ARBOR DATA SCIENCE

Inflation Roundup

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Benjamin Breitholtz and Peter Forbes

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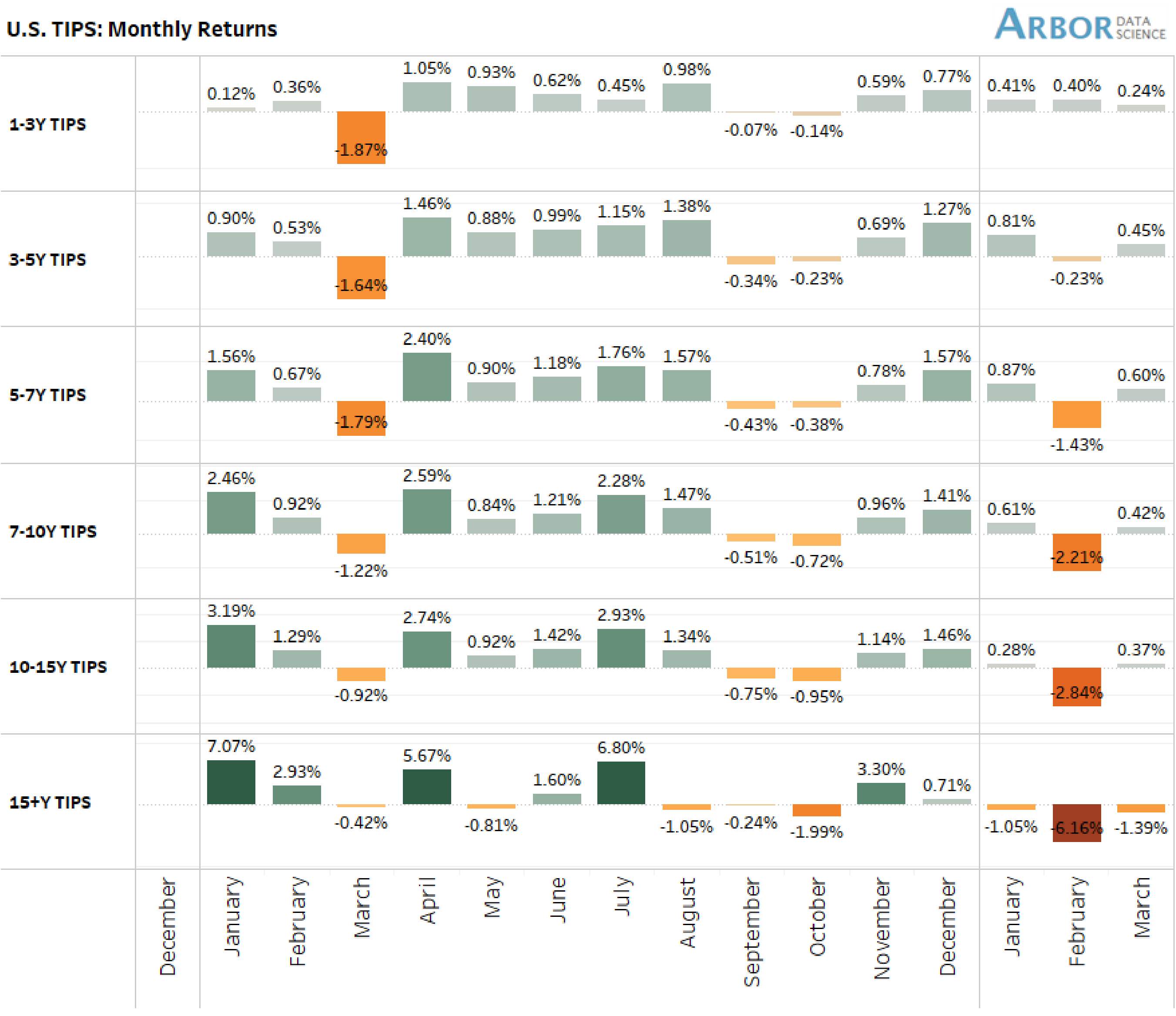
Contents

	Conditions Fueling an Inflation Premium	Aug '20	Sep '20	Oct '20	Nov '20	Dec '20	Jan '21	Feb '21	Notes
Wider TIPS Breakevens	Commodities ex-energy and gold: 50+% produce + YOY return	Y	Y	Y	Y	Y	Y	Y	*82% of commodities soaring YOY led by grains and industrial metals*
	Global econ data releases: 50+% economies growing above one-year trend	N	Y	Y	Y	Y	Y	Y	*81% of economies growing above trend led by Asia Pacific and U.S.*
	Investors pricing in 2+% YOY headline CPI next 10 years	N	N	N	Y	Y	Y	Y	*Inflation swap caps/floor place firm floor in for TIPS breakevens at 200 bps*
	TIPS breakeven curve inversion confirms committal to AIT	N	N	N	N	Y	Y	Y	*Allowing short-run inflation to run hot expected with Fed officials comfortable (for now). Very different than past instances when inversions signaled then end of widening.*
	Fed purchases diminishing liquidity premium	Y	Y	Y	Y	Y	Y	Y	*Fed purchases added 70 and 30 bps to 2 and 10-year TIPS breakevens over the past year, respectively. Must continue to avoid damaging TIPS.*
	Search activity forecasts rising OER YOY	N	N	N	N	N	N	N	*Rising rents will very likely be THE game changer for inflation. Currently, search activity shows a paltry 17% probability rent price growth YOY rises.*
Impairs Risk Assets	VIX and US 10 year TIPS breakeven positively correlated	N	N	N	N	Y	N	N	*Brief push positive in December 2020, but since retreated (45-day = -0.35). Positive correlations have marked setbacks by risk assets.*
	Short-end swaption volatility shows tightening fears	N	N	N	N	N	Y	Y	*Swaption vol for 2 year rates looking ahead to 2024 has jumped above pre-pandemic levels. Need 2023 (2 year outlook) to follow-suit for tapering / rate hike fears to become a big factor.*
	TIPS breakevens reach fair value implied by risk assets	N	N	N	N	N	N	N	*10-year TIPS breakevens placed at 250 bps according to risk assets. Above here, inflation expectations would become too hot.*
	Investors pricing in 2.5% YOY headline CPI next 10 years	N	N	N	N	N	N	N	*Inflation swap caps/floors yet to show 50+% probabilities headline CPI will run hot above 2.5% YOY. Remember core on average runs 50 bps below headline CPI.*

TIPS
TOTAL RETURNS:



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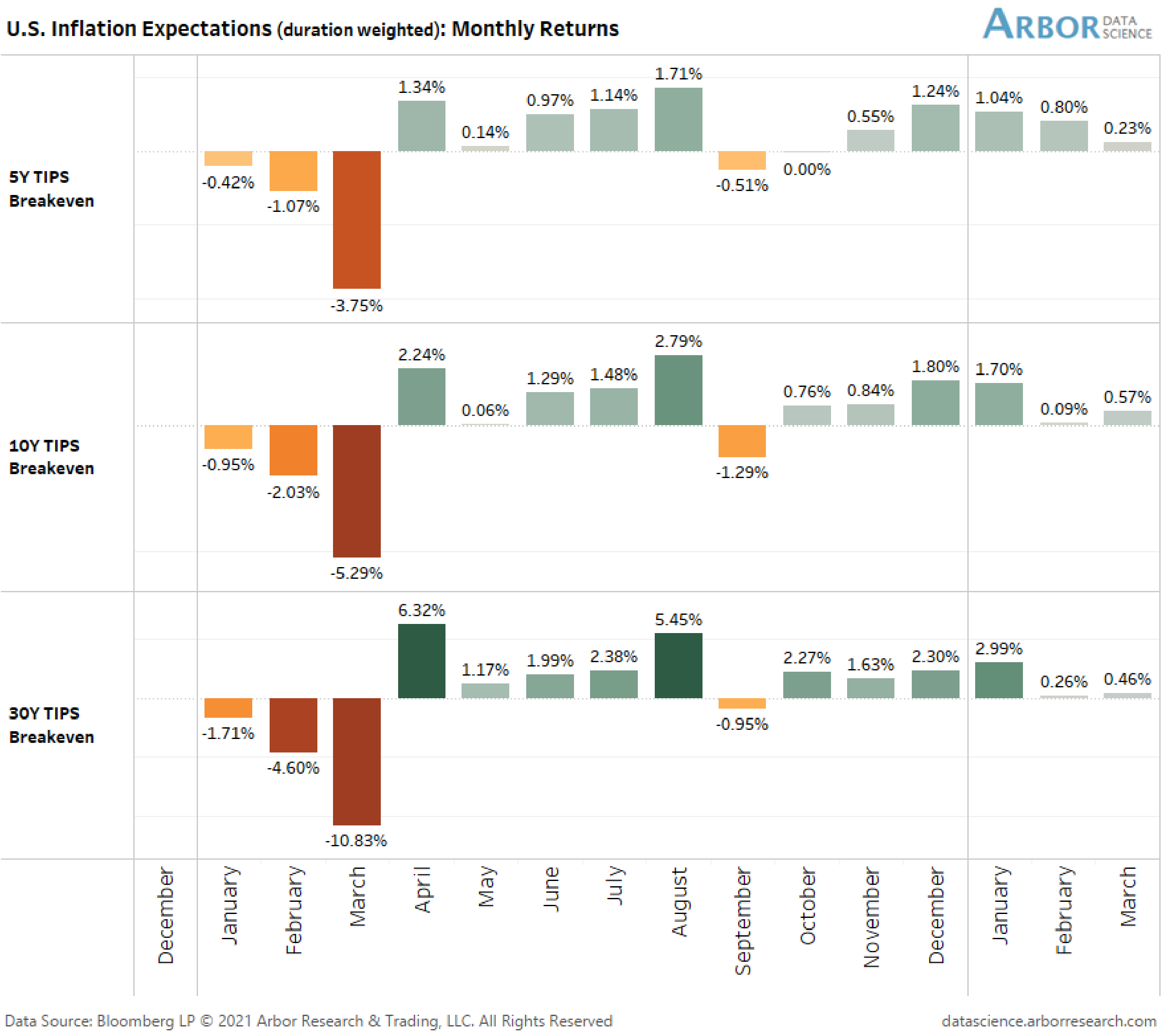
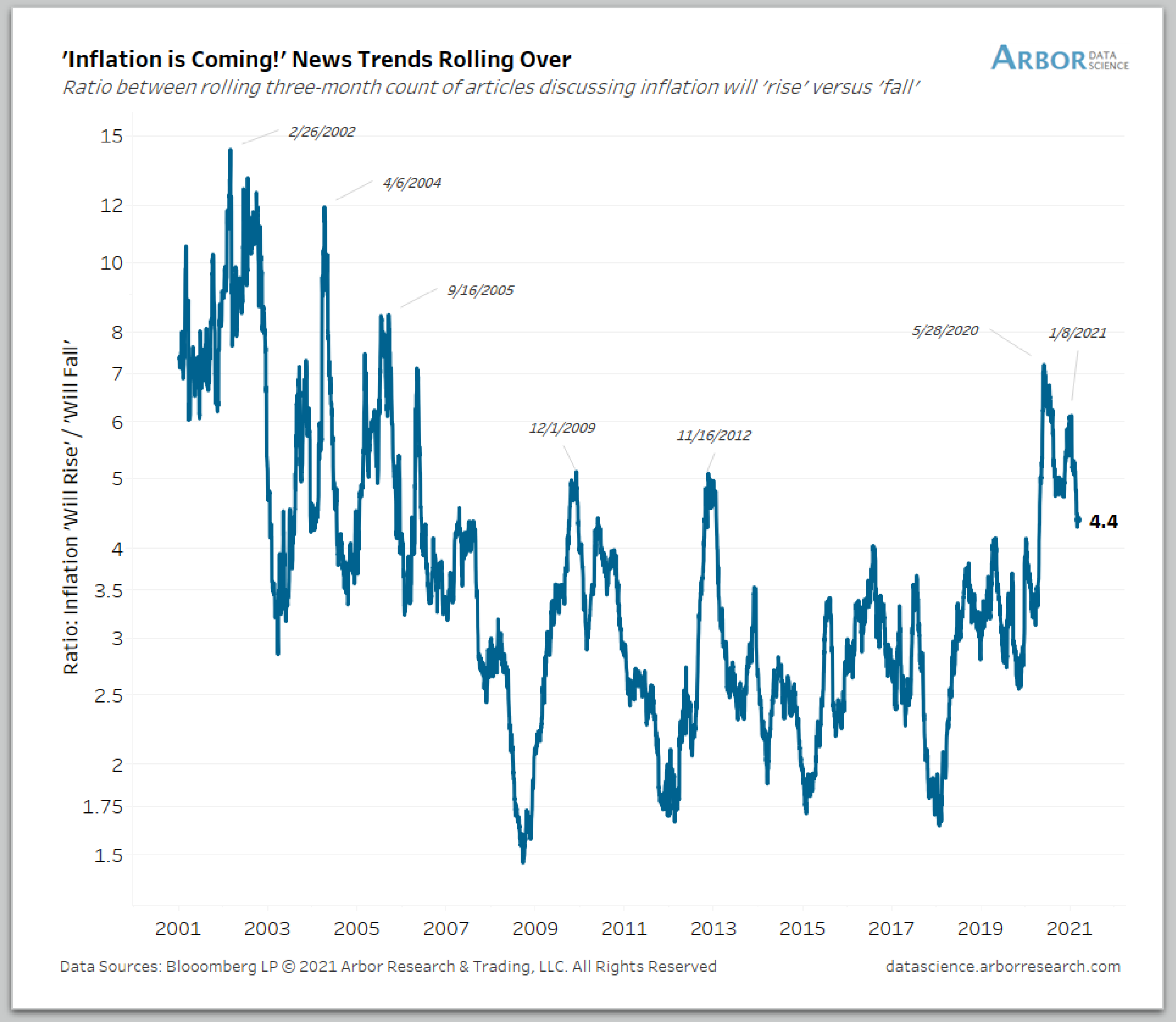
TIPS ***BREAKEVENS*** *TOTAL RETURNS:*





'Inflation is Coming' Narrative Slows

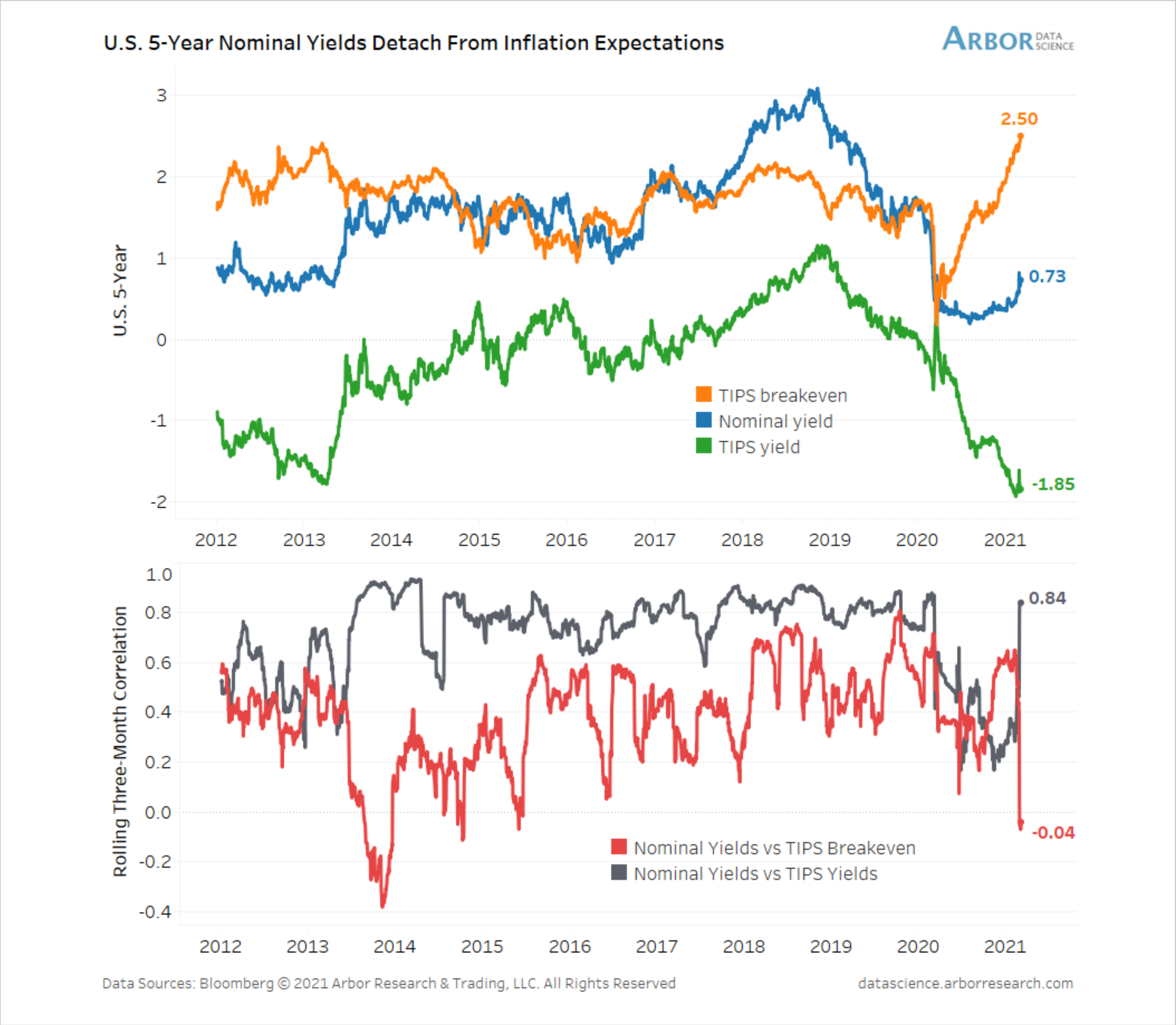
- Loudest into May 2020 and January 2021.
- Financial media still discussing rising versus falling inflation expectations at over a 4-to-1 ratio.

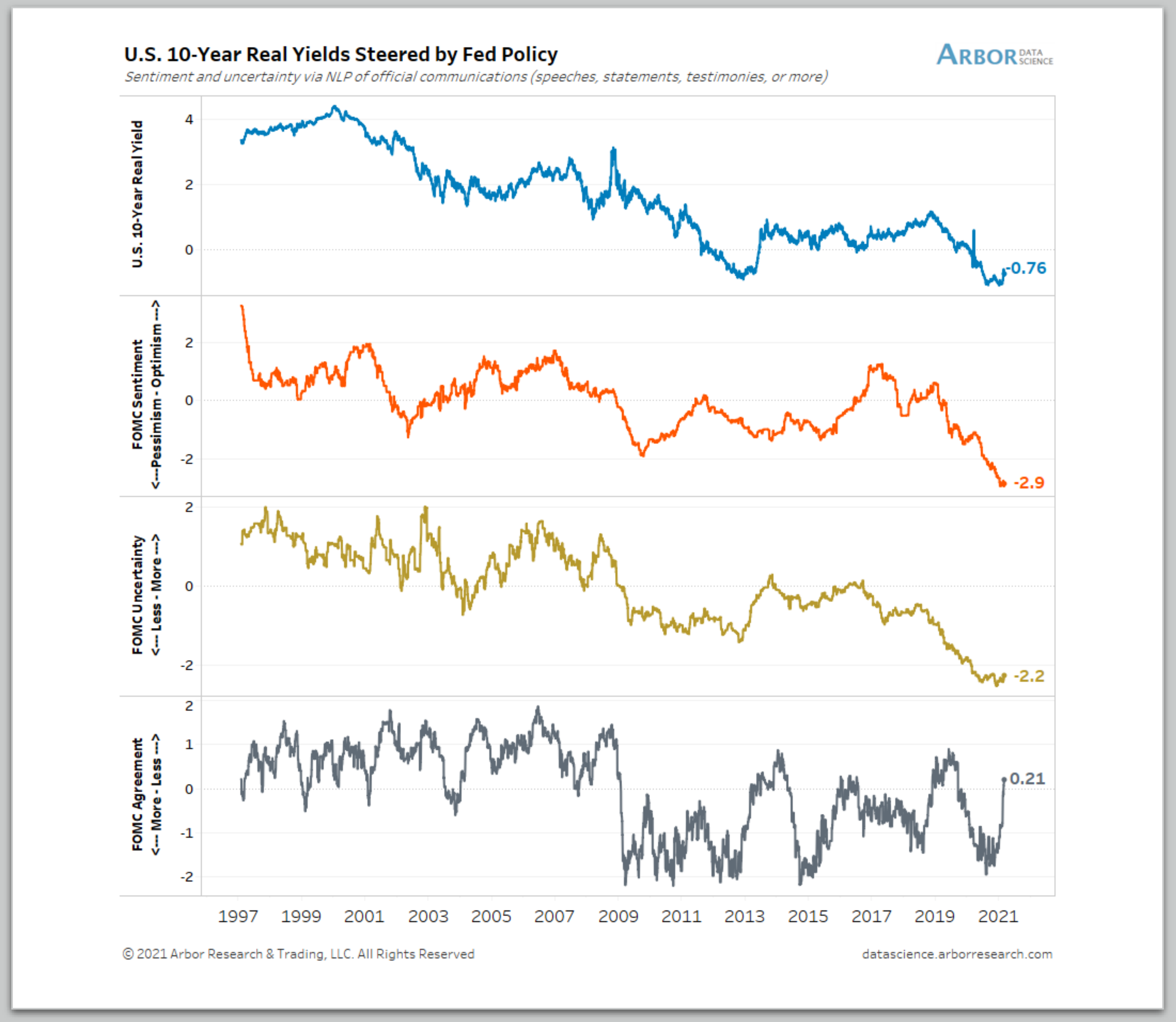
Nominal Yields Detach From Inflation Expectations

- Nominal 5-year yields are seemingly no longer driven by inflation expectations with a rolling three-month correlation of -0.04.

- Conversely, yields have suddenly re-attached to real (TIPS) yields with a rolling three-month correlation of +0.84.

- Investors are watching Fed policy more closely than inflation overshooting expectations over the years to come.





Real Yields Won't Move Until Fed Gets Hawkish

- We can explain over 70% of the variation in U.S. 10-year real yields using exclusively Federal Reserve sentiment, uncertainty, and agreement.

- Our natural language processing produces the indices shown to the right from speeches, statements, testimonies, pressers, and more.

- Agreement has been falling, raising red flags uncertainty may soon rise as well. In this event, real yields would finally climb.

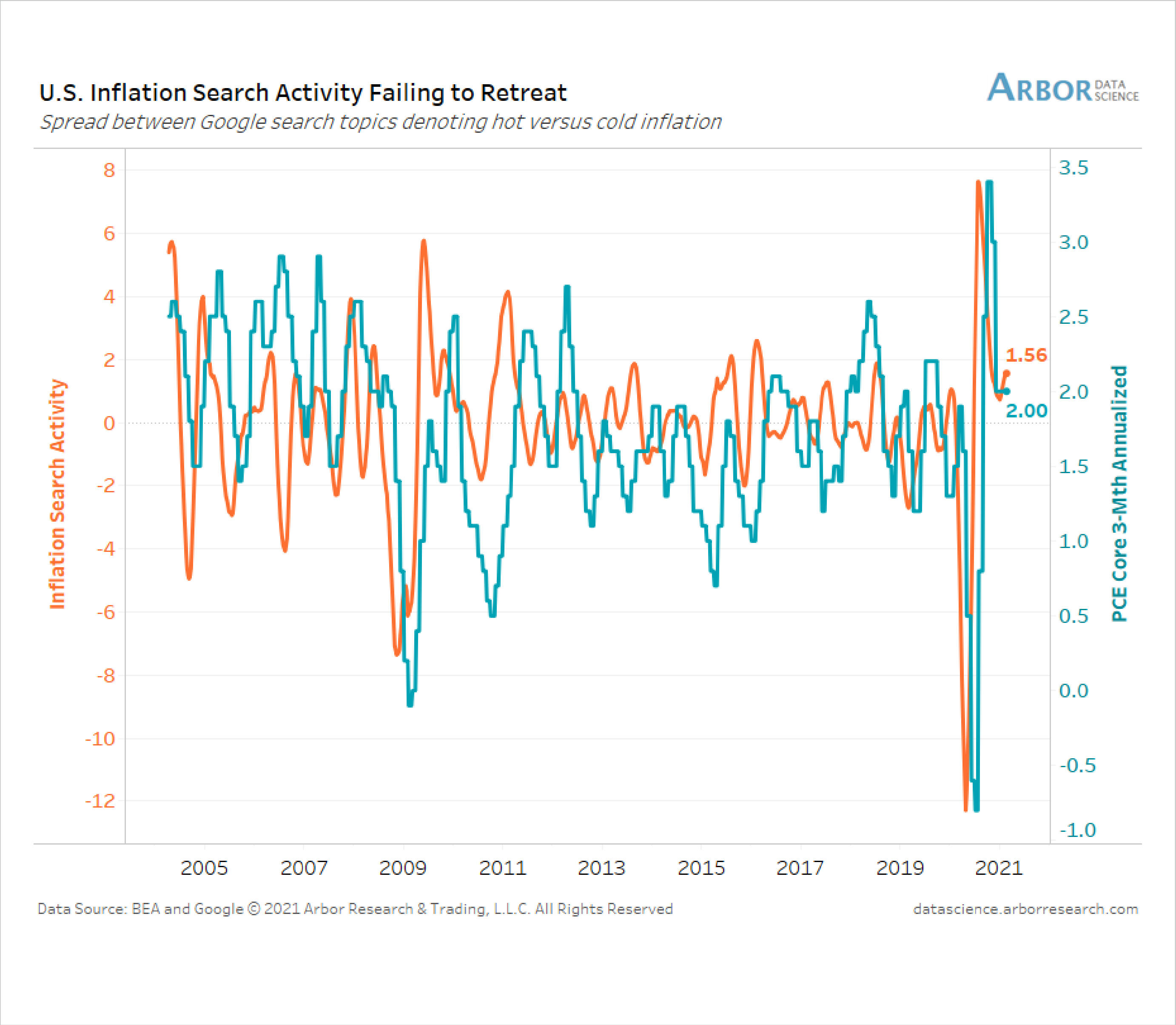
Reasons for optimism

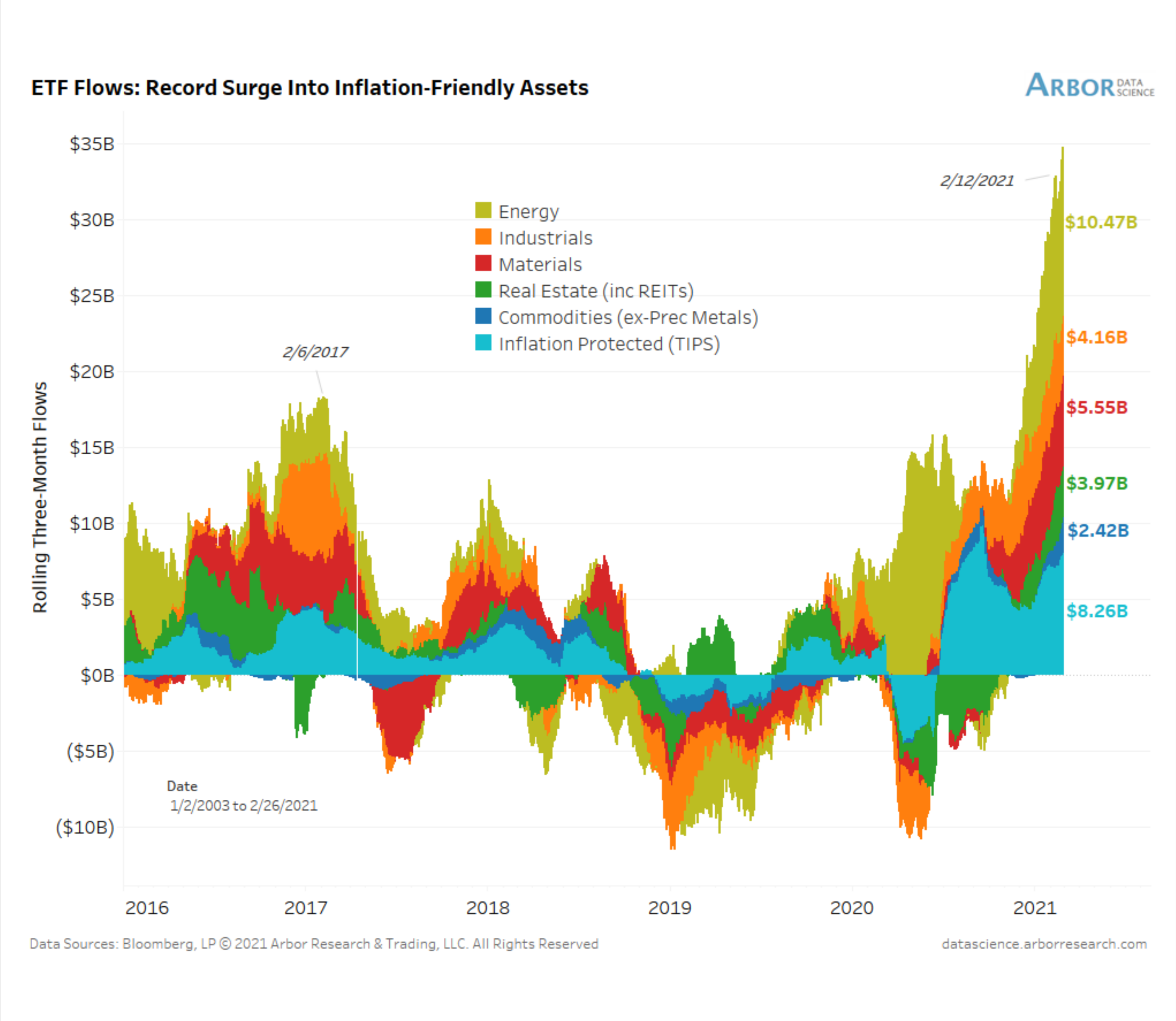
U.S. Consumers See Inflation

- We use Google search activity to measure the public's views on inflation:
  - **Higher inflation** = hyperinflation, inflation, wage, full-time job, commodities, apartment, and more
  - **Lower inflation** = deflation, savings account, layoff, and more

- The chart shows the spread between higher and lower inflation search topics for comparison to core inflation (PCE). Impressively, the public's views on consumer prices habitually led realized core inflation by one to three months.

- The public's interest in higher inflation has rebounded in recent weeks, suggesting core inflation remains at or above 2.0% on a three-month annualized basis heading into the spring months.





Reasons for optimism

Investors Infatuated with Inflation-Friendly Assets

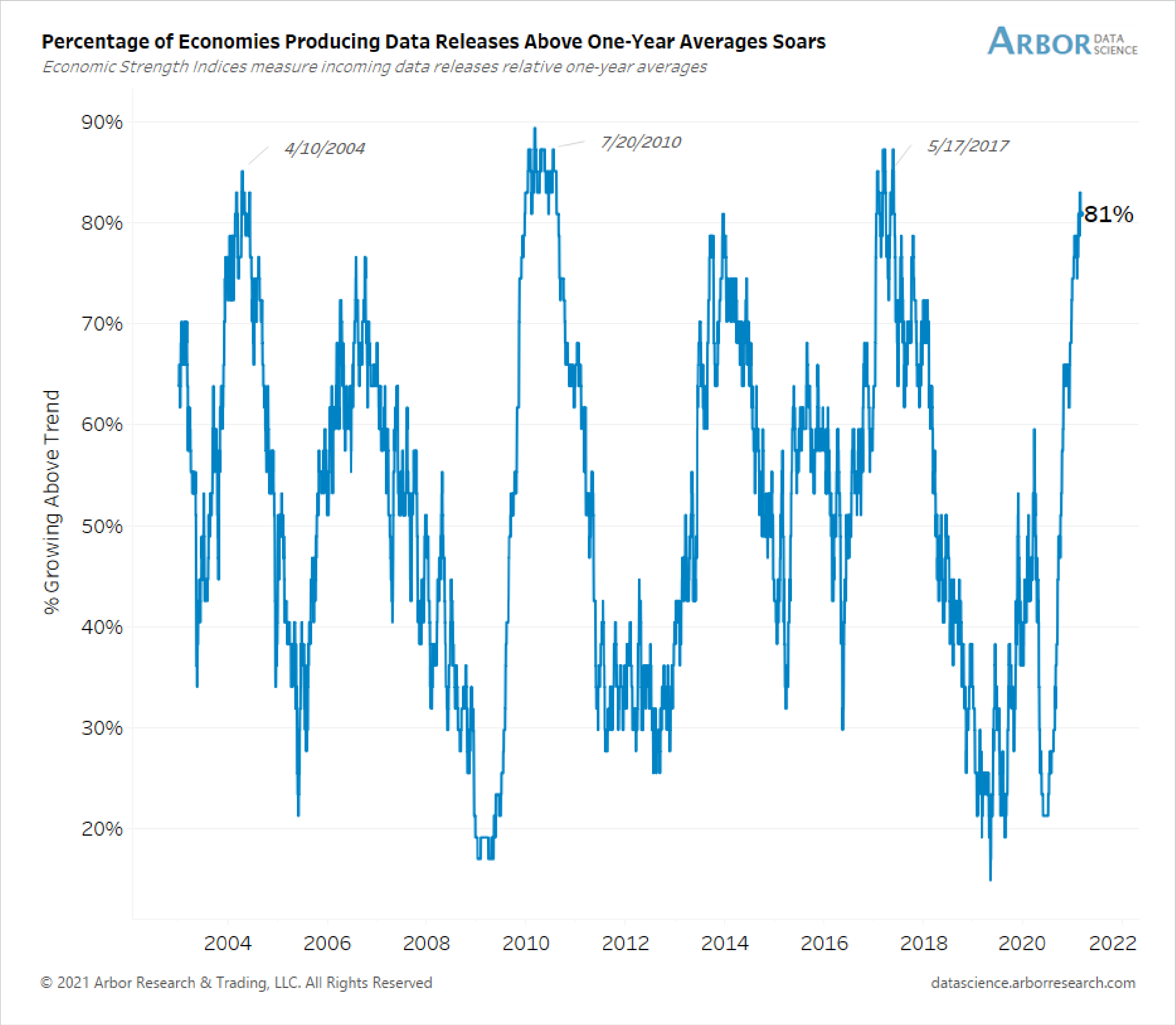
- Flows into TIPS-focused ETFs on a rolling three-month basis remain a very healthy of $8.3 billion.
- As an aside, these same ETFs suffered $-744 million in out-flows on Tuesday. We never put weight into one-day flows, but worth watching.
- The commodities revival has investors chasing energy and materials, bringing the total flows into inflation-friendly assets to an **eye-popping $35 billion**.

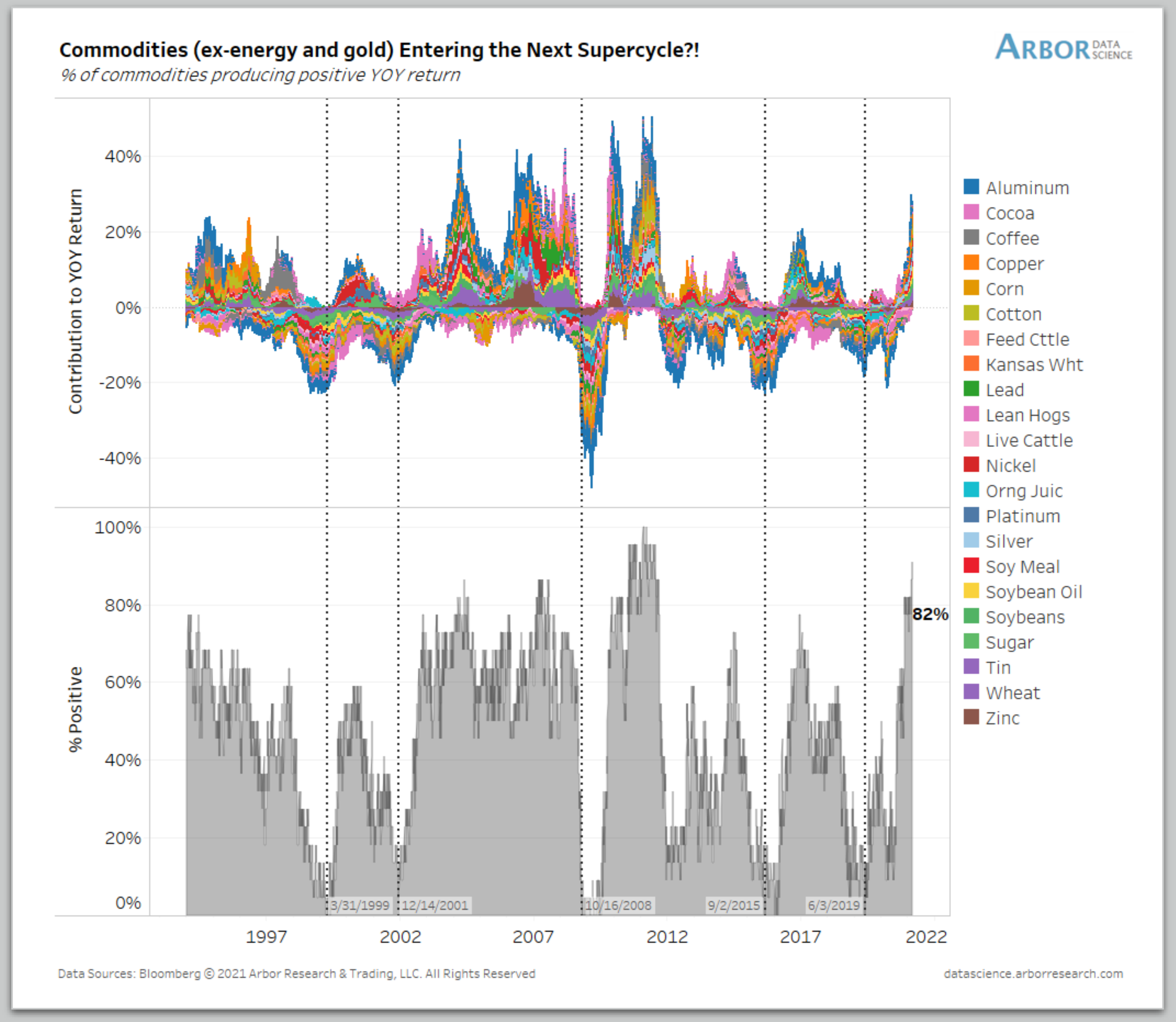
Reasons for optimism

Global Synchronized Growth is Here

- 81% of the world's economies have been producing data releases above one-year average growth rates.

- Such strong, ubiquitous growth tends to last less than one year. Will the rebound from COVID-19 be any different?!





Reasons for optimism

Commodities Roaring Higher

- 82% of the world's commodities (ex-energy and gold) are producing positive YOY gains, the highest since September 2011.
- Commodities ex-energy are +19.2% since the start of 2020.
- Energy and some softs (e.g. cocoa) remain the few laggards.

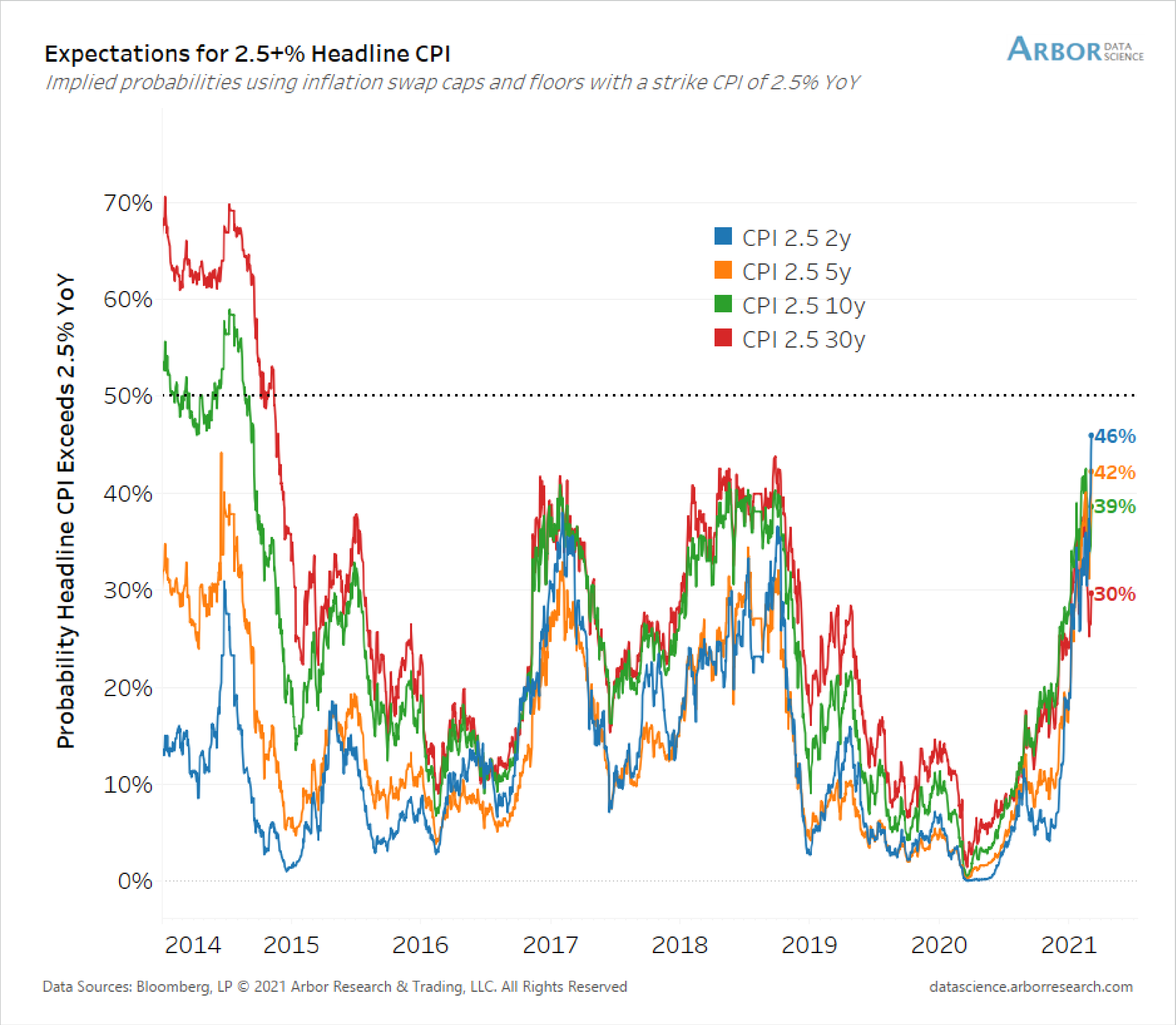
Reasons for optimism

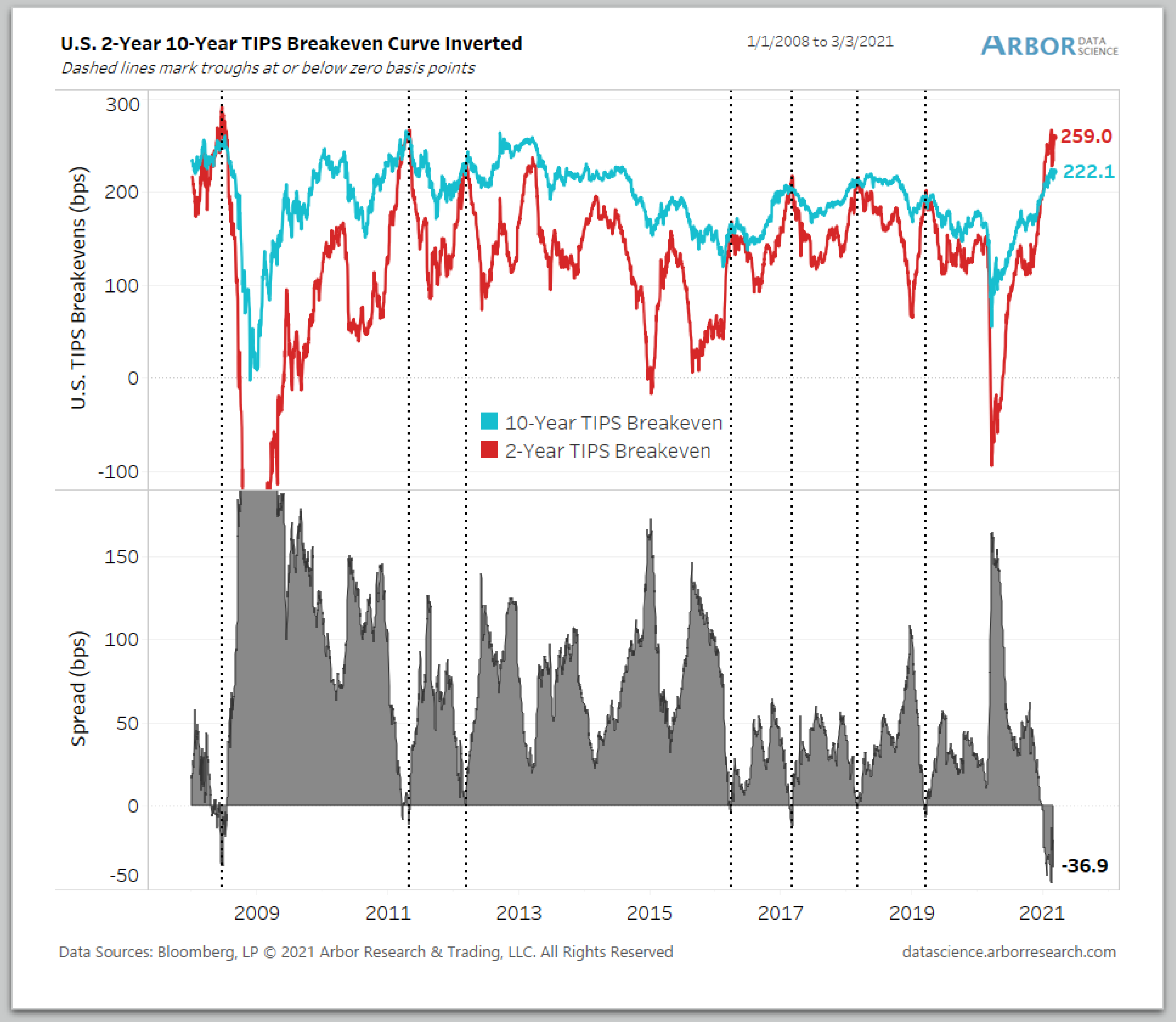
Investors Pricing in 2.5+% YOY Critical

- Probabilities are breaking to the best levels since in early 2017 and 2018.

- Officials (e.g. Bostic, Brainard, and Evans) have suggested 2.5% inflation is needed to fulfill new AIT framework.

- **Ultimately, 50+% probabilities will be needed to signal a lasting rise in core and headline inflation.**





Reasons for optimism

TIPS Breakeven Curve Inverted as Expected Under AIT

- U.S. TIPS breakeven curve inversions have habitually marked the peak in inflation expectations.

- This is the big test for the Federal Reserve's new AIT framework. Will they react or not to rising short-term inflation expectations? **So far, the answer appears an emphatic 'NO!'**

- Our baseline has been lasting, deeper inversion than any seen since the financial crisis.

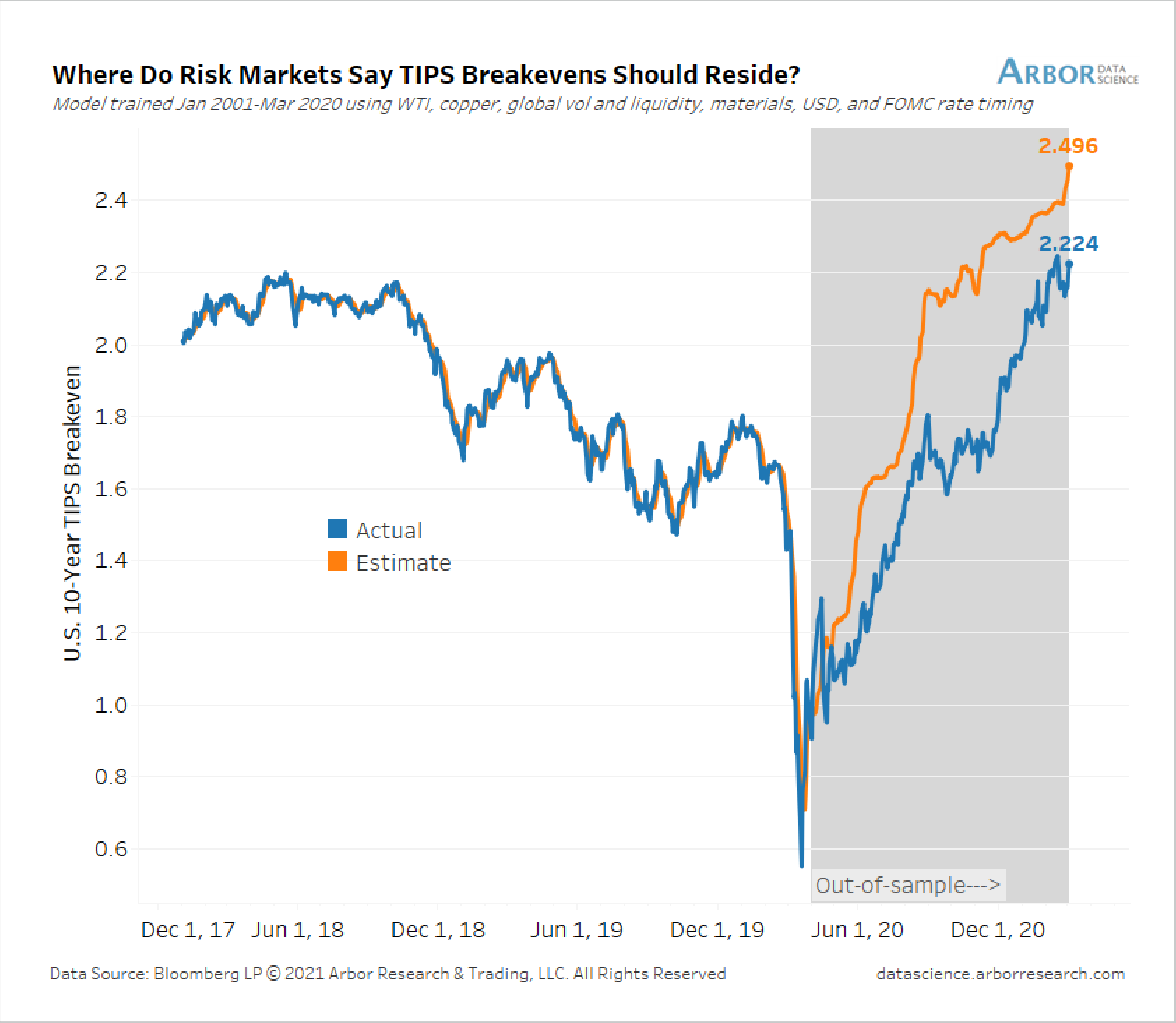
Reasons for optimism

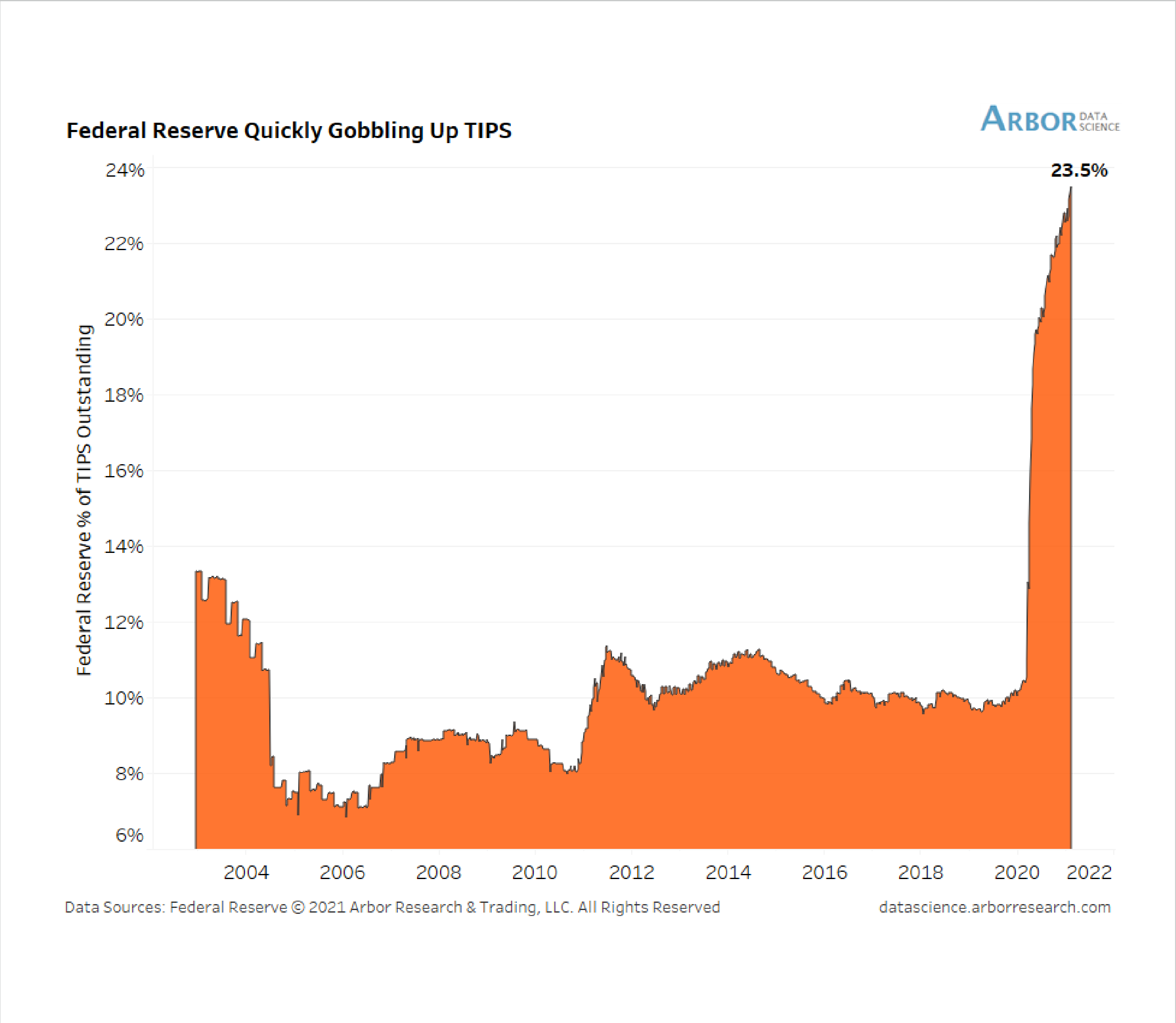
TIPS Breakevens Still Underperforming Where Risk Assets Suggest They Should Reside

- Model (QRF) explaining U.S. 10-year TIPS breakevens places fair value higher and higher near 249.6 bps.

- Model uses WTI crude oil, copper, global implied volatility, liquidity, materials, USD, and FOMC rate timing.

- **Are risk assets overdone or TIPS breakevens still cheap?!**





Reasons for caution:

Fed a Dominant Force Within TIPS Market

- The Federal Reserve's holdings of TIPS jumped from ~10% before the pandemic to a whopping 24% of total outstanding through last week.

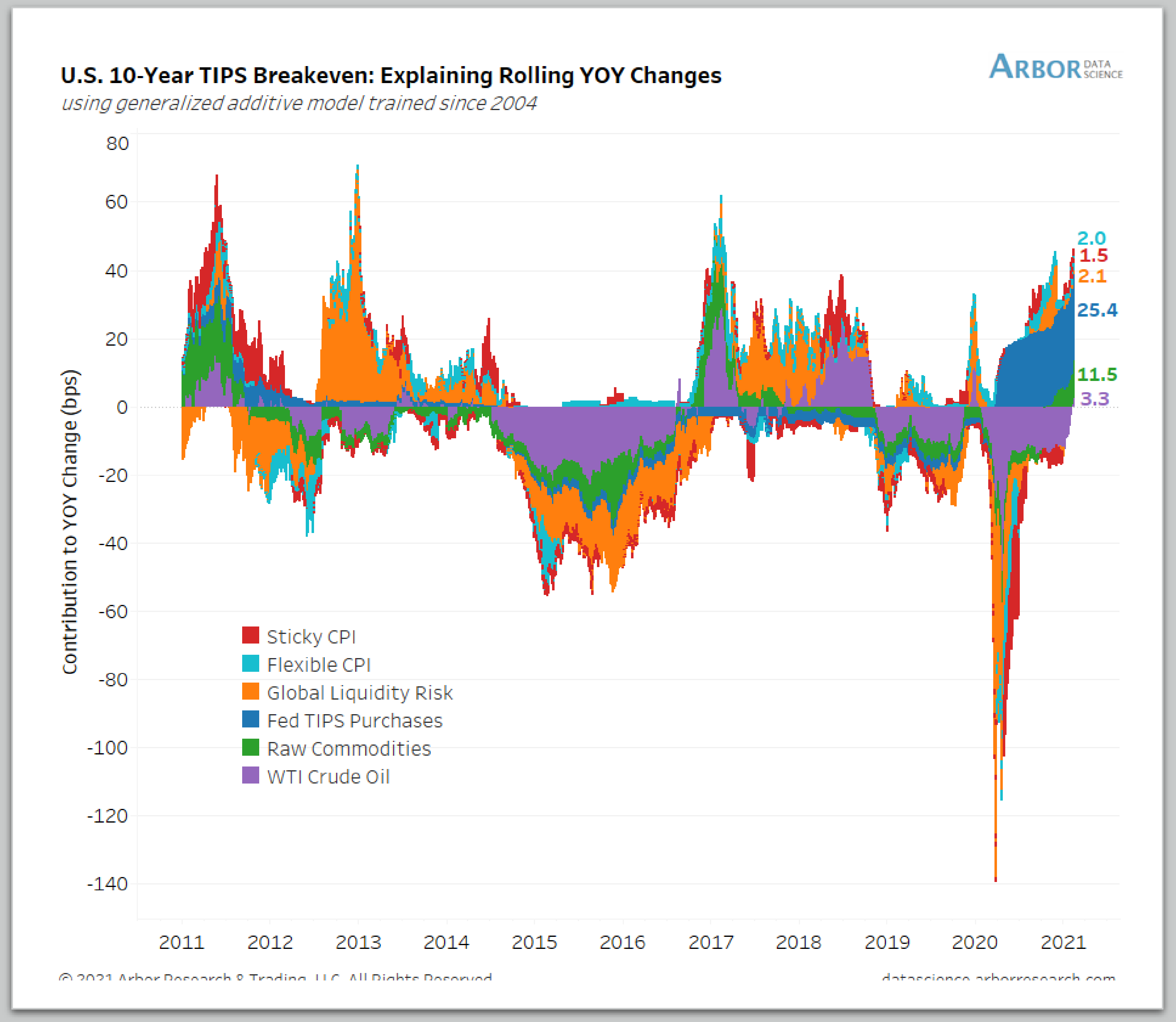
- The Federal Reserve has become a dominant force behind the drop in liquidity premiums as well as real yields.

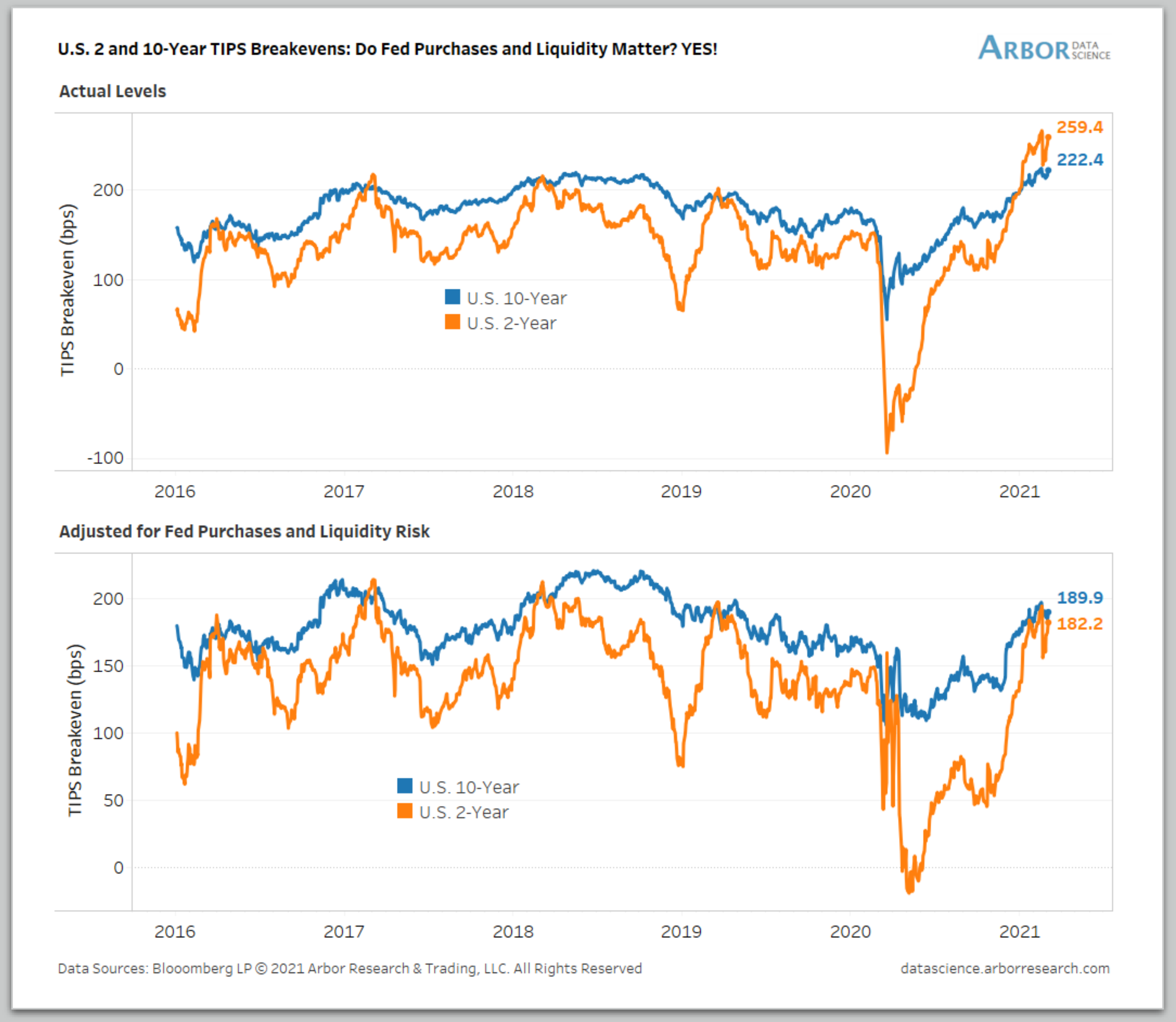
Reasons for caution:

Liquidity Premiums and Fed Purchases Distorting TIPS Breakevens

- We assembled a model determining the impact of liquidity and Federal Reserve purchases on TIPS breakevens. This generalized additive model trained since 2004 employs the following variables to estimate the rolling year-over-year change by TIPS breakevens:
    - Flexible CPI
    - Sticky CPI
    - Global liquidity risk
    - Federal Reserve TIPS purchases
    - Raw industrial commodities
    - WTI crude oil

- **We estimate over 27 basis points of widening has been tacked on to U.S. 10-year TIPS breakevens** thanks to improved liquidity and Federal Reserve purchases (blue and orange areas).





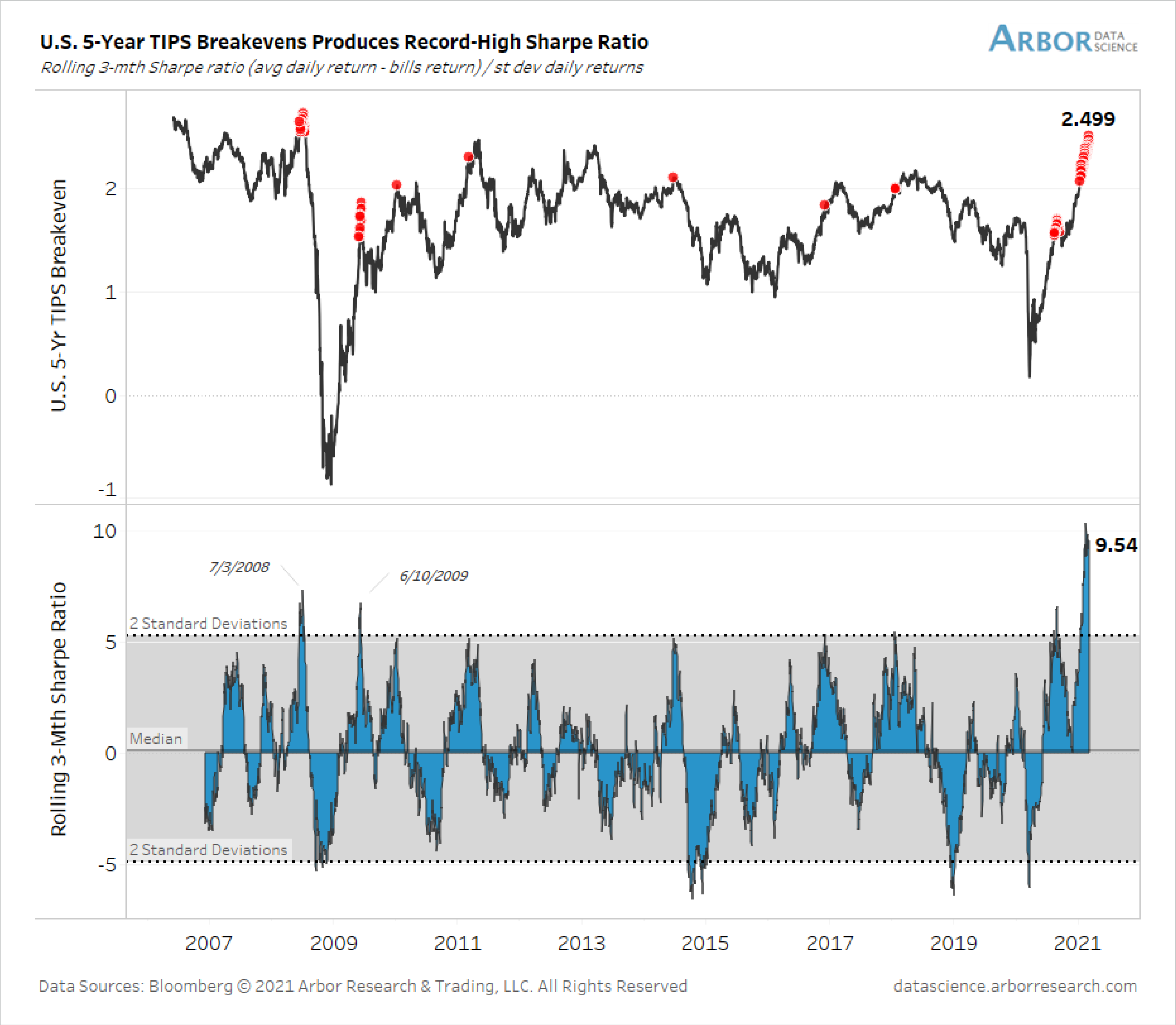
Reasons for caution:

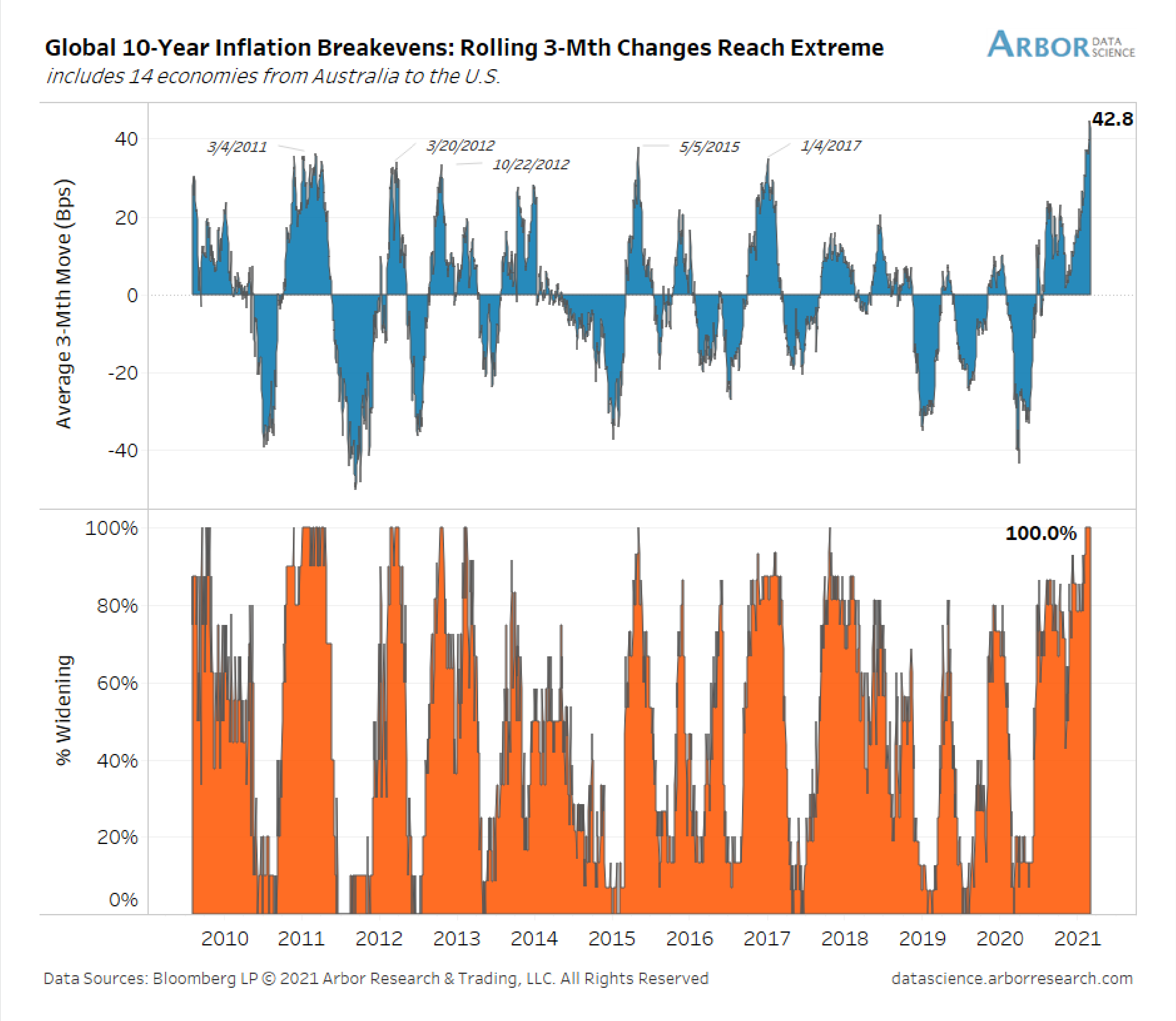
Inflation Expectations Closer to 180-190 Bps Across the Curve

Reasons for caution:

U.S. TIPS Breakevens Producing Rock Star Risk-Adjusted Returns

- U.S. 5-year TIPS breakevens over the past 3 mths have a Sharpe ratio near 10!
- Red dots highlight past episodes when this Sharpe ratio exceeded 2+ st devs (5.08).
- Again, we need to see a right-side tail emerge (2.5+% CPI) to warrant such tremendous performance.





Reasons for caution:

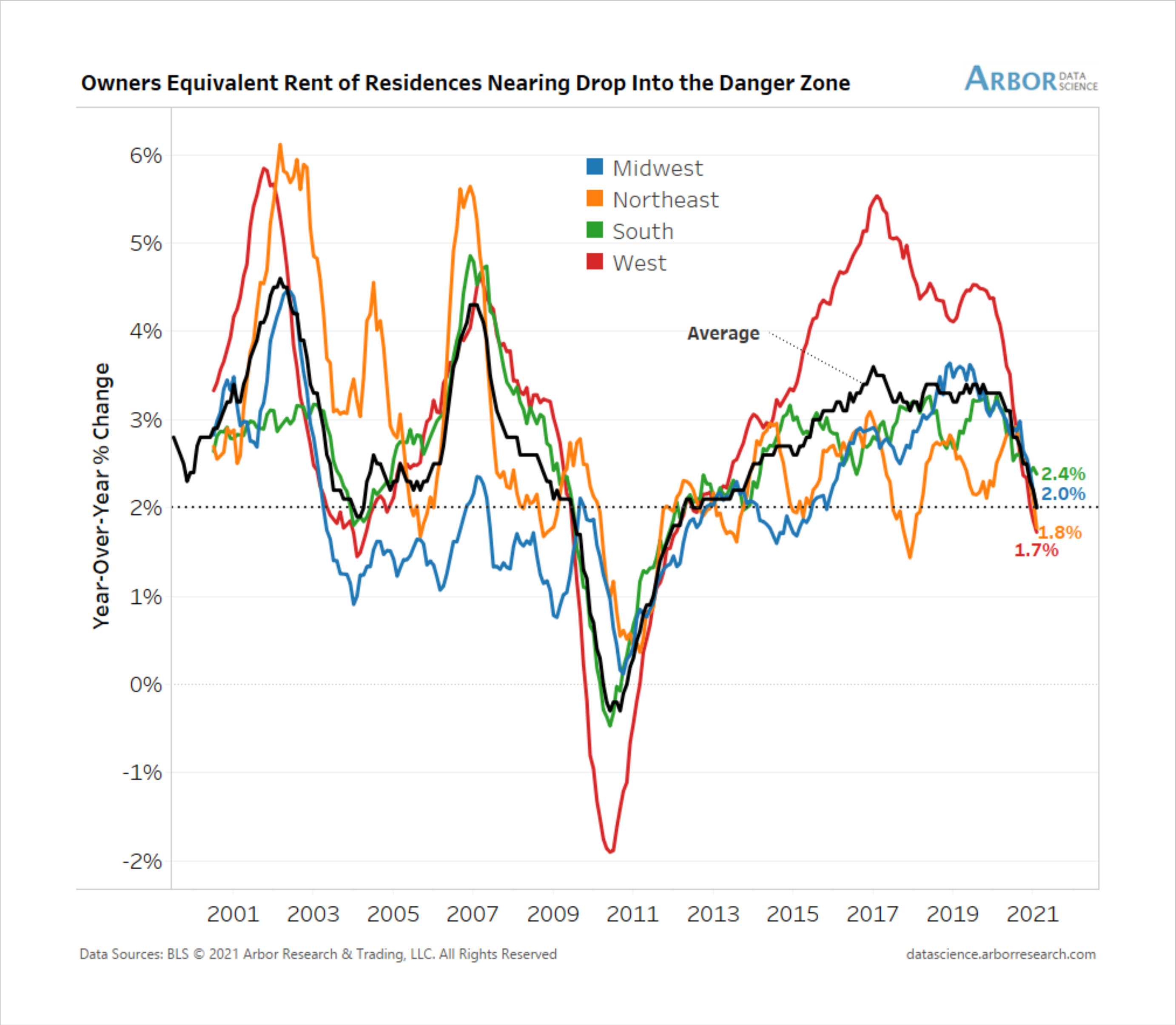
10-year Inflation Expectations Across the Globe Reach Extremes

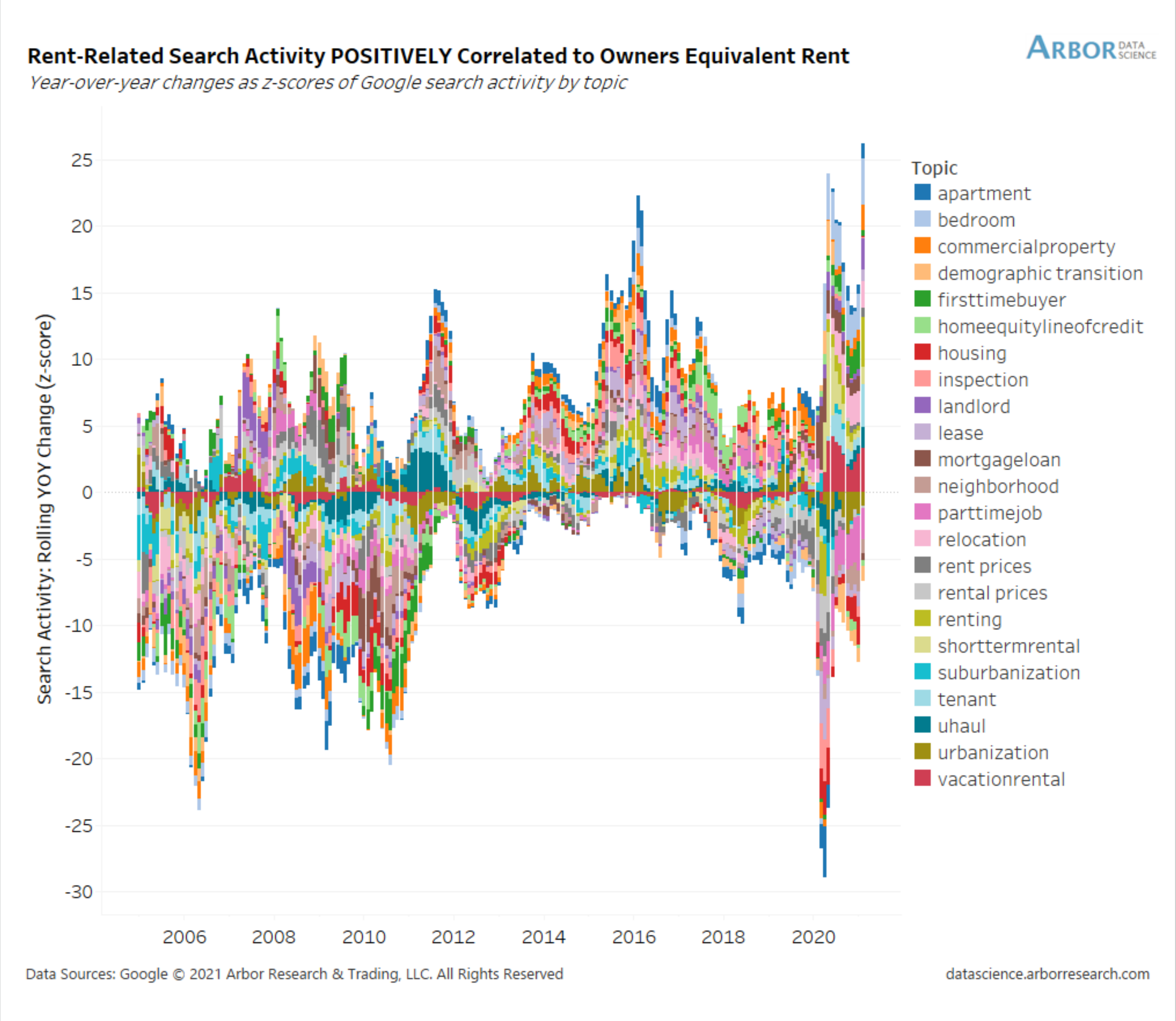
- The average three-month change across 10-year inflation expectations has rocketed higher to 42.8 bps, the highest since June 2009.
- 100% of 10-year inflation expectations across the globe have advanced over these past three months.
- History suggests investors should temper inflation expectations going forward, but maybe this time will be different?!

Reasons for caution:

Owners Equivalent Remains a HEAVY Weight on Inflation

Owners equivalent rent (OER) remains the 800-pound gorilla weighing heavily on headline and core inflation. Remember OER comprises 24% of headline CPI.





Reasons for caution:

Rent-Related Searches Jump

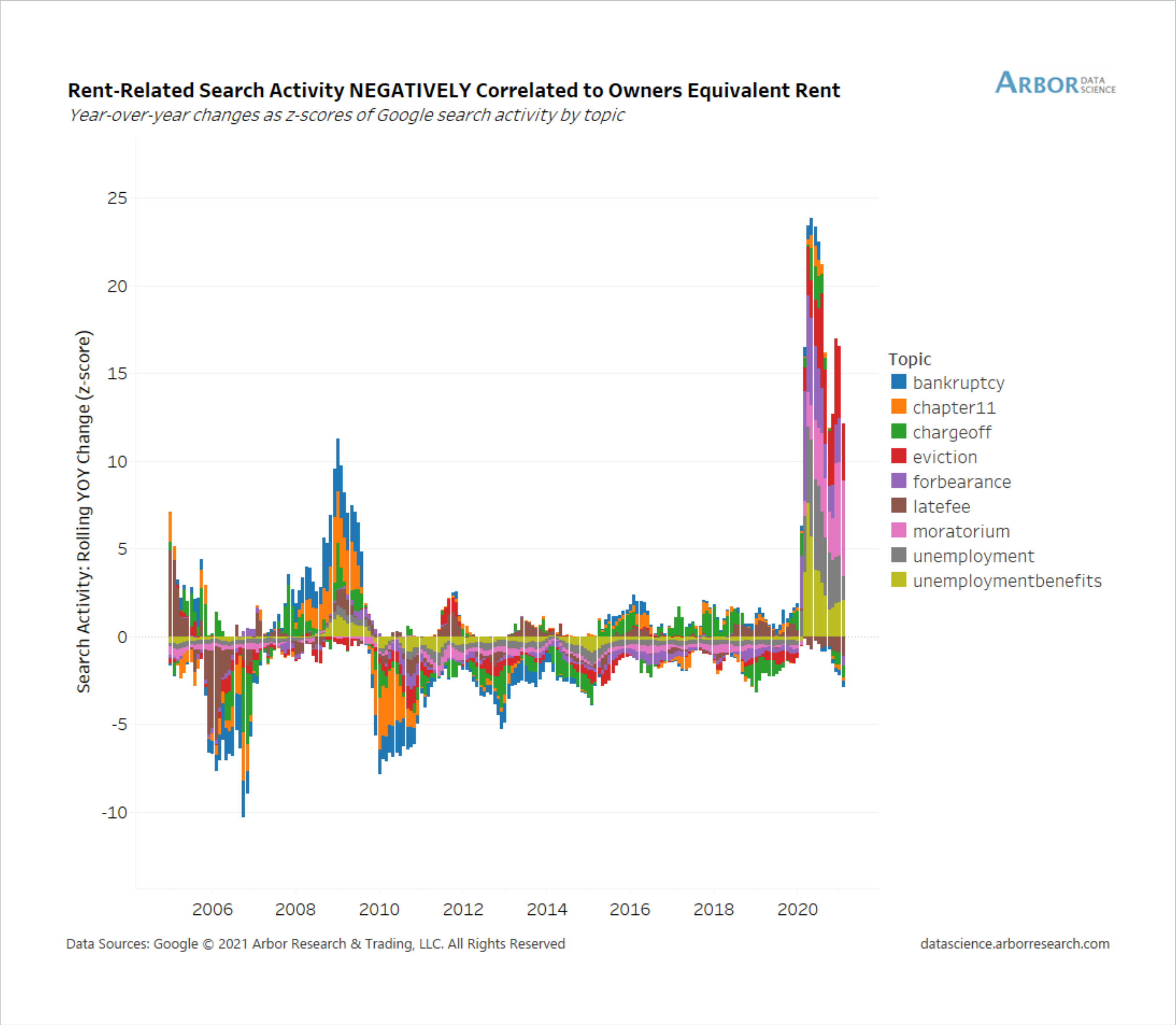
- Rent-favorable searches from one-bedroom apartments to vacation rentals rebounded sharply in February.
- A continued surge in rent-related search activity would bode well for rising rents into year-end.

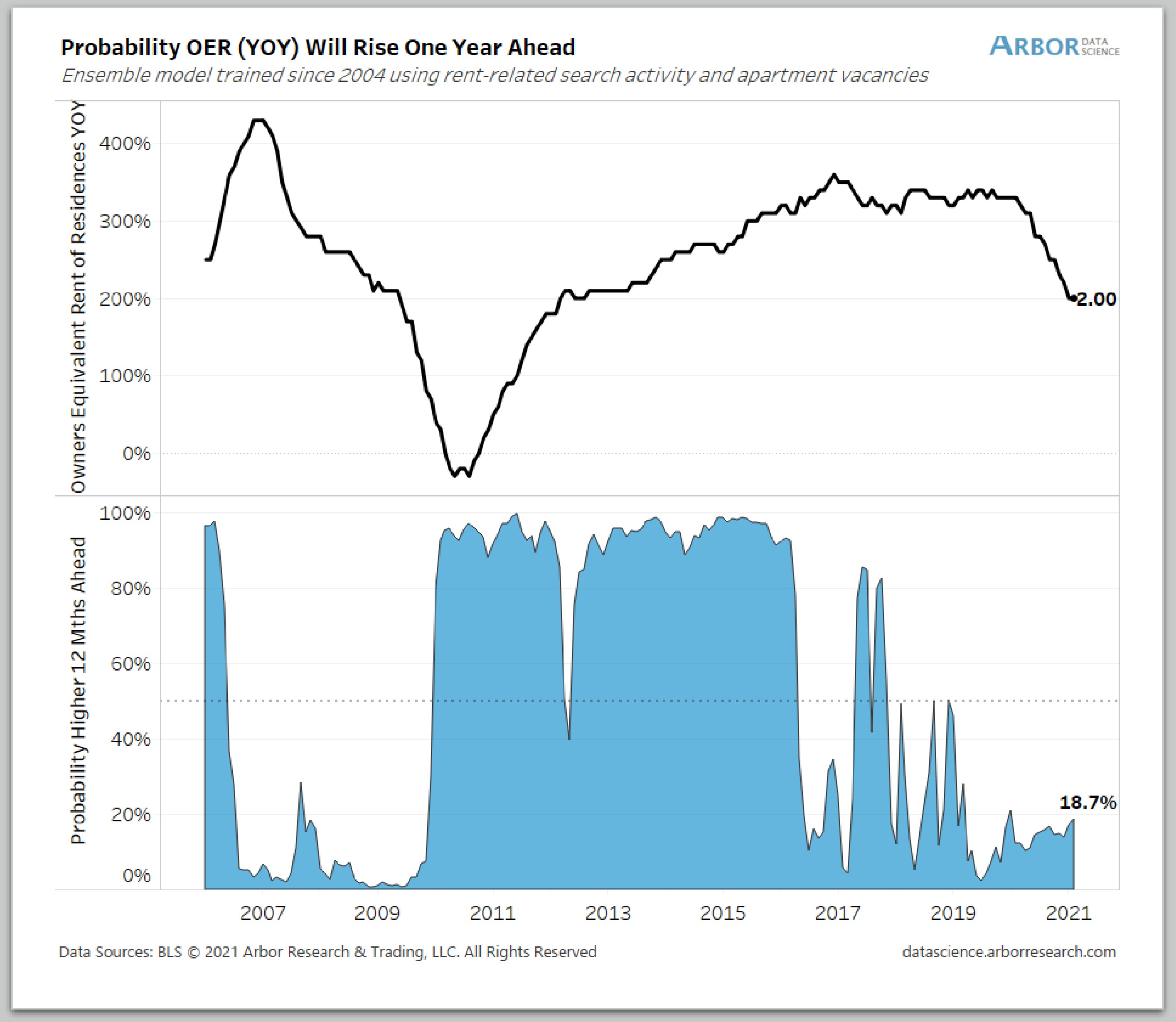
Reasons for caution:

Financial Stress Searches Yet to Fully Abate

- Searches for bankruptcy to unemployment benefits diminished in February, but remains awfully elevated.

- Ultimately, we need to see financial stress for lower to middle-income workers abate to believe a lasting rebound in rents will be underway.





Reasons for caution:

Awaiting High Probabilities OER Will Rise

- The 35 rent-related search topics are fed into a model (random forest) to produce probabilities OER year-over-year will be higher 12 months ahead.

- **As of March 2021 rent-related search activity is at a paltry 18.7% probability OER's year-over-year growth rate will be higher next January 2022**.

- Note we updated this model for recent amendments to Google search activity for December 2020 and January 2021. In addition, we have included additional variables to improve performance.

Contact Us

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

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

Pete Forbes – Data Scientist
peter.forbes@arborresearch.com

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

datascience.arborresearch.com