown in Home Searches



Investors' Thirst for Real Estate Dries Up

ARBOR DATA SCIENCE



Data Sources: Bloomberg, LP © 2021 Arbor Research & Trading, LLC. All Rights Reserved

datascience.arborresearch.com

Investors Pare Flows Into Real Estate

- Flows into real estate-related ETFs have greatly decelerated to a rolling one-month pace of \$1.8 billion.
- Residential, office, and industrial REITs have accelerated in recent days.
- Conversely, home builders have suffered drawdowns of ~10%. **Are consumers shifting back toward renting from owning?**

US Rental Market Heating Up

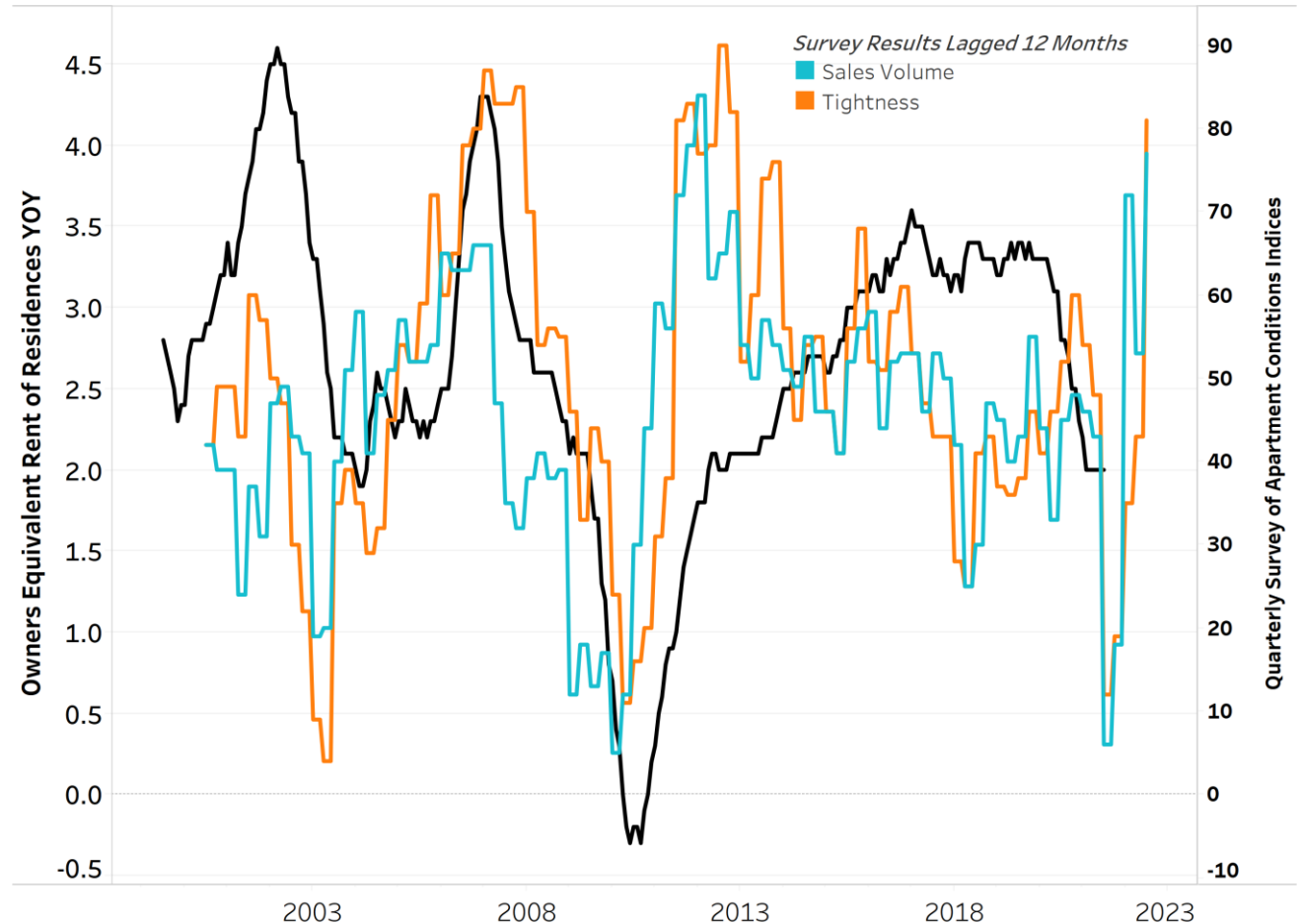


Apartment Rentals Heat Up According to Surveys

- The National Multifamily Housing Council's (NMHC) survey reveals greatly accelerating paces of sales and tightness.
- Both surveys have habitually led the owners equivalent rent (OER) by roughly 12 months, suggesting 3+% YoY gains could be seen by early 2022.

U.S. Apartment Market Rebounding From Extremely Loose Conditions

ARBOR DATA SCIENCE



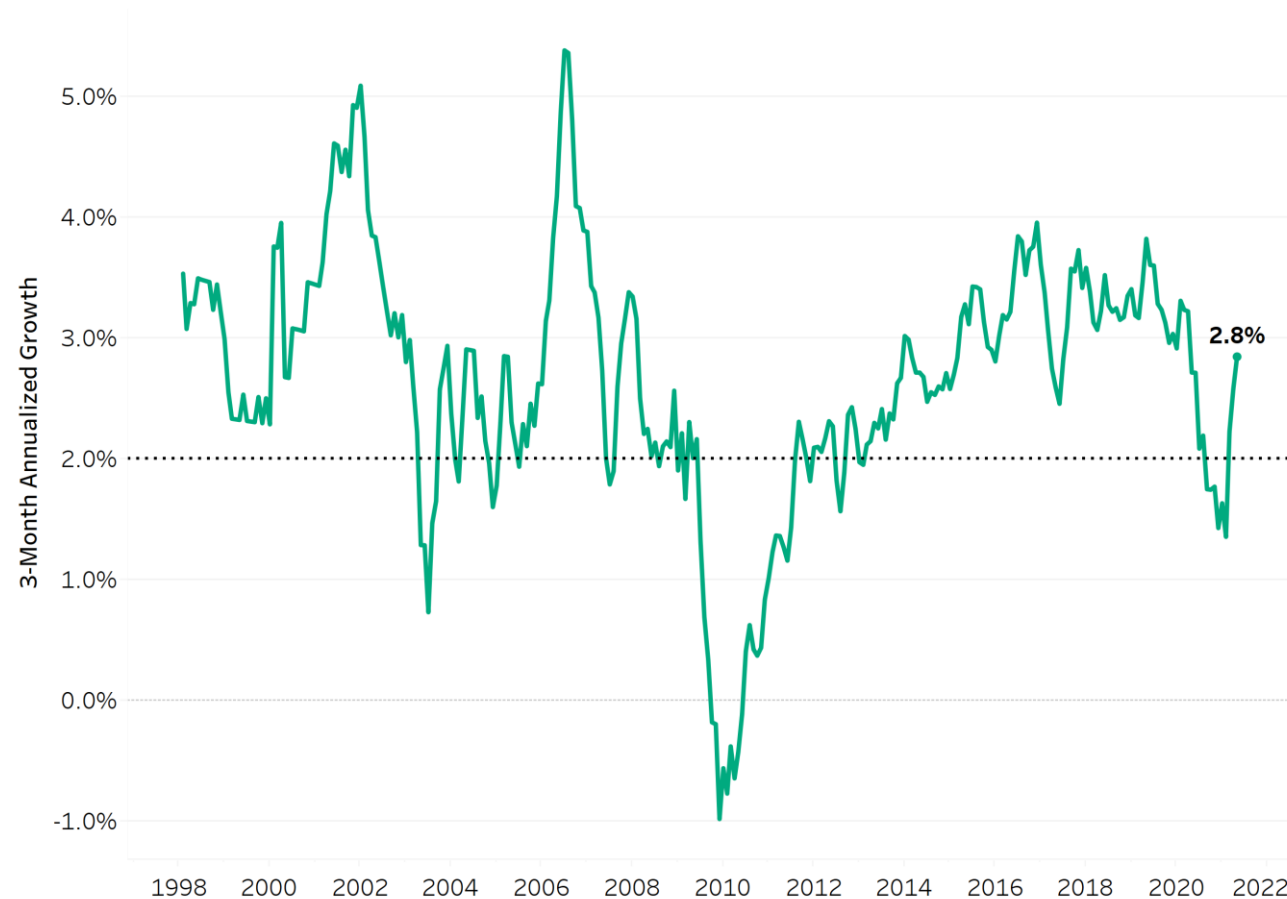
Data Sources: BLS and NMHC © 2021 Arbor Research & Trading, LLC. All Rights Reserved

datascience.arborresearch.com

3-month Annualized Growth
in OER Has Quickly
Recovered to 2.8%

Owners Equivalent Rent of Residences Rebounds

ARBOR DATA
SCIENCE

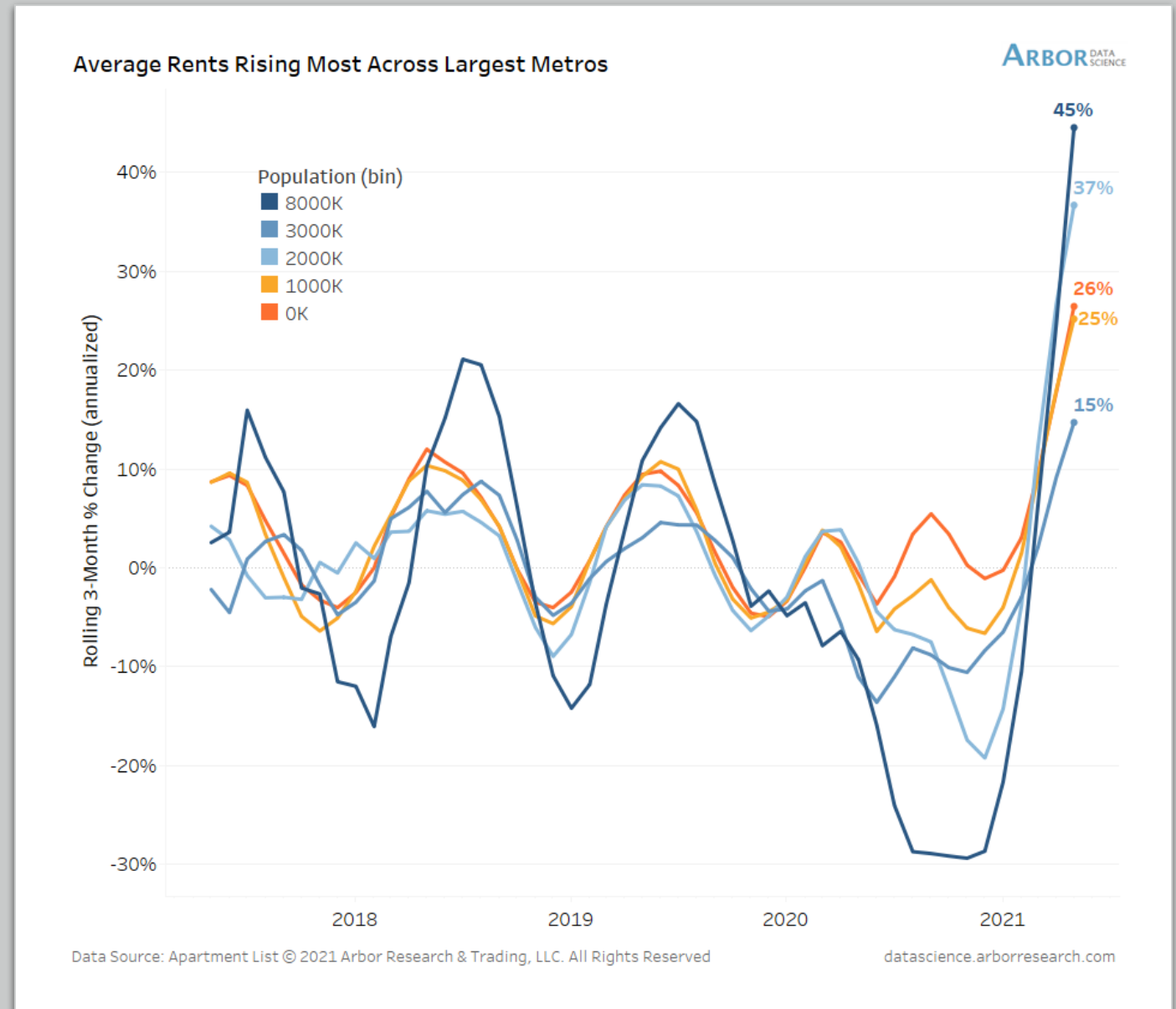


Data Sources: BLS © 2021 Arbor Research & Trading, LLC. All Rights Reserved

datascience.arborresearch.com

Apartment List Reports Rapidly Rising Rents

- 3-month annualized growth in rents (studio – 3+ bedrooms) have been soaring, even within the largest metros including Chicago and San Francisco.
- Seasonality is certainly at play, but the wave of activity this spring has been surprising.
- Are we beginning to see a rapid convergence between asking and collected rents?



Rising Rents Nearly Ubiquitous Across Metros

Rents Rise in 2021 - 5/1/2021

Rolling 3-mth annualized % change for studio - 4 bdrm

ARBOR DATA
SCIENCE

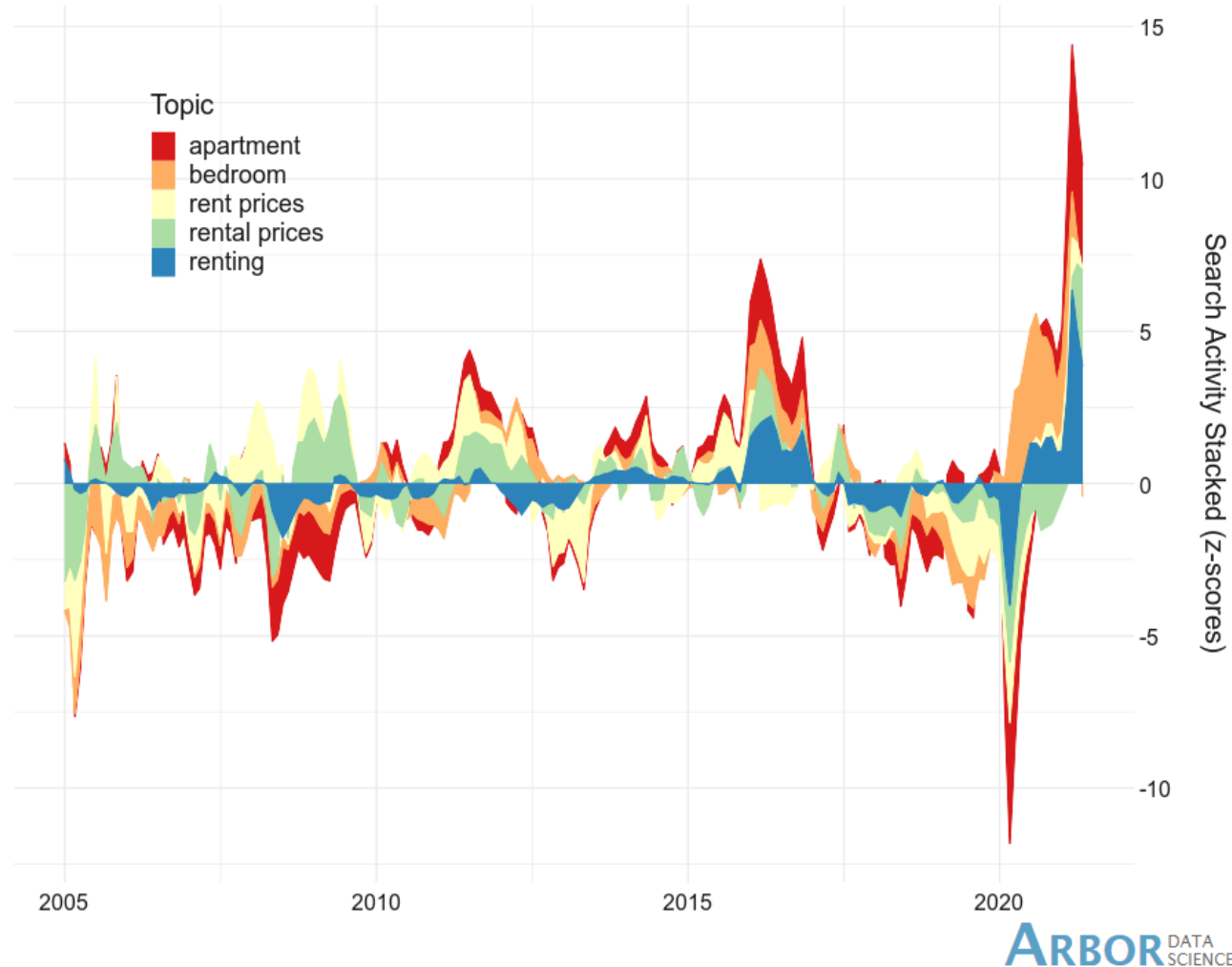


Data Source: Apartment List © 2021 Arbor Research & Trading, LLC. All Rights Reserved

datascience.arborresearch.com

Favorable Rent-Related Searches Remain Elevated

Seasonally-adjusted U.S.-based Google searches by topic



Data Source: Google Trends datascience.arborresearch.com

Rent-Related Searches Remain Strong

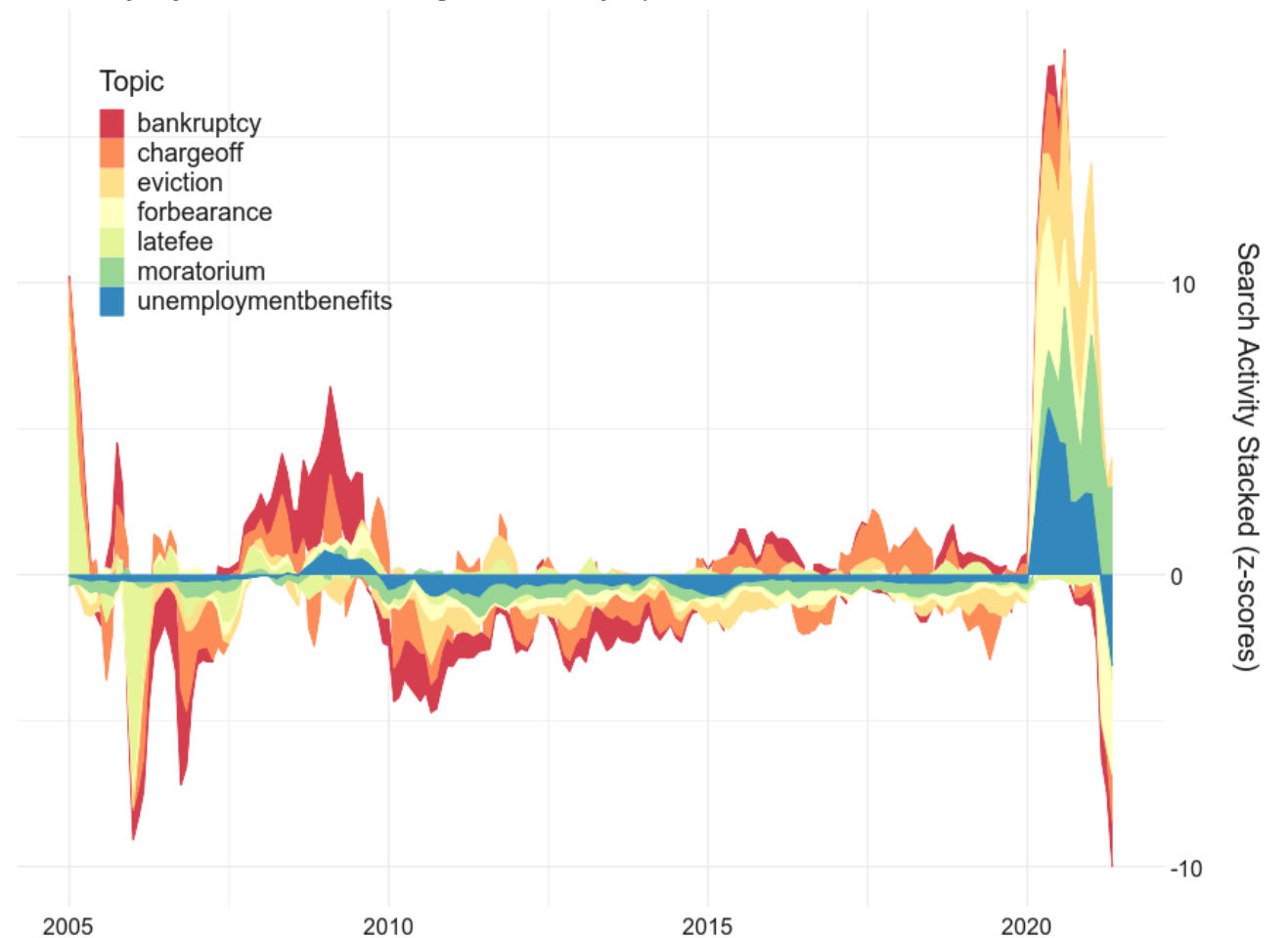
- Rent-favorable Google searches from one-bedroom apartments to vacation rentals have accelerated since March.
- Continued growth in rent-related search activity bodes very well for rising rents into year-end.

Financial Stress Searches Greatly Recede

- Searches for bankruptcy to unemployment benefits have consistently diminished throughout the year thanks to fiscal stimulus.
- All topics except 'eviction' and 'moratorium' are now well-below average. Eviction moratoriums should end by August, likely fueling a convergence between asking and collected rents.

Unfavorable Rent-Related Searches Fall Away From Eviction

Seasonally-adjusted U.S.-based Google searches by topic



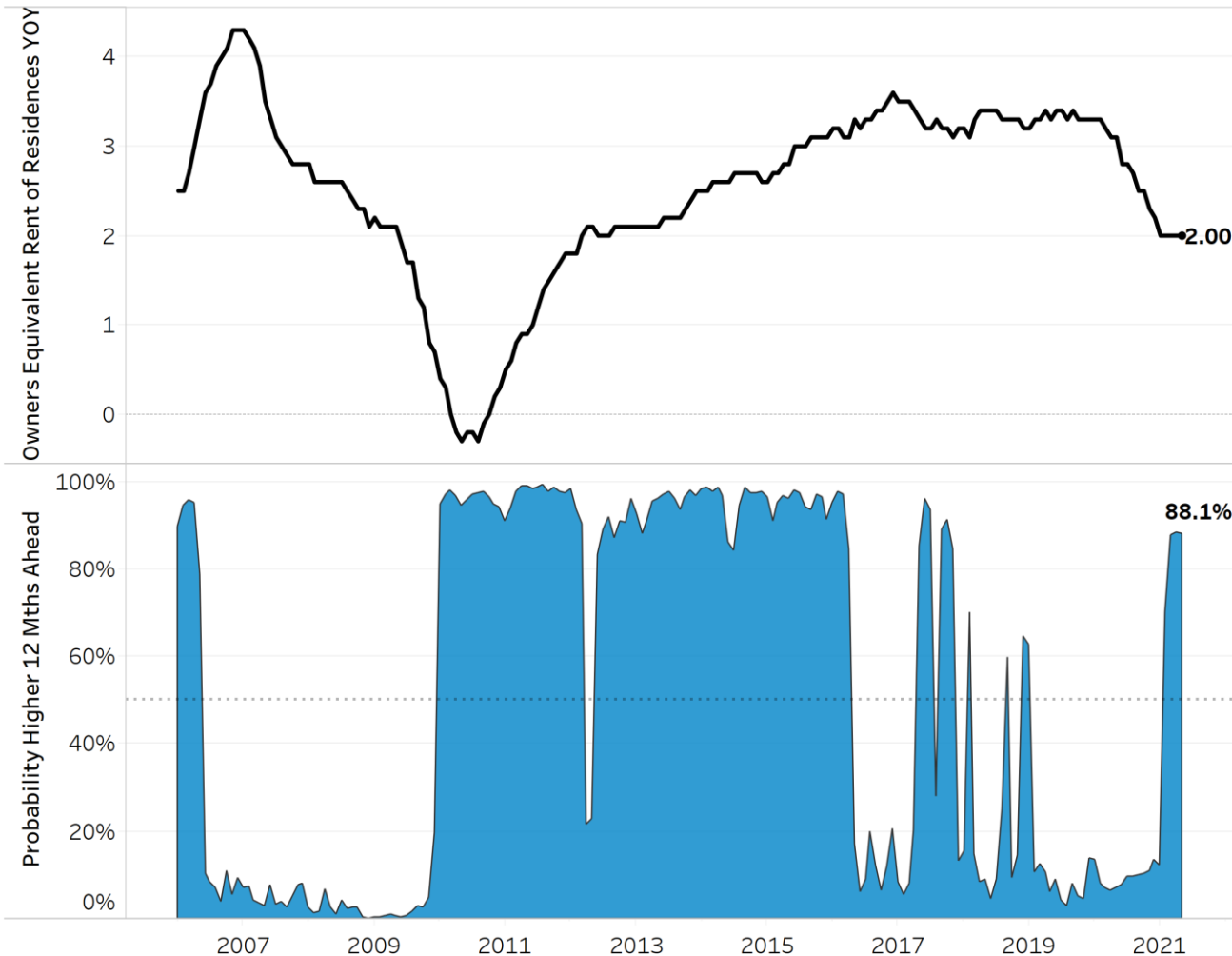
Data Source: Google Trends datascience.arborresearch.com

ARBOR DATA
SCIENCE

Probability OER (YOY) Will Rise One Year Ahead

Ensemble model trained since 2004 using rent-related search activity and apartment vacancies

ARBOR DATA SCIENCE



Data Sources: BLS © 2021 Arbor Research & Trading, LLC. All Rights Reserved

datascience.arborresearch.com

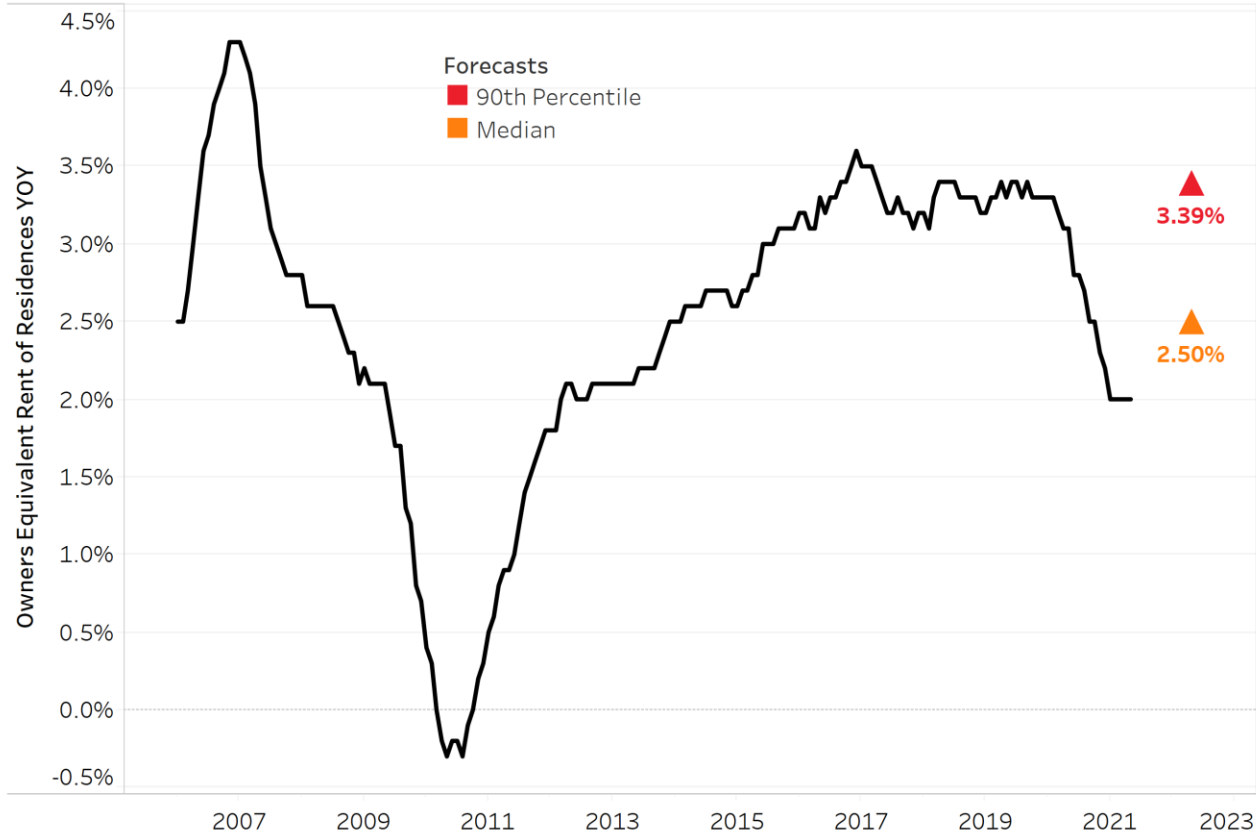
High Probabilities OER Will Rise are Here

- The 35 rent-related search topics and surveys for apartment tightness are fed into an ensemble model to produce probabilities OER year-over-year will be higher 12 months ahead.
- **As of May 2021 rent-related search activity indicates an 88.1% probability OER's YoY growth rate will be higher next May 2022.**
- This model consistently producing probabilities above 50% is a game changer for the inflation outlook!

OER (YOY) Expected to Rise!

Quantile regression forest trained since 2004 using rent-related search activity and apartment vacancies

ARBOR DATA SCIENCE



Data Sources: BLS © 2021 Arbor Research & Trading, LLC. All Rights Reserved

datascience.arborresearch.com

How High Can OER Go?

- Can the rapid acceleration in rents reported by Apartment List continue? Zillow and other sources paint a more muted rise.
- We use a quantile regression forest to project a median and 90th percentile estimate of OER YoY in May 2022. Currently, potential exists for upside toward 3.39% YoY.
- We will be routinely updating this model in the event a larger tail toward higher rents arises. Stay tuned!

Contact Us

Give us a call for more information about our services and products

Ben Breitholtz – Data Scientist
ben.breitholtz@arborresearch.com

Anthony Rizzo – Data Scientist
anthony.rizzo@arborresearch.com

Arbor Research & Trading, LLC
22333 Classic Court
Lake Barrington, IL 60010
847 756 3575



datascience.arborresearch.com



Copyright 2021 Arbor Research & Trading, LLC. This message is intended only for the personal and confidential use of the designated recipient(s) named above. If you are not the intended recipient of this message you are hereby notified that any review, dissemination, distribution or copying of this message is strictly prohibited. This communication is for information purposes only and should not be regarded as an offer to sell or as a solicitation of an offer to buy any financial product, an official confirmation of any transaction, or as an official statement of Arbor Research & Trading, LLC. Email transmission cannot be guaranteed to be secure or error-free. Therefore, we do not represent that this information is complete or accurate and it should not be relied upon as such. All information is subject to change without notice.