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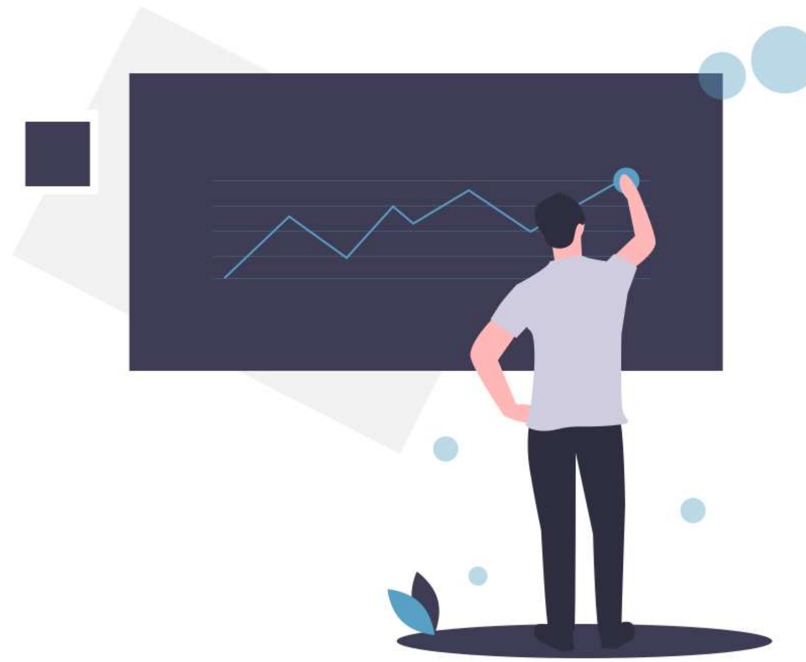

Inflation Roundup

December 2, 2021

- Total Returns and Seasonality
- The State of Inflation and Market-Based Expectations
- Supply Chain Disruptions are Not Going Away
- Expectations for Stagflation are Misplaced
- Fed Shifts Focus to Inflation From Employment
- Shelter Inflation is Building
- Never Count the Consumer Out

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KEY HIGHLIGHTS (for those wanting tl;dr version)

- Economists have pushed elevated inflation expectations (~5% YoY) into Q1 2022, helping promote rate hike expectations for June/July 2022.
- Fed officials are now focusing on inflation as much as employment, a reversal from FAIT placing greater onus on approaching full employment. History shows a greater inflation focus coincides with positive correlation between equity and US Treasury returns, disrupting investors' ability to hedge.
- Powell helped drive the use of 'transitory' language lower during his presser, but passive language remains. Rate hikes not likely entering their discussions until passive language like 'some time,' 'wait,' or 'assessing' fade.
- Over 70% of economies are still reporting supply chain concerns as measured via search activity. We must see consumers' acknowledgment of disruptions and shortages abate before feeling comfortable we are headed back to normal.
- Never count out the consumer. Search activity for going-out and staying-in goods and services remains robust heading into the holiday season. To boot, job-seeking also remained elevated in November, suggesting an upside surprise could occur this Friday.

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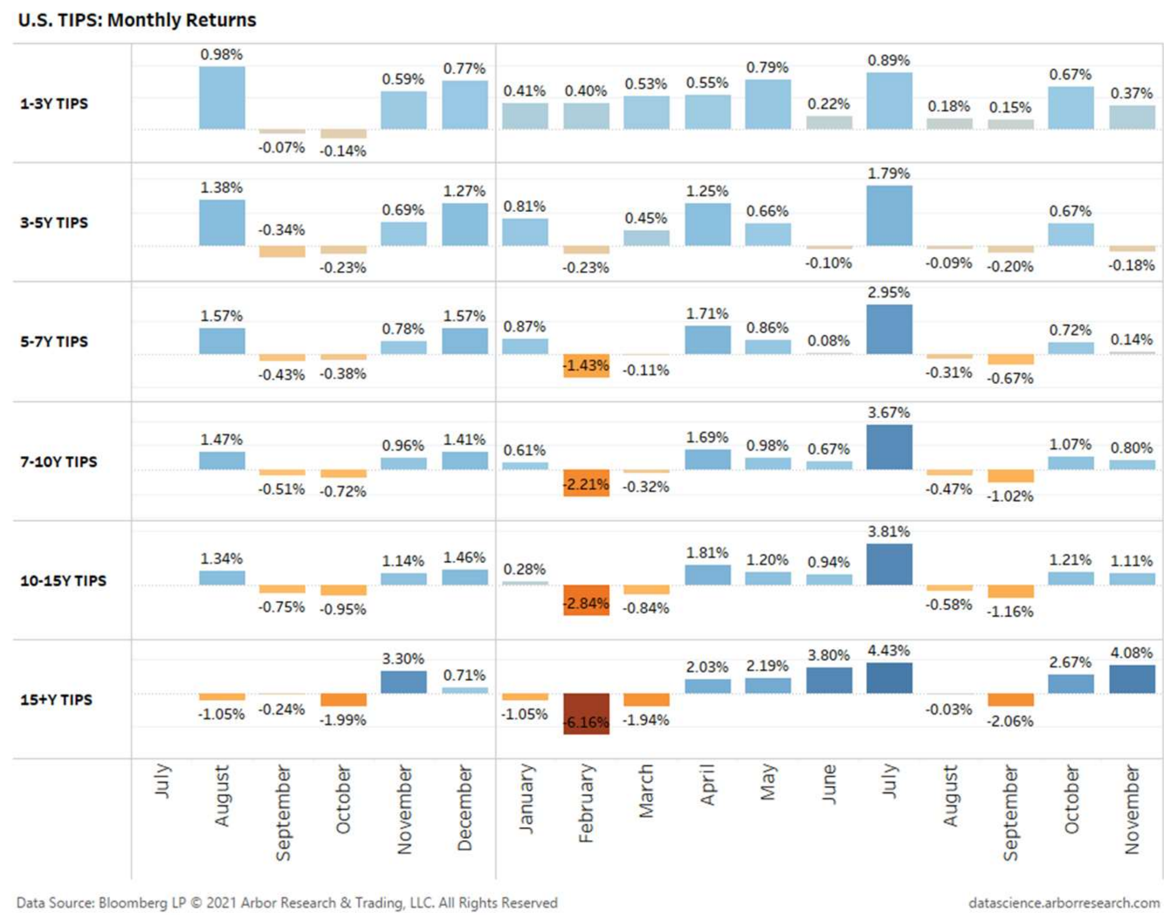
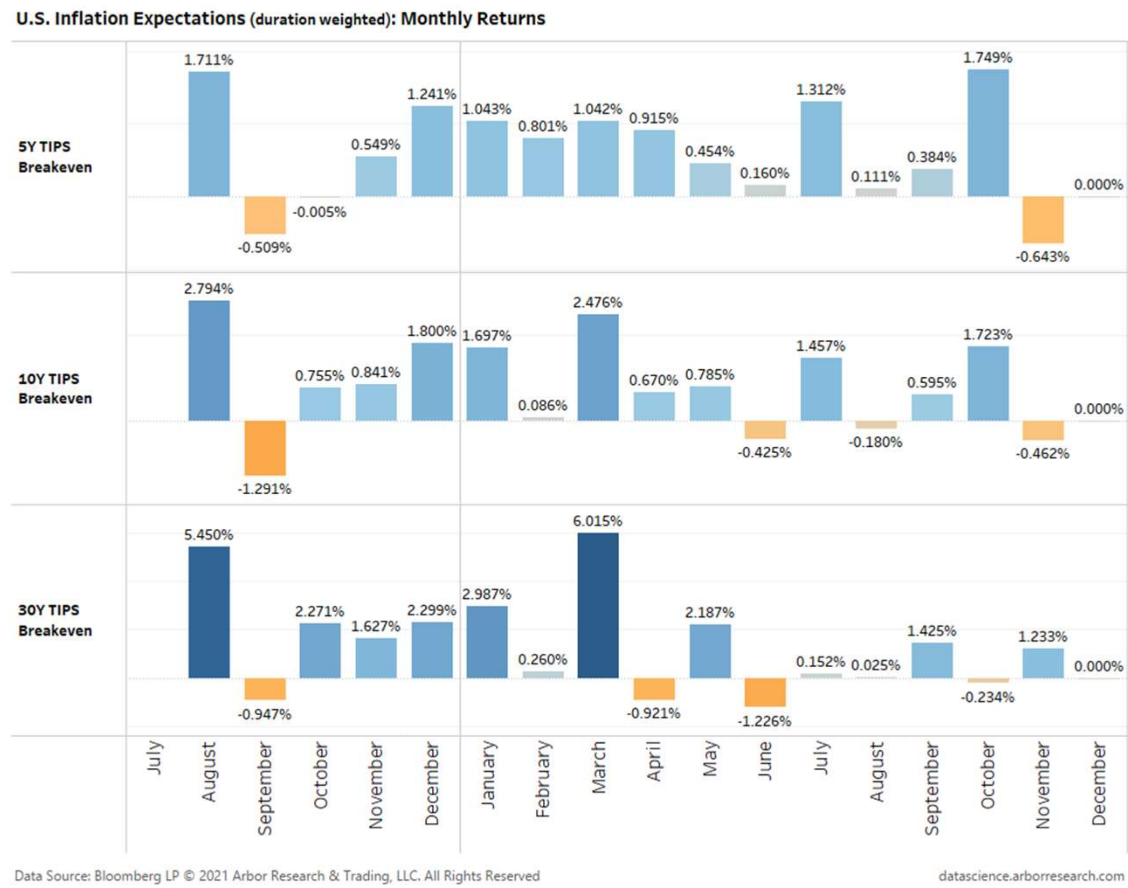
TIPS
TOTAL RETURNS:

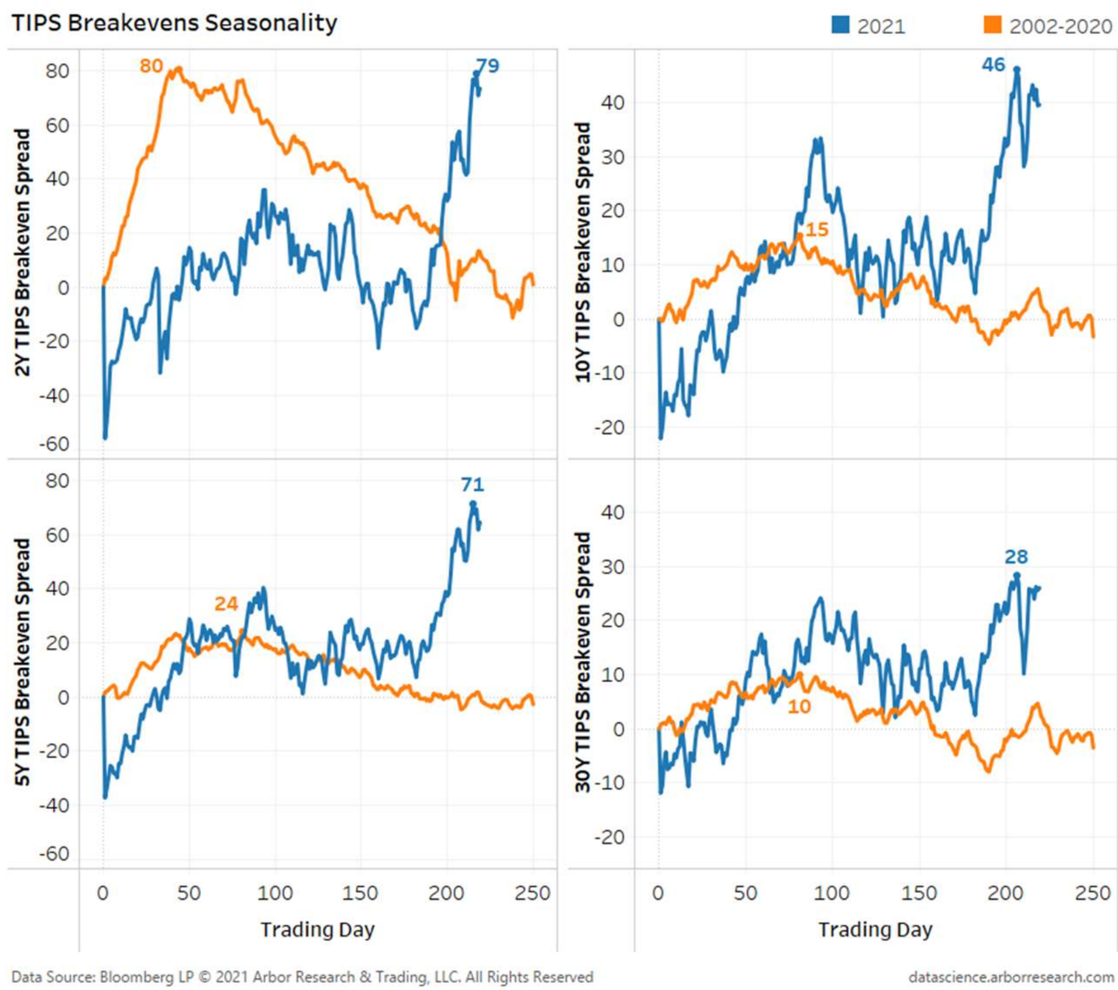


TIPS BREAKEVENS
TOTAL RETURNS:



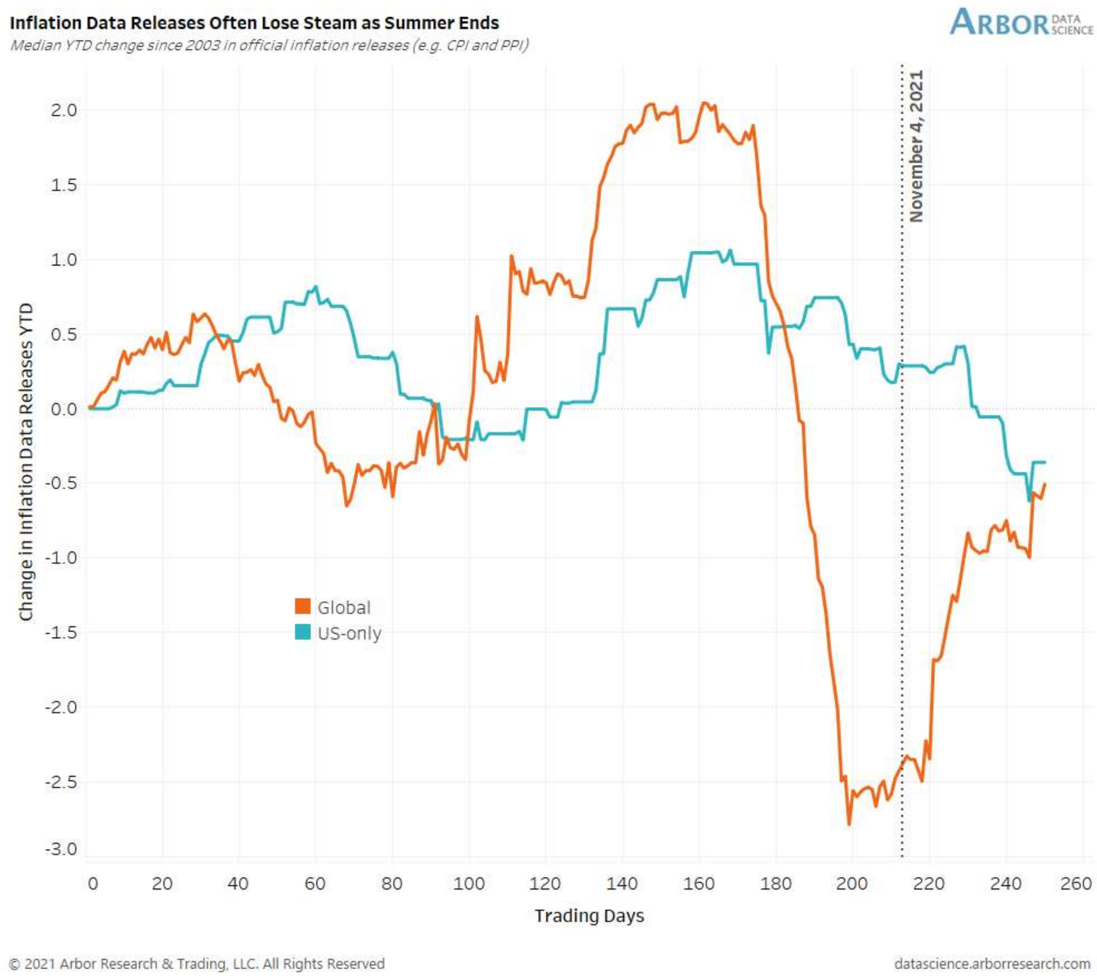
TIPS BREAKEVENS *SEASONALITY:*

Narrowing Bias Begins to Fade Into Year-End



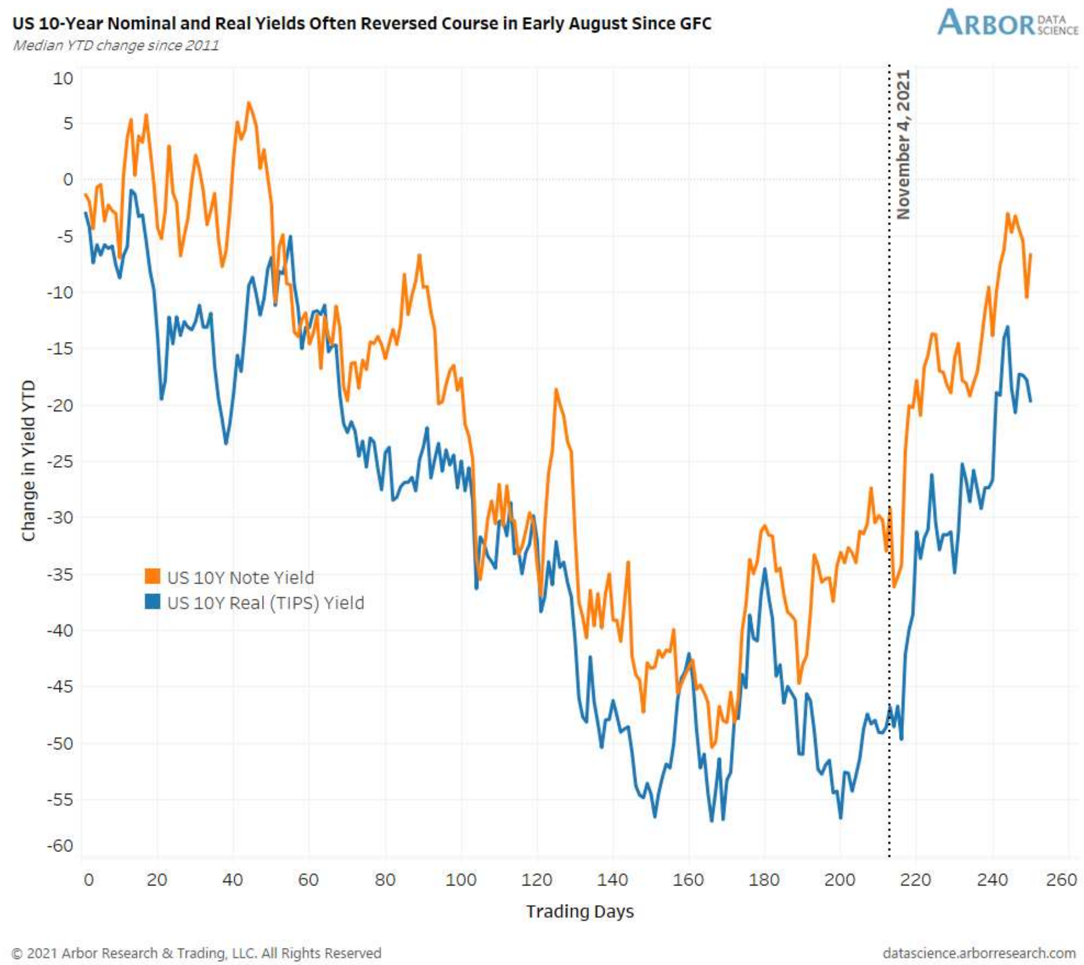
INFLATION *SEASONALITY:*

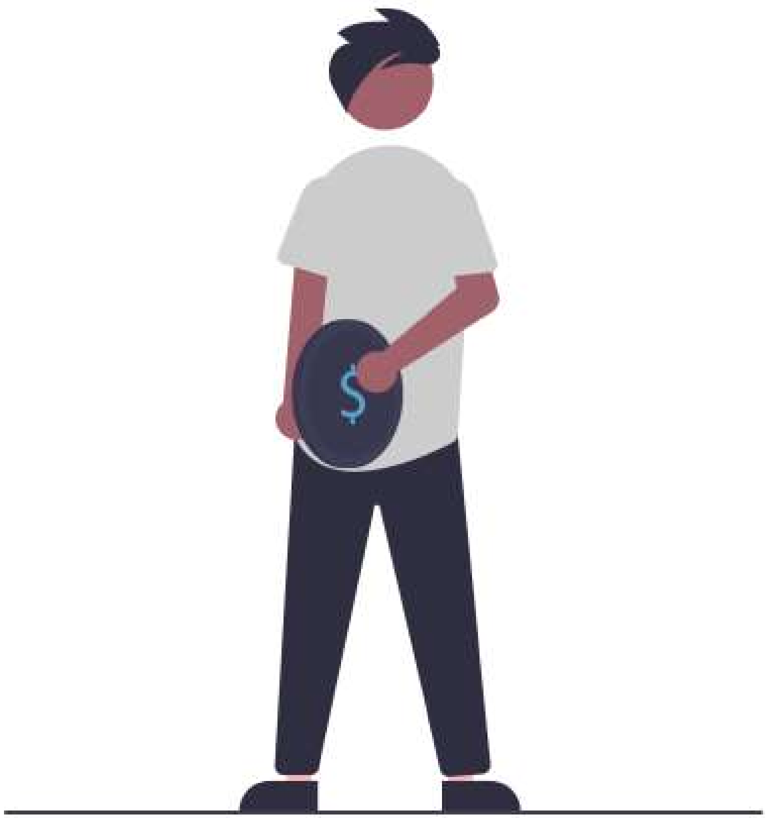
Data Releases Have Routinely Peaked in August/September

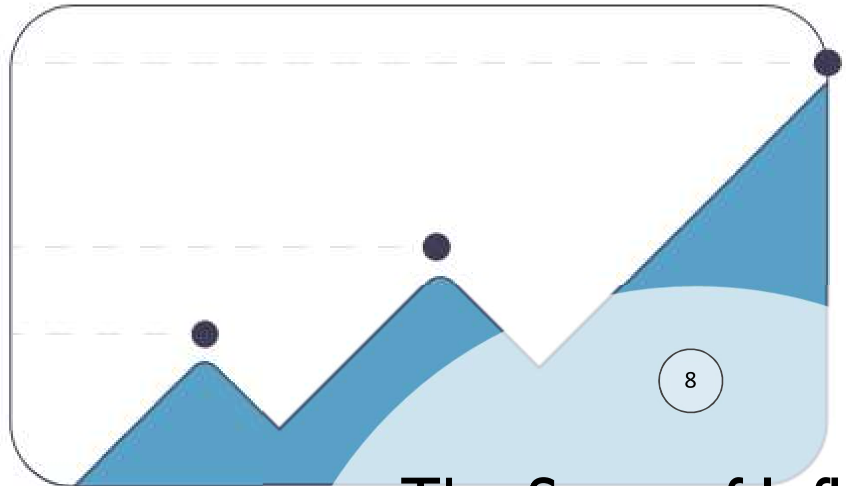


US 10-YEAR YIELDS SEASONALITY:

Nominal and Real Yields Rise on Average Into Year-End

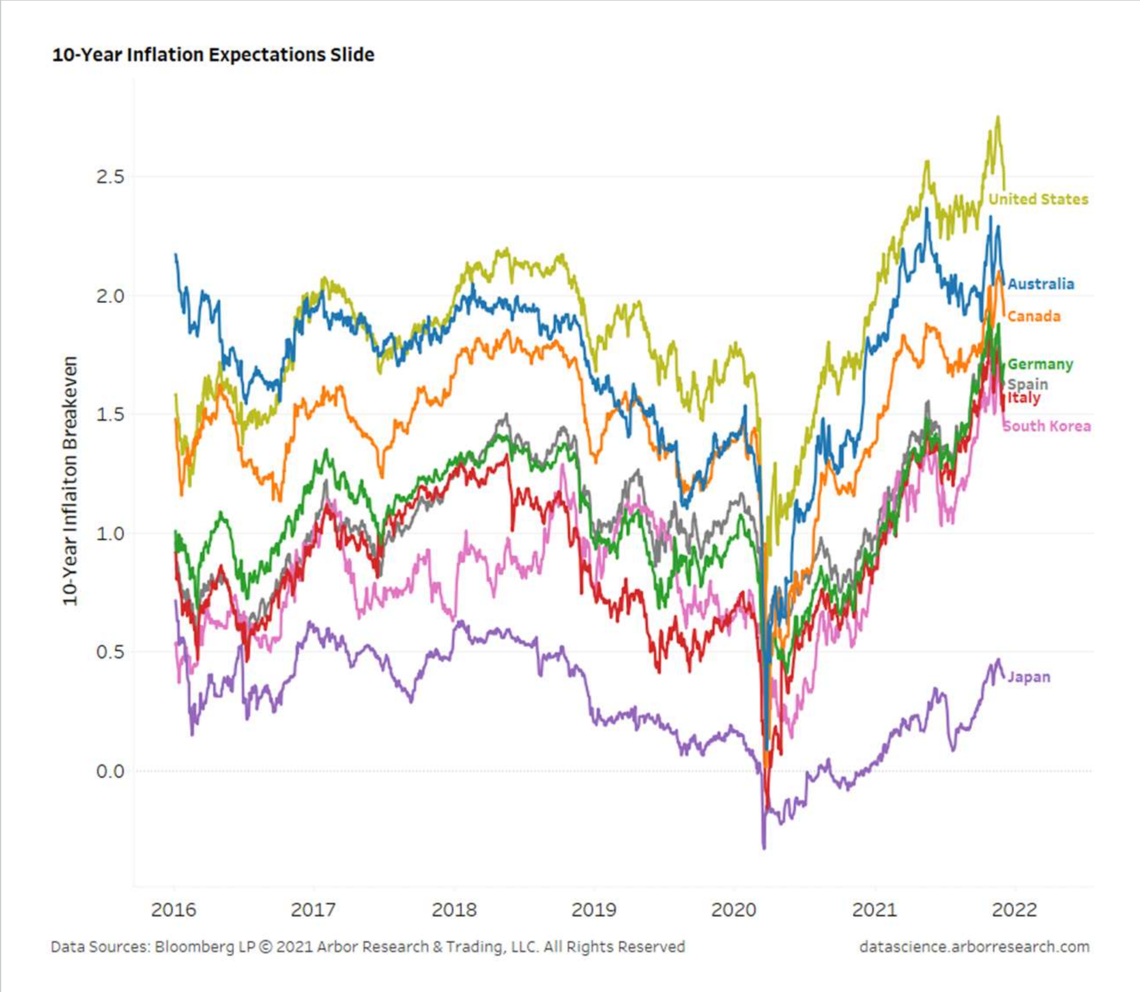






The State of Inflation and Market-Based Expectations

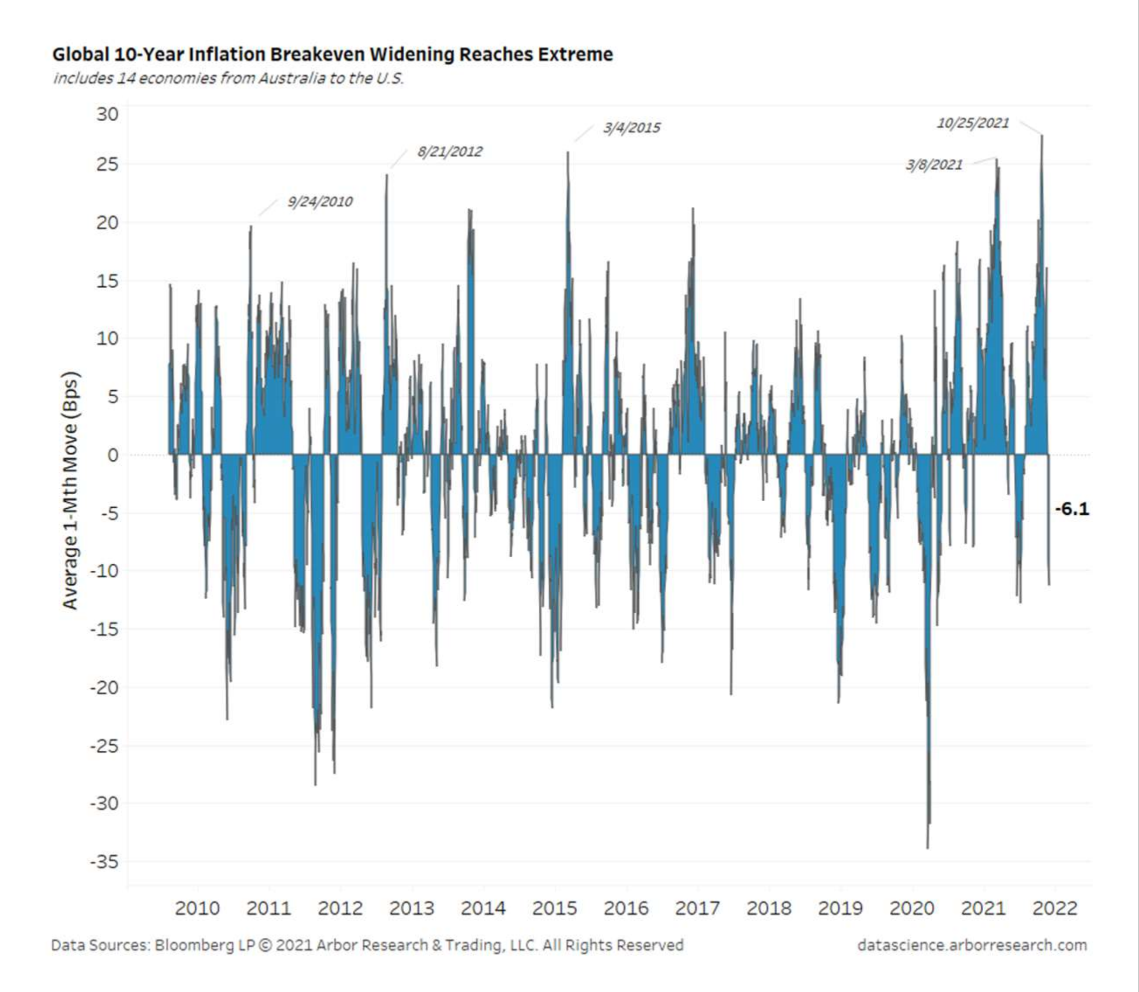
10Y Inflation Breakevens Begin to Slide



10Y Inflation Breakevens Finally Back Off Extremes

- The chart shows the rolling 3-month change in 10-year inflation breakevens for 14 economies has risen by an average of -6.1 bps, well off the 25+ bps pace seen into late October.

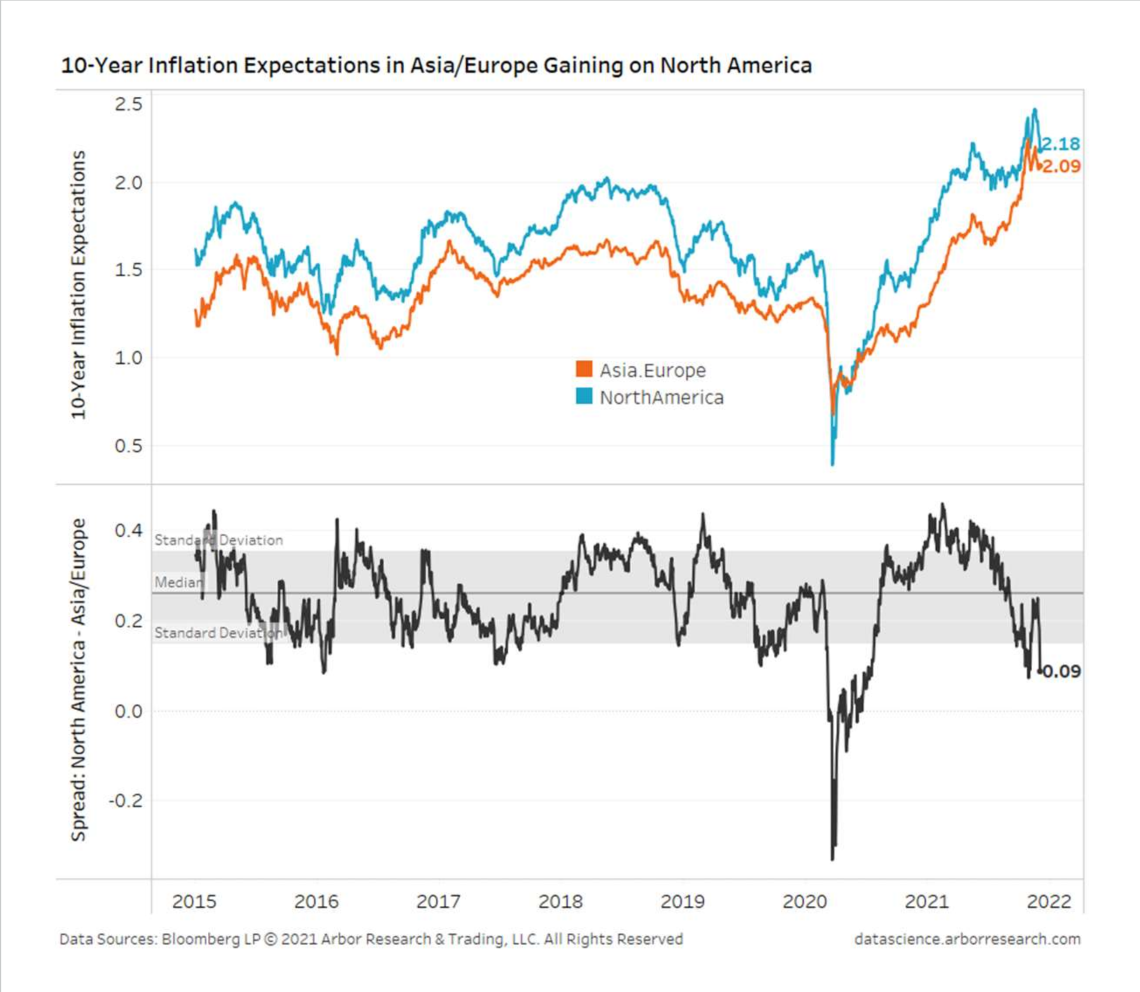
- The connection between global inflation expectations has become quite heightened thanks to supply chain dysfunction.



Asia/Europe
Closed the Distance

- The spread between average 10-year inflation expectation for Asia/Europe versus North America quickly converged as we expected. This spread hit -1 st devs below average, meaning not much room for further narrowing may be present.

- Our conviction level over this trade has subsided. In fact, we may look in the opposite direction assuming a larger extreme emerges.

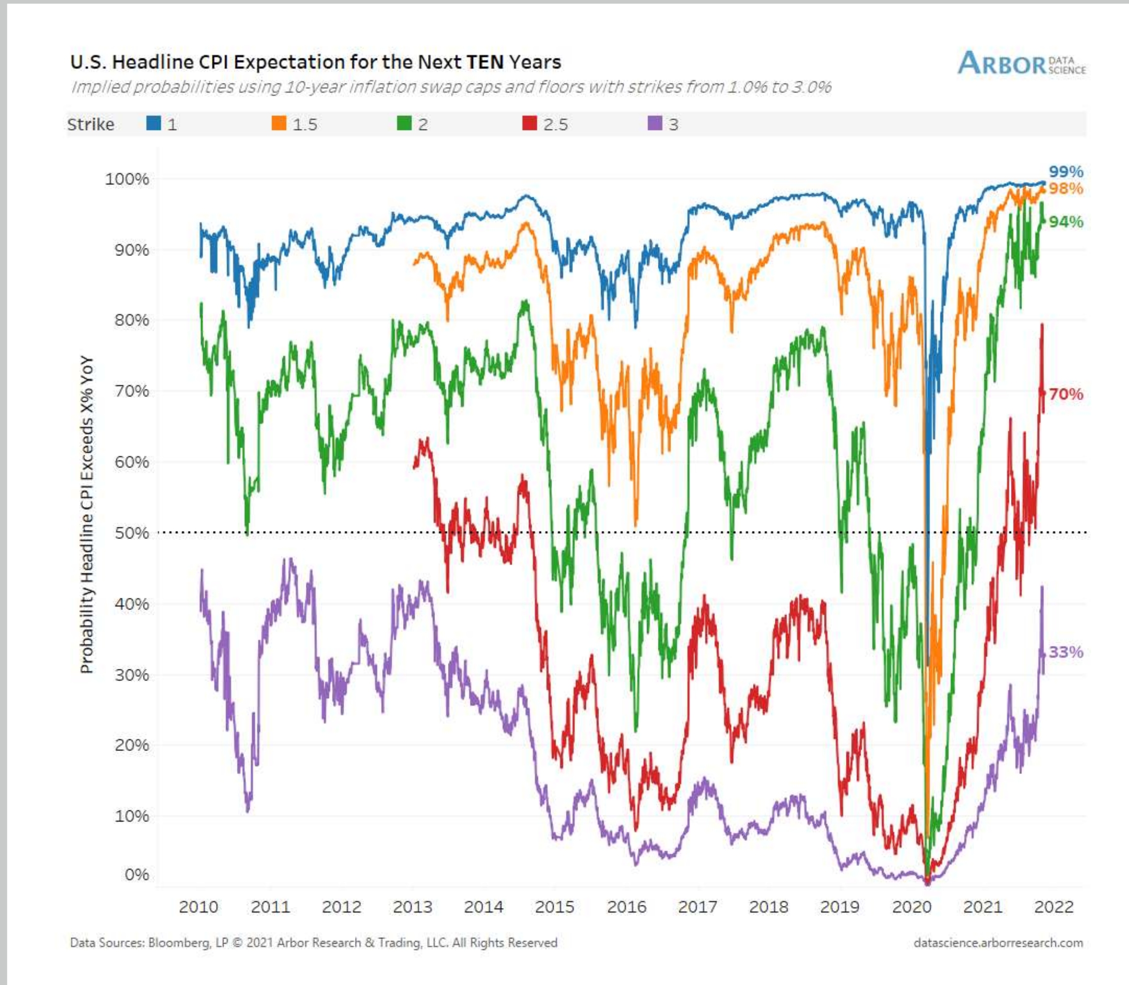


US
Inflation Expectations

- Investors are pricing in a 70% probability headline CPI runs at or above 2.5% YoY for the next 10 years, a sizable improvement after being stuck near 50% throughout the summer.

- The prospects of 3.0+% YoY remain elevated at a not inconsequential 34% probability.

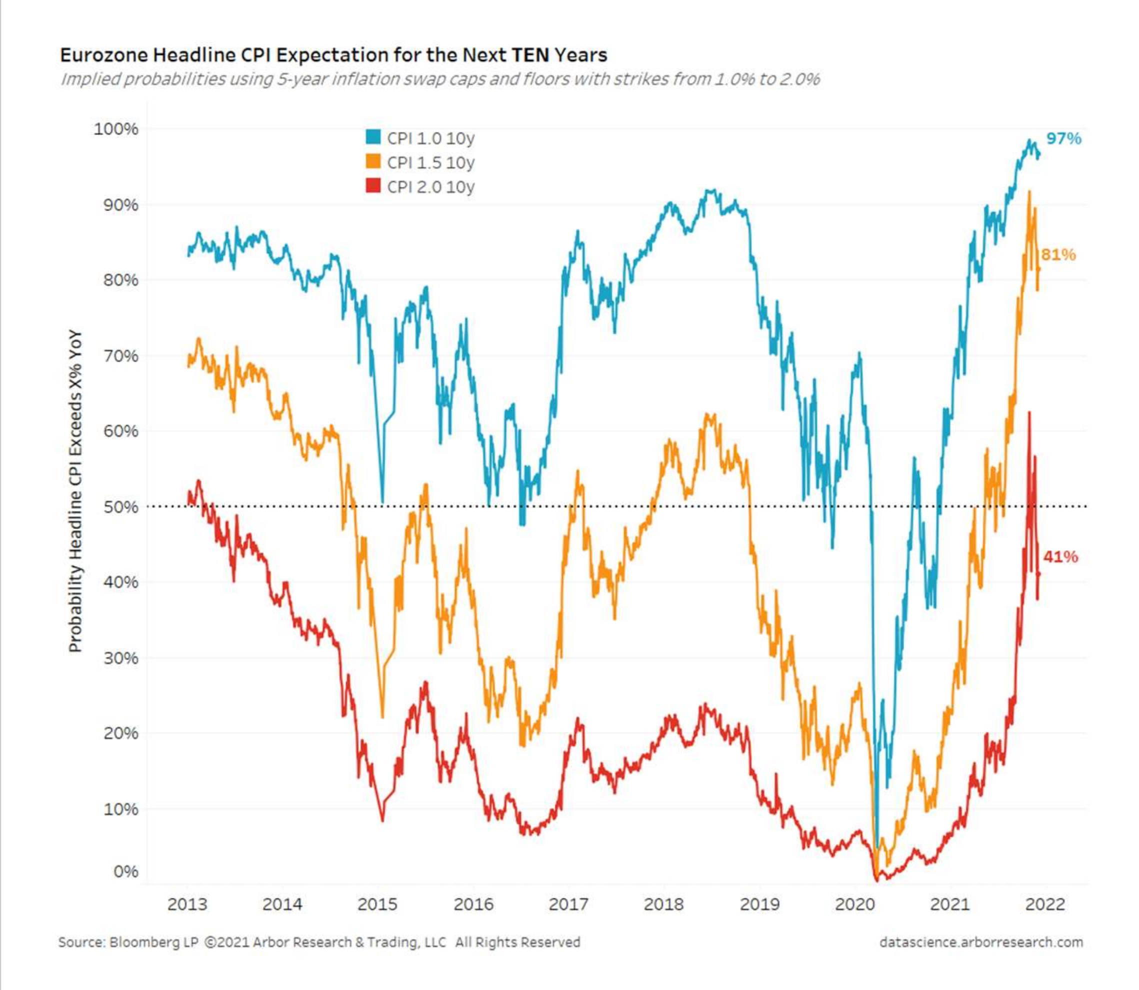
- All in all, investors are finally beginning to build a right-side tail into inflation expectations.



Eurozone
Inflation Expectations

- Investors maintain a floor for Eurozone CPI at 1.5% YoY. Inflation swap caps and floors show a 81% probability headline CPI averages above this threshold over the next 10 years.

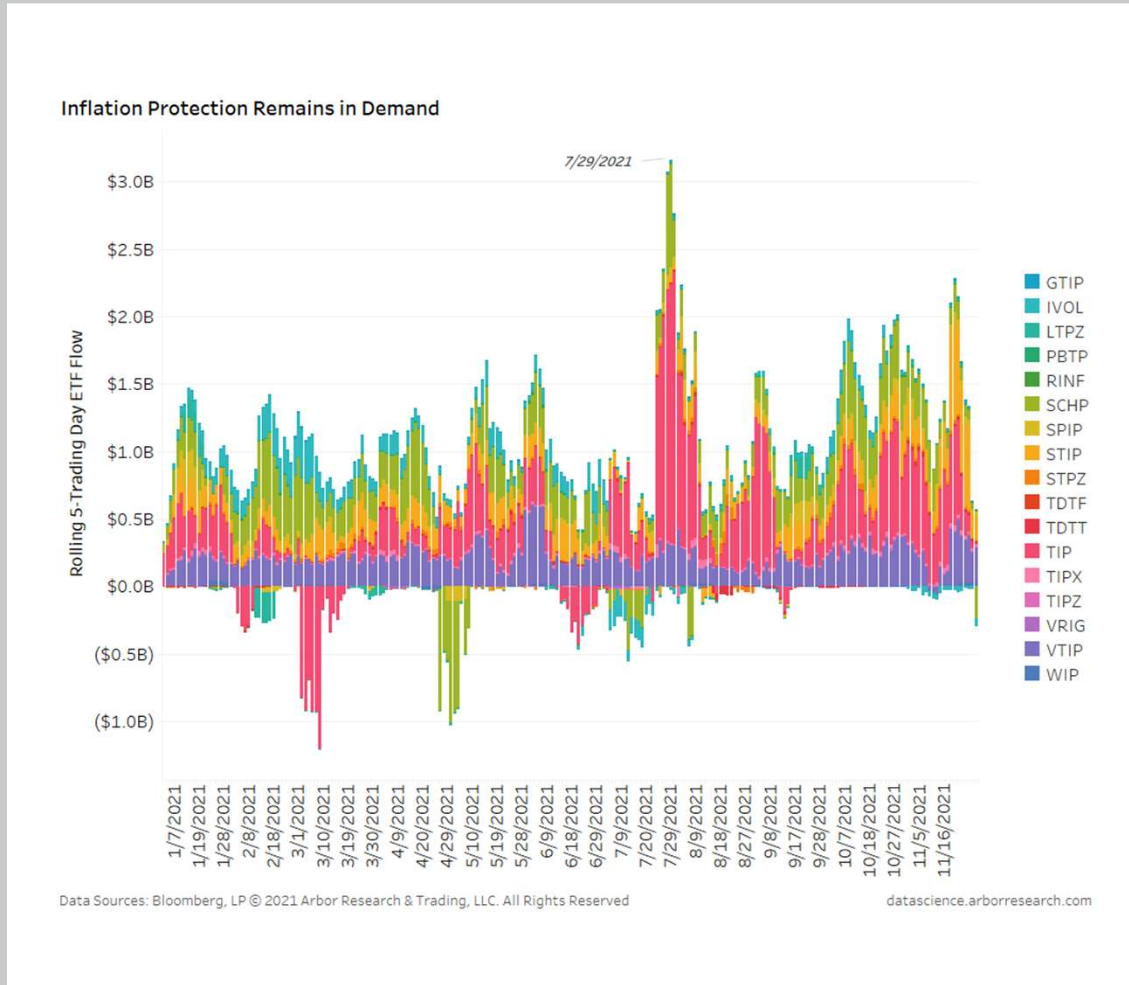
- Potential for 2.0+% YoY has moderately abated to a 41% probability.



TIPS ETF Demand Slides

- TIPS ETFs have seen rolling five-day inflows weakens to around $0.6 billion.

- We are watching closely investors' sensitivity to renewed volatility. Reaping the sizable accrual under low volatility had attracted a mass of investors. Will the Fed's impending taper disrupt this easy money?! Short answer: Probably!

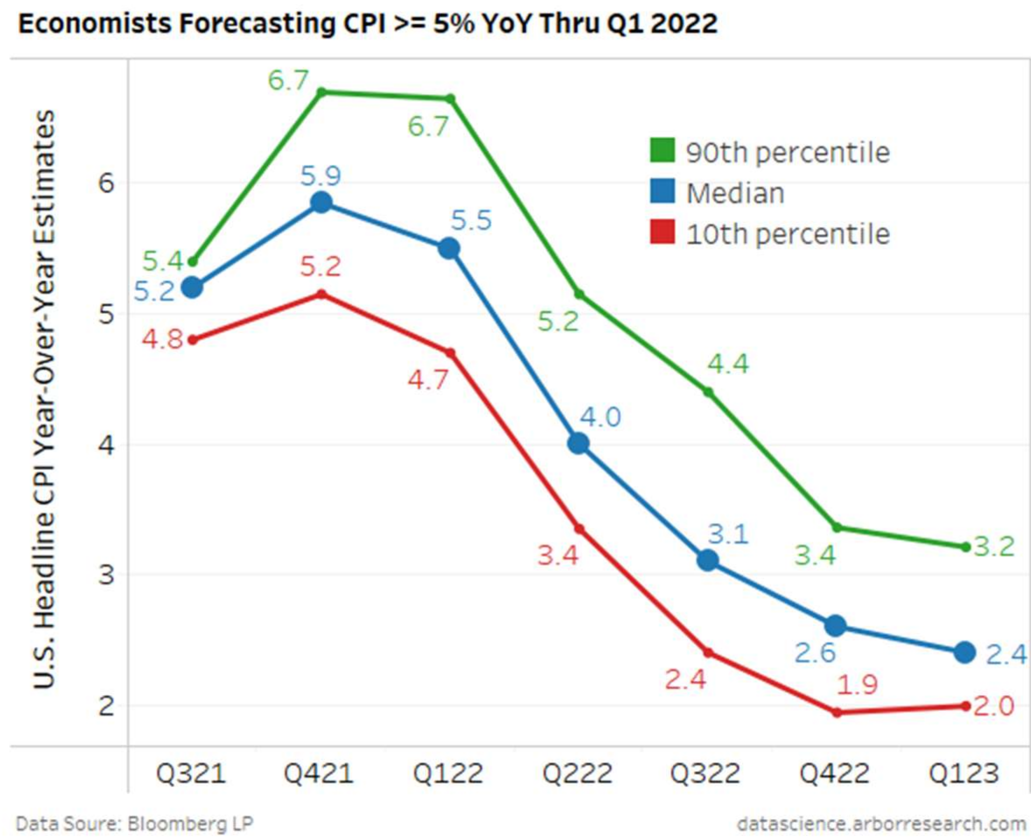


Economists Ratchet Higher Inflation Outlook

- Economists boosted headline CPI estimates for Q1 2022 higher to 5% YoY.

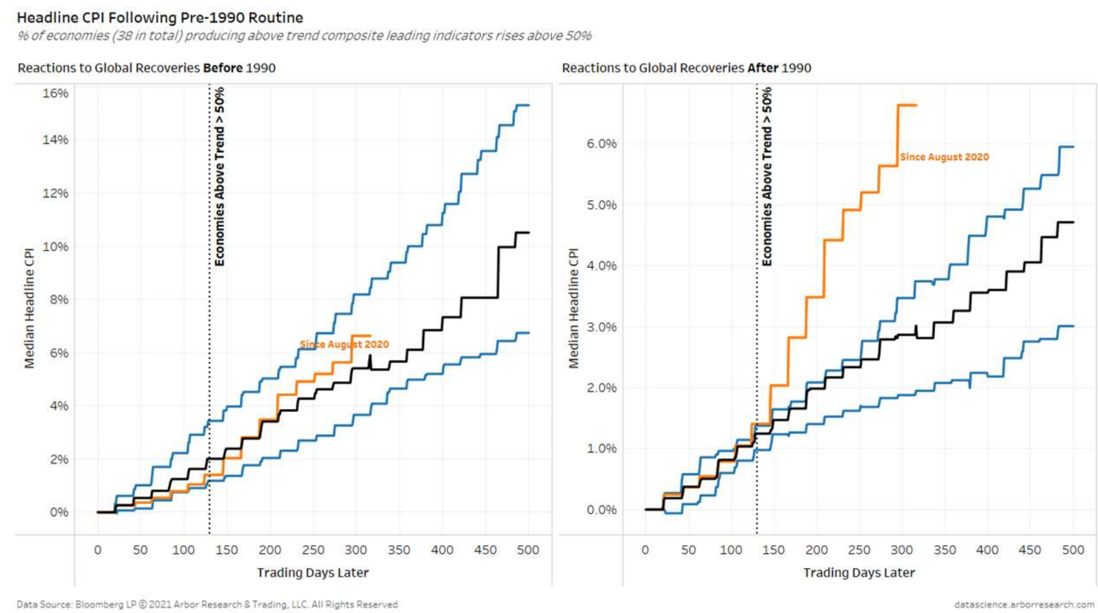
- The glidepath into Q4 2022 now projects ~2.5% YoY, implying core should remain at or above 2.0% YoY.

- All in all, the expected mean reversion has been delayed deeper into 2022 thanks to continued consumer demand battling a disrupted supply chain.



Headline CPI Chasing Recoveries From Pre-1990

- Charts show change in headline CPI from six months before global recoveries were identified.
- Headline CPI is very much in line with pre-1990 recoveries, while greatly exceeding post-1990.

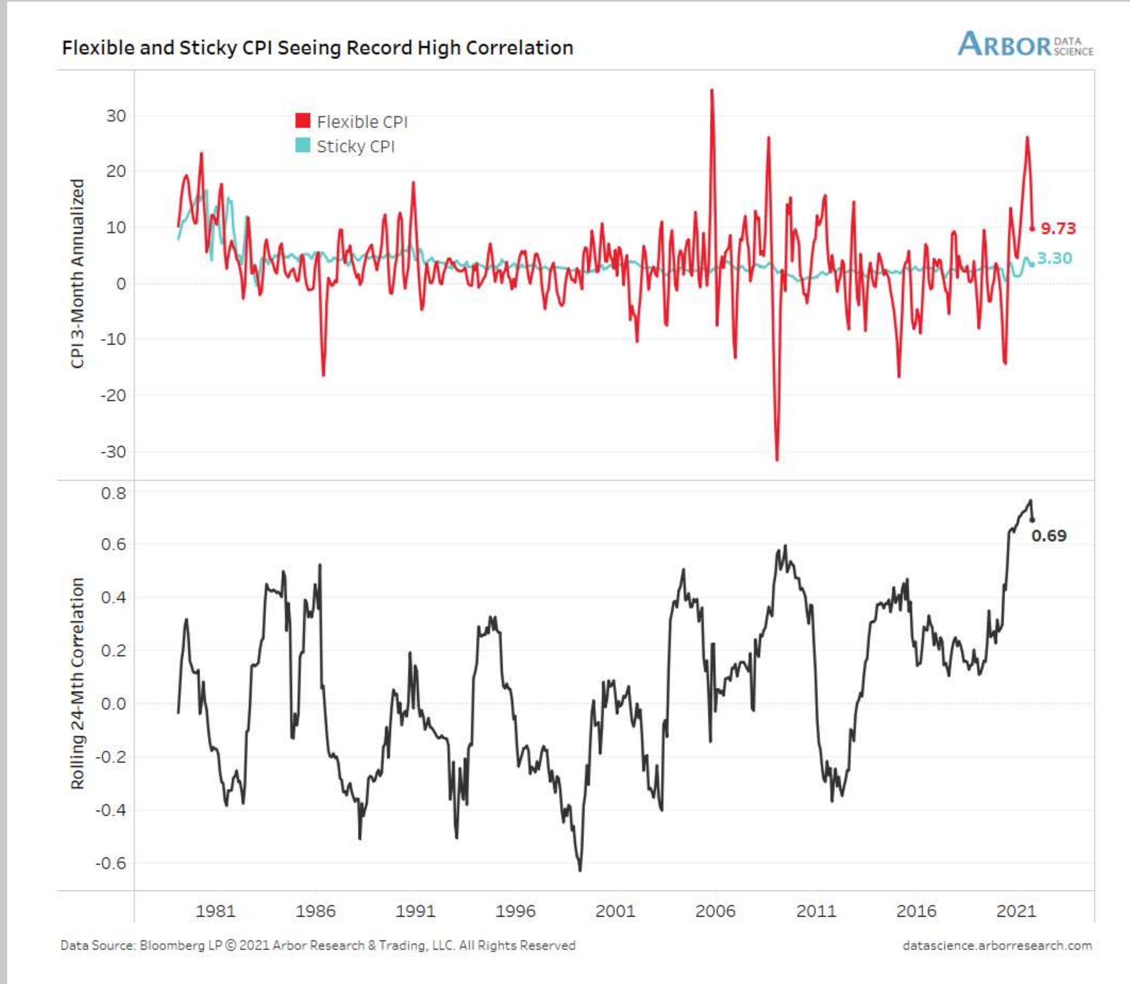


Flexible and Sticky CPI Aligning Suggests Greater Persistence Than Expected

- Flexible CPI is set to recede over the months to come. However sticky CPI has been exceptionally positively correlated with flexible CPI through the pandemic.

- High correlation between flexible and sticky prices suggests the pandemic is not creating one-off jumps in inflation, but some **real persistence**.

- We need to see this correlation quickly abate to keep #teamtransitory in control of the debate.

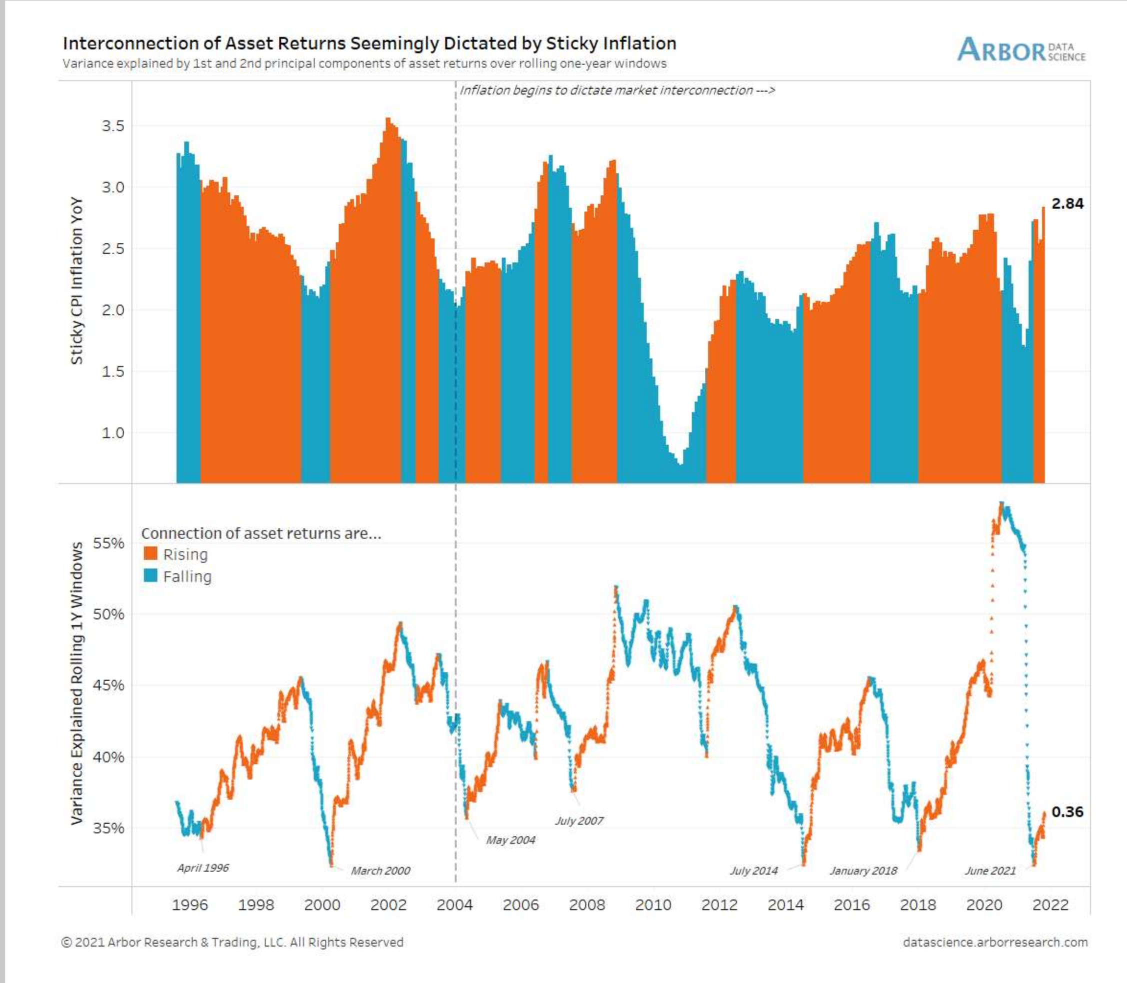


Elevated Stick Inflation Becomes a Latent Factor Behind All Markets

- We assess 18 assets from energy to US Treasuries for their coalescence around the same latent factors. The chart below shows the % of variance explained by the first two principal components of rolling one-month returns over one-year windows.

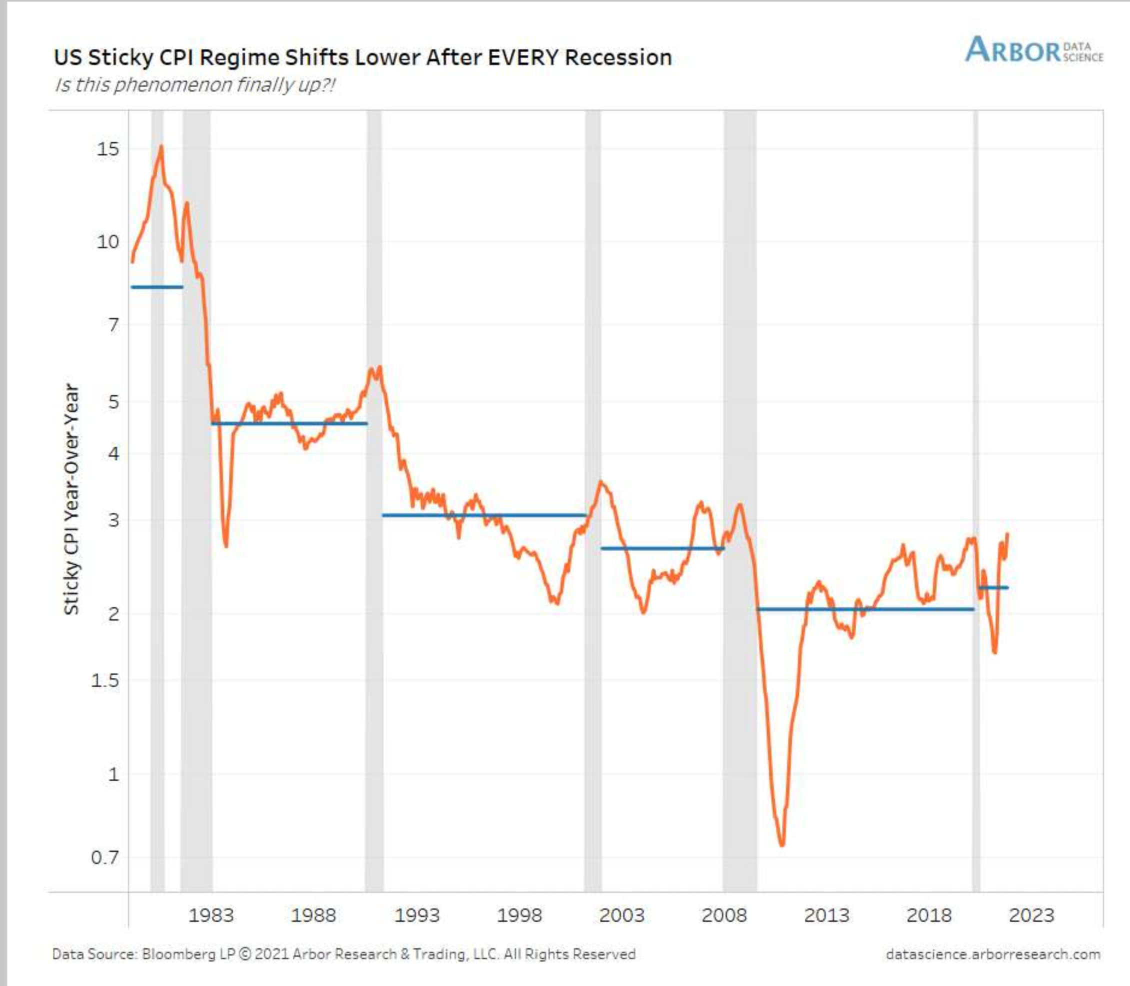
- Since 2004 periods of rising sticky inflation have habitually been met with rising variance explained, **meaning assets attach to the building inflation narrative**.

- If inflation is truly to remain sticky and become a problem for investors, then we would fully expect to see variance explained surge over the months ahead. This is NOT our baseline view, but this metric provides a very easy method of assessing impediments to diversification.



Core / Sticky Prices Expected to See Regime Shift Higher

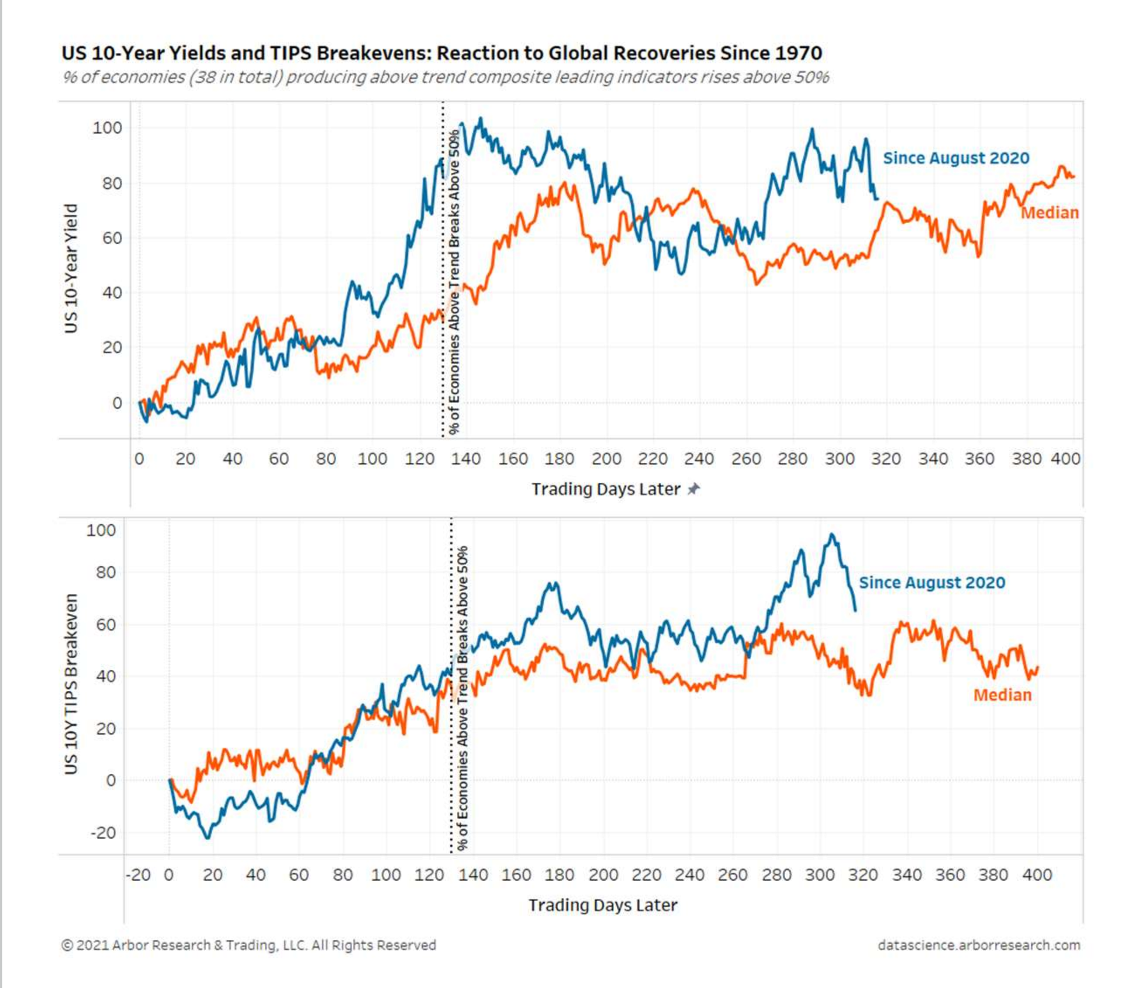
- Sticky prices have seen declining rates of inflation after every recession since 1980.
- The current rebound from the pandemic looks set to change this dynamic.
- The glidepath for core inflation looks more likely to 2.5% YoY, which would indeed be a game-changer.
- **This would be the first regime shift higher by core/sticky prices following a recession since the 1980s.**



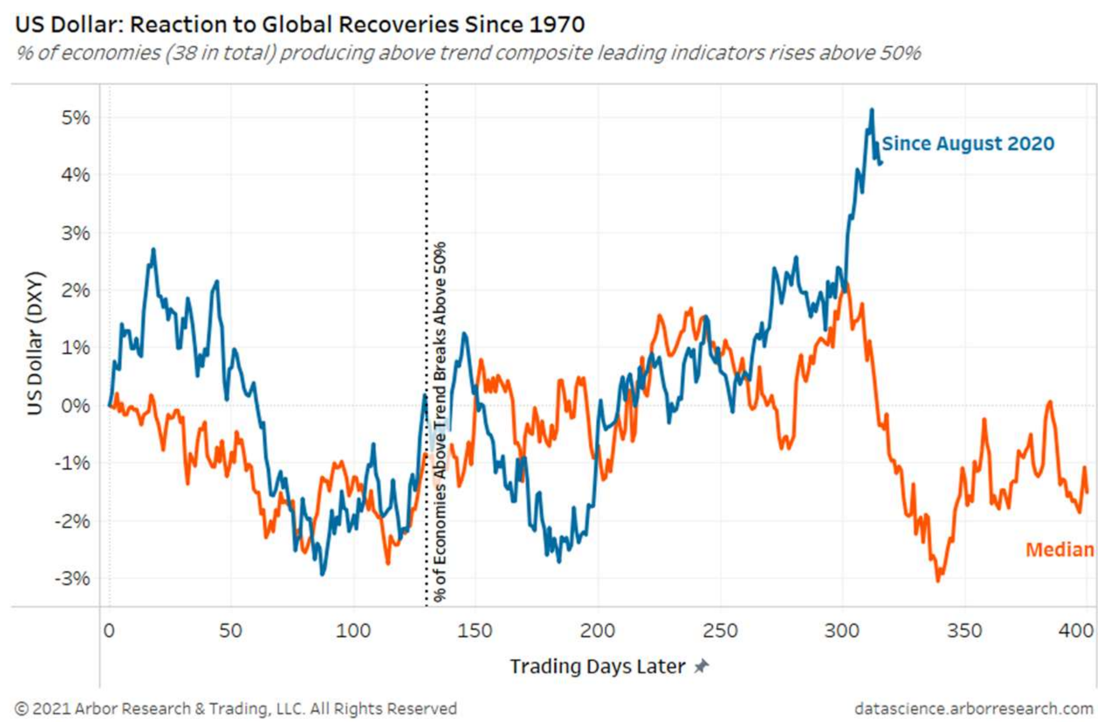
US 10y Yields and Inflation Expectations in Line With Past Global Recoveries

- We review past global recoveries identified when greater than 50% of OECD composite leading indicators are above trend. This last occurred in February 2021.

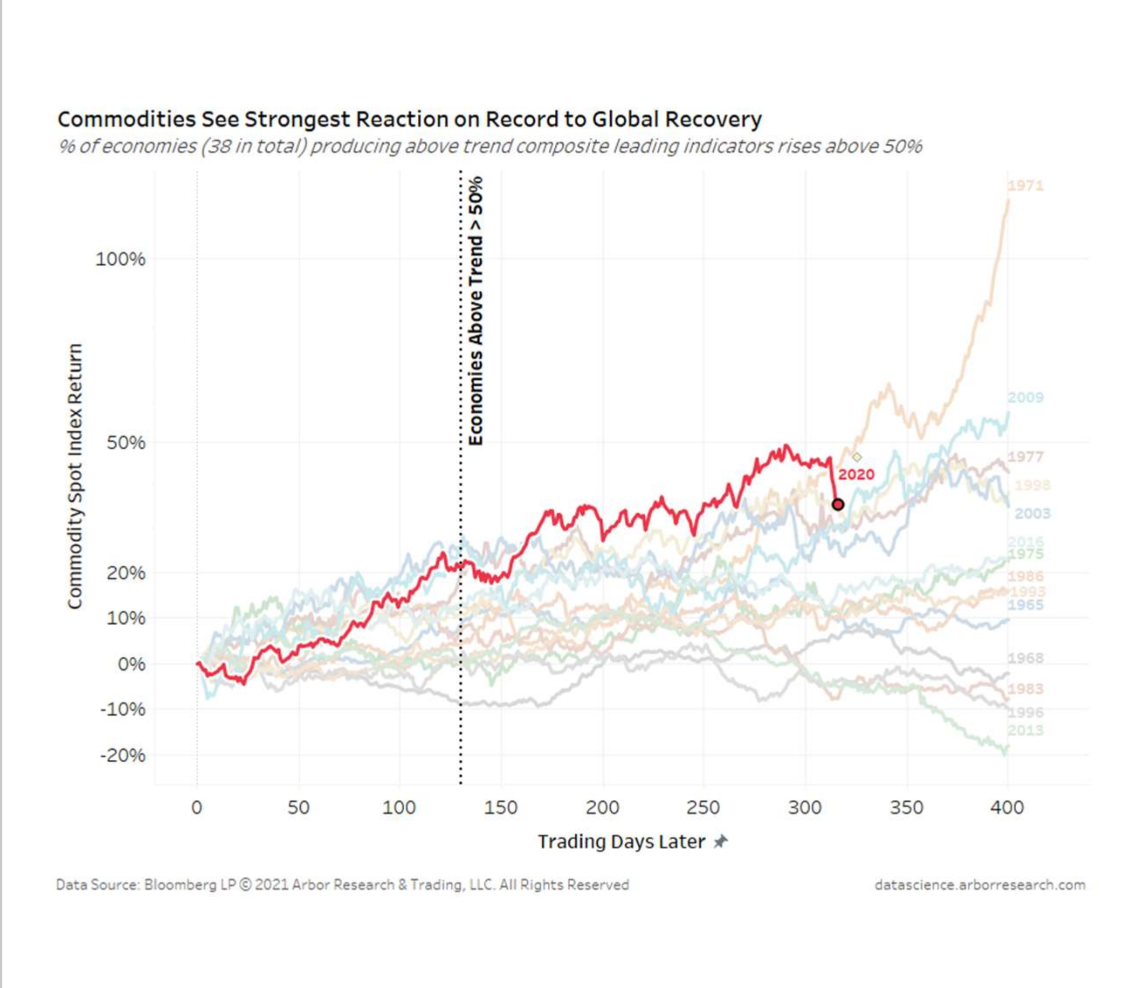
- The charts show the average path from six months before these recoveries were marked since 1970. Current moves in blue remain mostly in line with the past in orange.



Will the USD Finally Break Free From Its Historical Pattern?!



Strongest Commodity Rally During Global Recovery



Real Asset Returns During Inflation Regimes

Real Asset Returns During High Inflation Regimes

Periods when headline CPI rises above 2% YoY and ultimately in excess of 5.0% YoY

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Market Name	Sep 1950 Feb 1951	Feb 1966 Jan 1970	Jul 1972 Dec 1974	Jan 1977 Mar 1980	Feb 1987 Nov 1990	Dec 2006 Jul 2008	Average
	Inflation Regime						
S&P 500	10.8	-22.9	-48.6	-30.6	-1.9	-16.4	-18.3
Dow Jones Industrial Average	8.9	-36.3	-46.7	-42.9	-1.0	-14.0	-22.0
US 10Y Note	-6.4	-15.9	-12.5	-33.2	7.2	3.0	-9.7
US AAA Corporates		-16.7	-13.0	-33.4	5.7	4.1	-10.7
US BBB Corporates		-15.2	-12.8	-28.0	12.4	-1.3	-9.0
Gold	-6.3	-16.2	137.9	168.4	-19.8	30.4	49.1
GSCI Industrial Metals					49.3	-12.3	18.5
Iron and Steel (PPI)	1.5	-5.3	23.3	-1.1	-4.3	43.3	9.5
Lumber and Wood (PPI)	-1.5	-0.3	-7.8	-2.1	-2.0	-5.6	-3.2
Fuels and Power (PPI)	-3.4	-11.6	55.9	44.8	22.1	56.8	27.4
Petroleum (PPI)	-3.1	-13.1	75.8	67.3	58.4	92.0	46.2
Gas Fuels (PPI)		-13.0	26.6	55.0	-2.6	65.3	26.3
Industrial Commodities (PPI)	3.7	-6.3	13.1	4.6	0.4	15.3	5.1

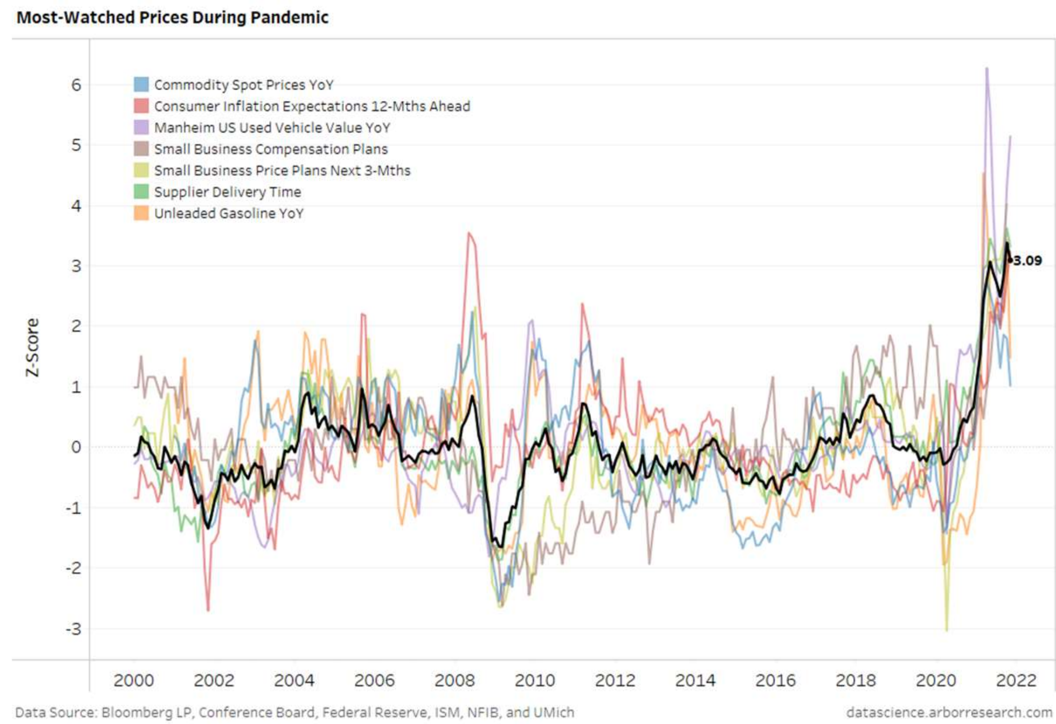
Data Source: Bloomberg LP and FRED datascience.arborresearch.com

Supply Chain Disruptions Are Not Going Away

Most-Watched Delivery Times and Prices Have NOT Peaked

- The chart shows z-scores for key measures from commodities to used cars to supplied delivery times, which averages 3.4 standard deviations above average. We have yet to see a peak, suggesting the countdown to a mended supply chain has yet to begin.

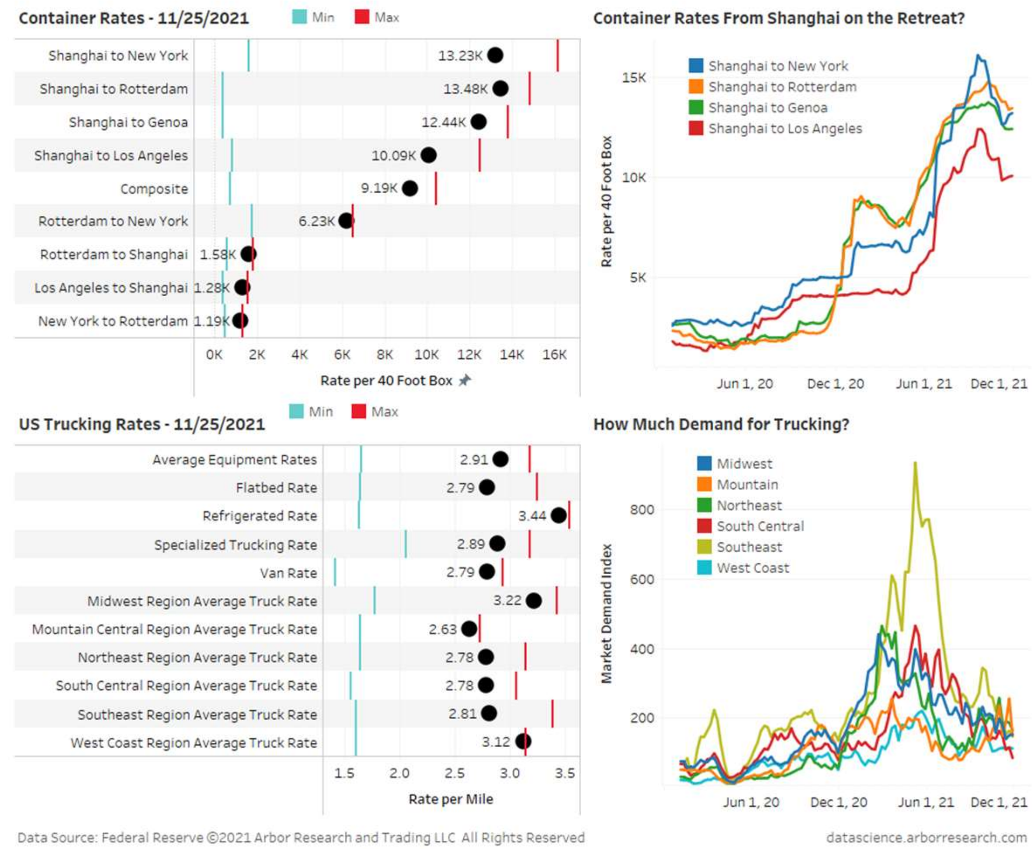
- Eventually, the peak in these measures still start the 10-12 month countdown we have been expecting. Past bouts of supply chain dysfunction since 1950 have taken this time to retreat back to 'normal.'



Container and Trucking Rates Refusing to Accelerate Lower

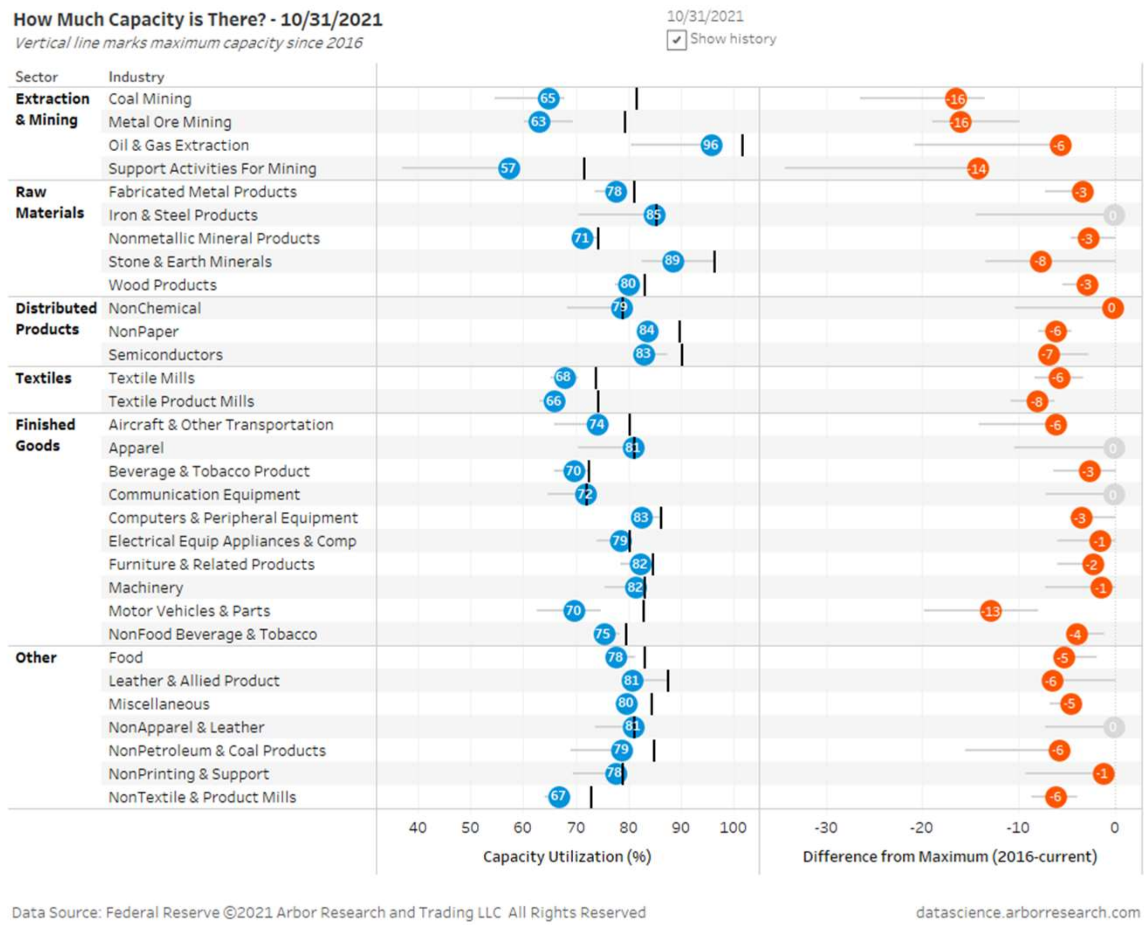
- The top chart and table shows container rates per 40 foot box mildly rolling over. Do note rates tend to fall heading into the winter months each year.

- The bottom chart and table shows trucking rates remaining elevated at an average of $2.92 per mile. Market demand has yet to appreciably bounce given continued bottlenecks and shortages.



Capacity Must Continue to Expand

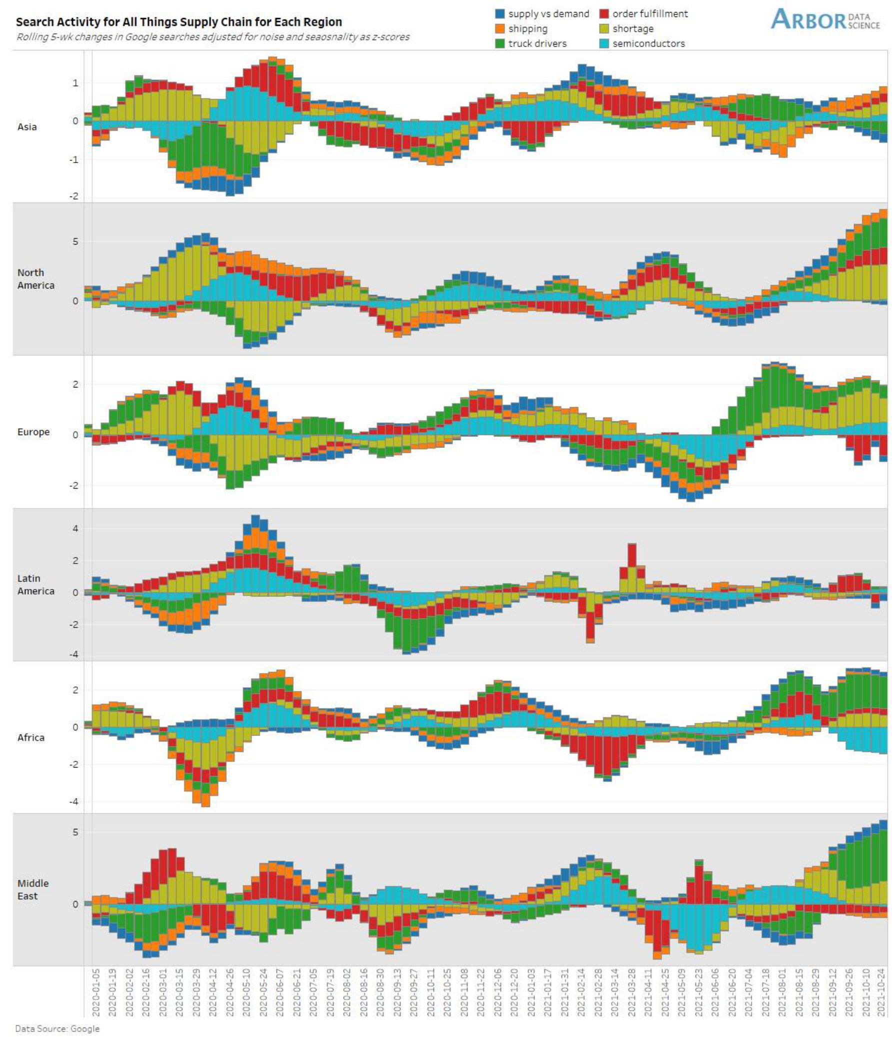
- The table shows the capacity utilization by industry relative to the maximum reached from 2016 – current.
- Mining, semiconductors, and motor vehicles have yet to return toward the maximum capacity seen since 2016.



Consumer Searches Remain Heavily Tilted Toward Supply Disruptions

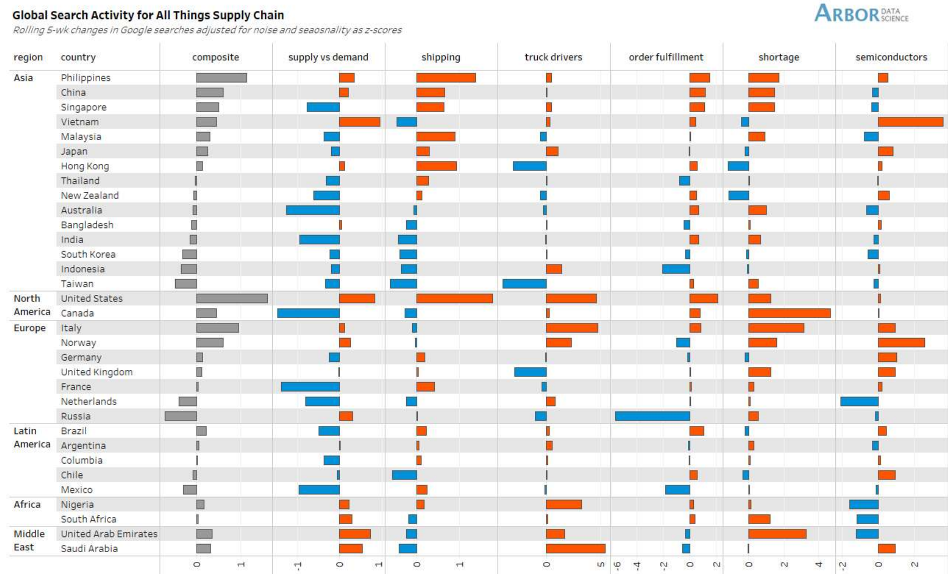
- The table and map show rolling five-week search activity by country and topic adjusted for noise and seasonality.

- Higher search activity is believed to represent heightened concern and interest. Heavier searches for the supply side, order fulfillment, and semiconductors confirms a supply chain still in disarray.

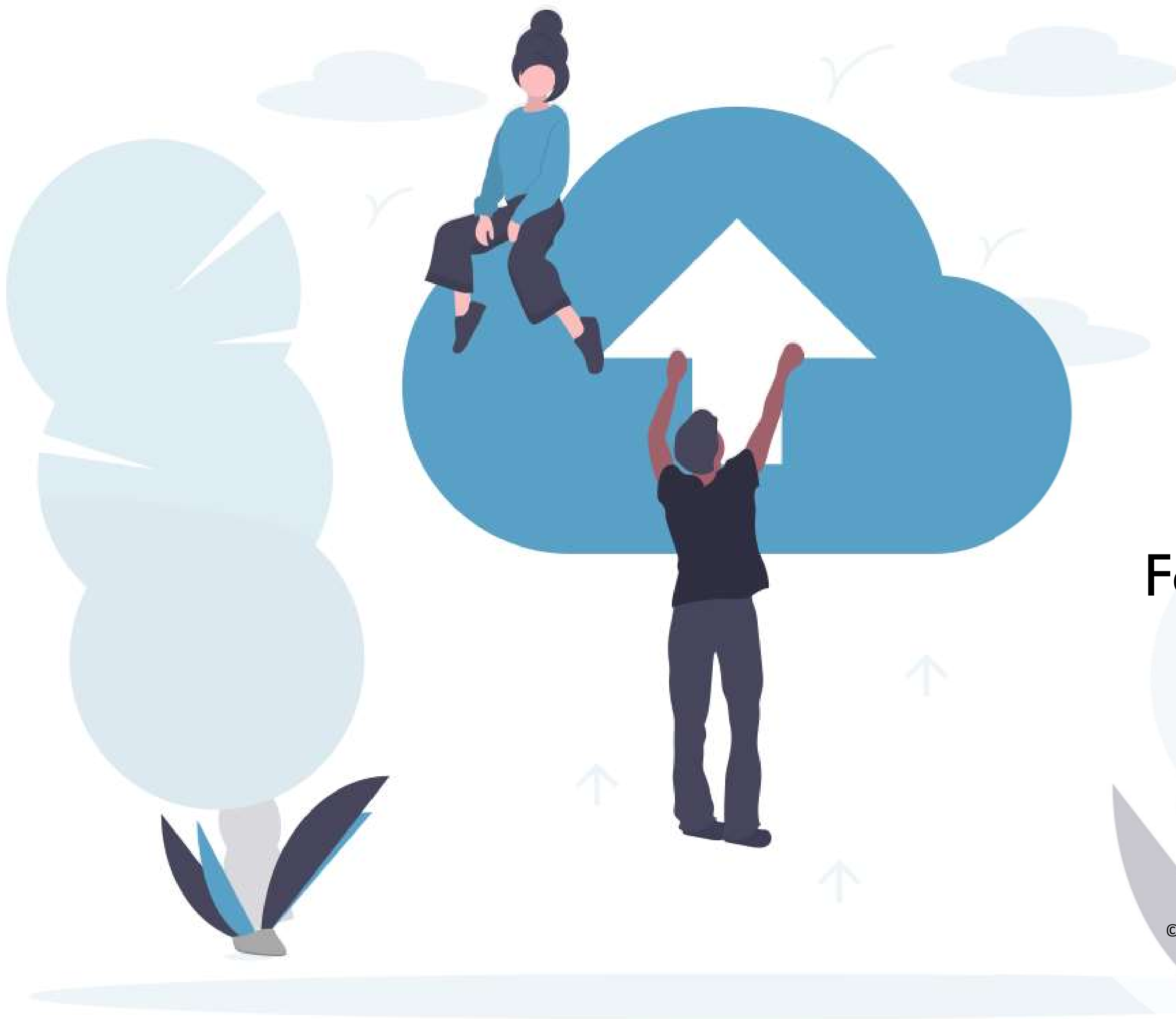


US and East Asia Reflecting Greatest Supply Chain Concern

- The charts to the right show rolling five-week search activity (stacked) by topic.
- Consumers in Europe and the US reflect substantial bottlenecks and shortages.
- Most regions continue to see rising search activity.
- We need to see a concerted decline to believe supply chain woes are dissipating.



Data Source: Google



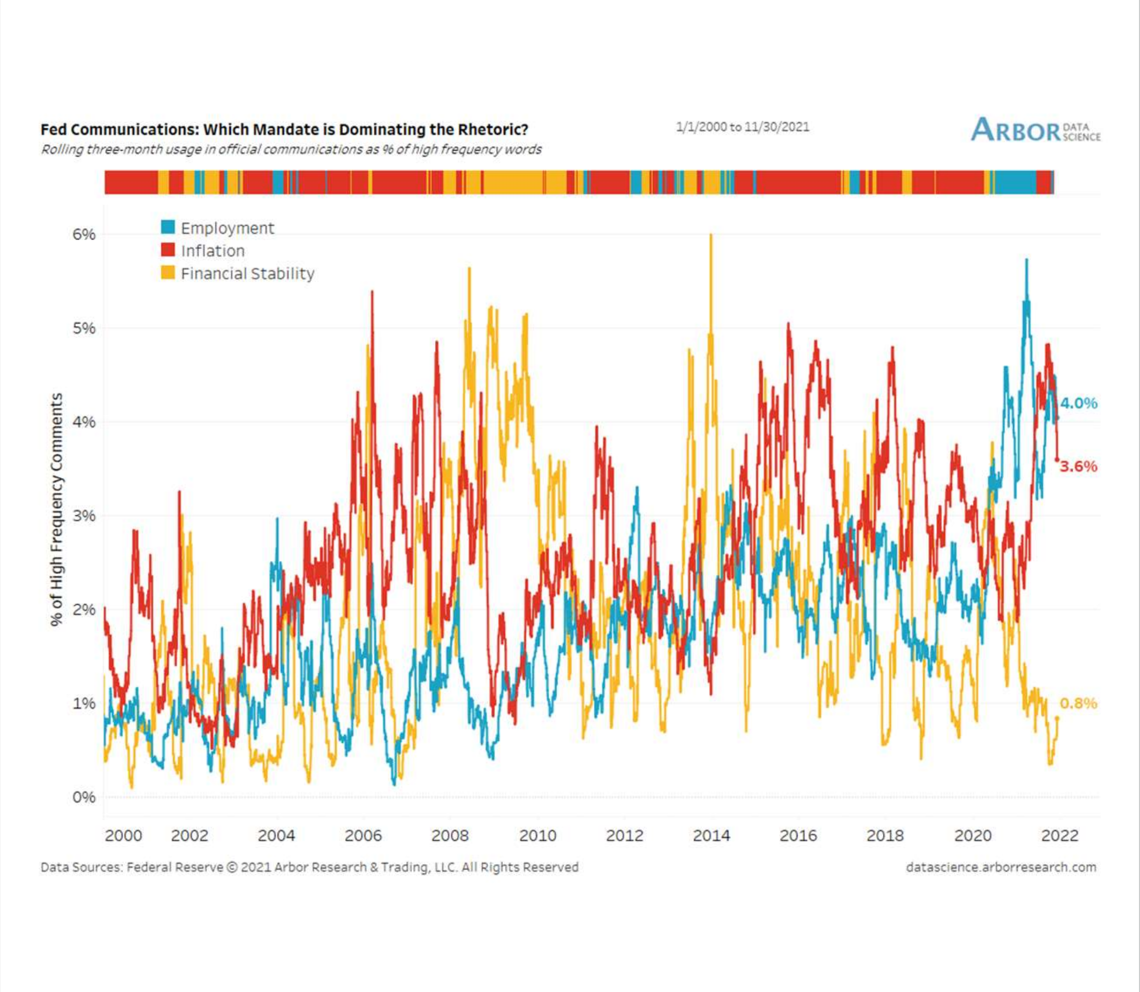
Fed Shifts Focus to Inflation From Employment

Inflation Suddenly Enters the Fed's Radar

- We comb through all official Fed communications (statement, speeches, testimonies, and more) for the allotment given to each mandate: 1) full employment, 2) stable prices, and 3) financial stability.

- Yes, the Fed has only two mandates, but financial stability became a dominant concern following the Asian financial crisis in 1997.

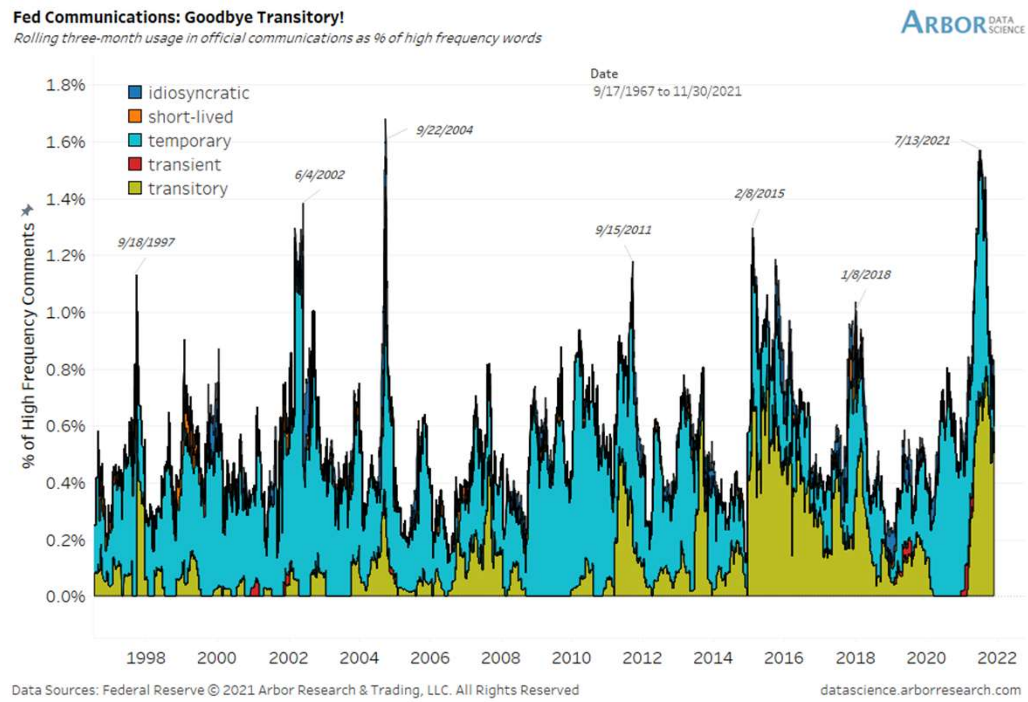
- Officials have never focused so much on employment than post-GFC, but inflation is now making inroads. Financial stability has seemingly become an afterthought.



‘Transitory’ Quickly Recedes From the Fed Vernacular

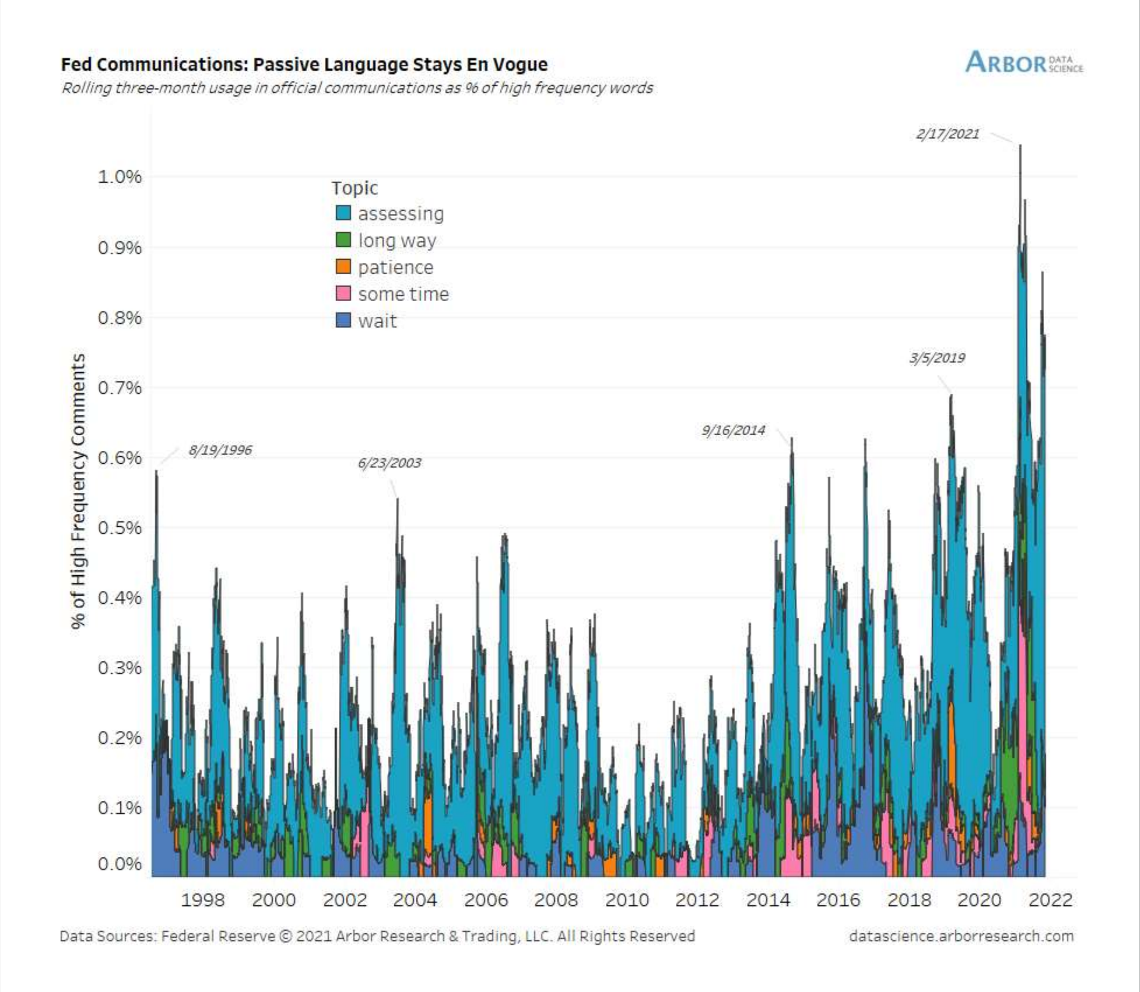
- ‘Lingering’ and 'Moderating’ are the new transitory!

- The Fed's use of transitory language has taken a dive since mid-July. Instead, passive language has accelerated yet again.



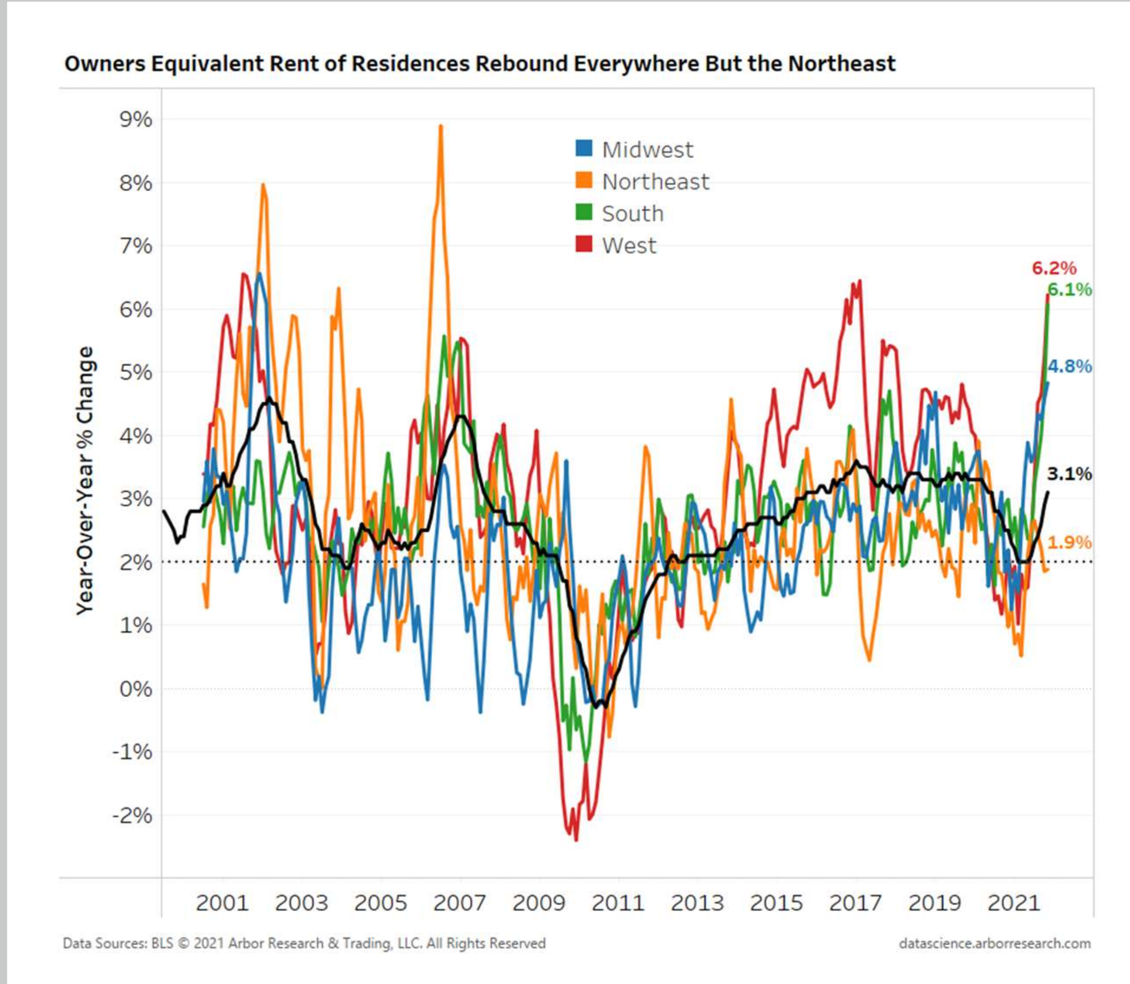
Passive Language Takes Over

- Words asking consumers and investors for patience with this inflation regime continue.
- We need to see a drop in both transitory and passive language to believe Fed officials are ready to hike rates.

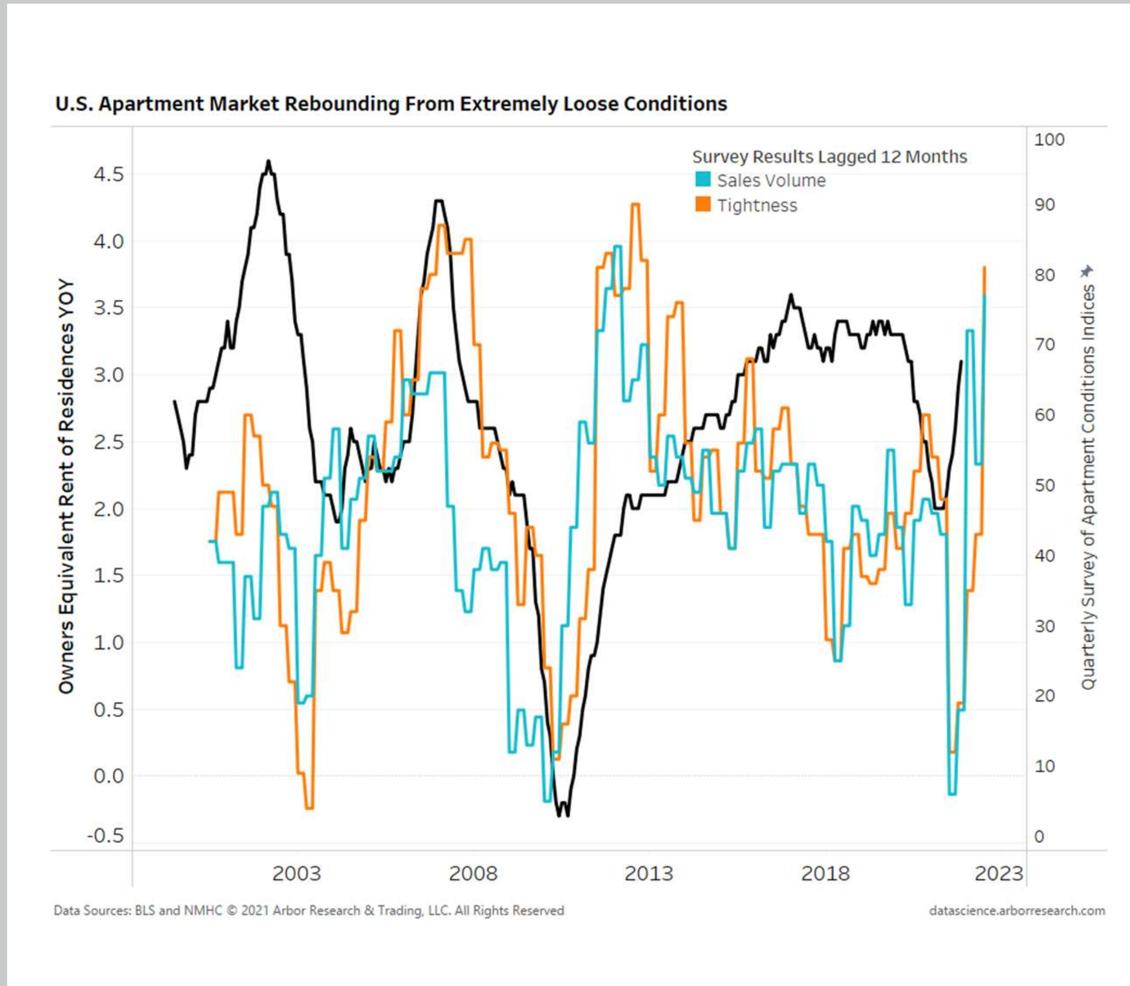


Shelter Inflation is Building

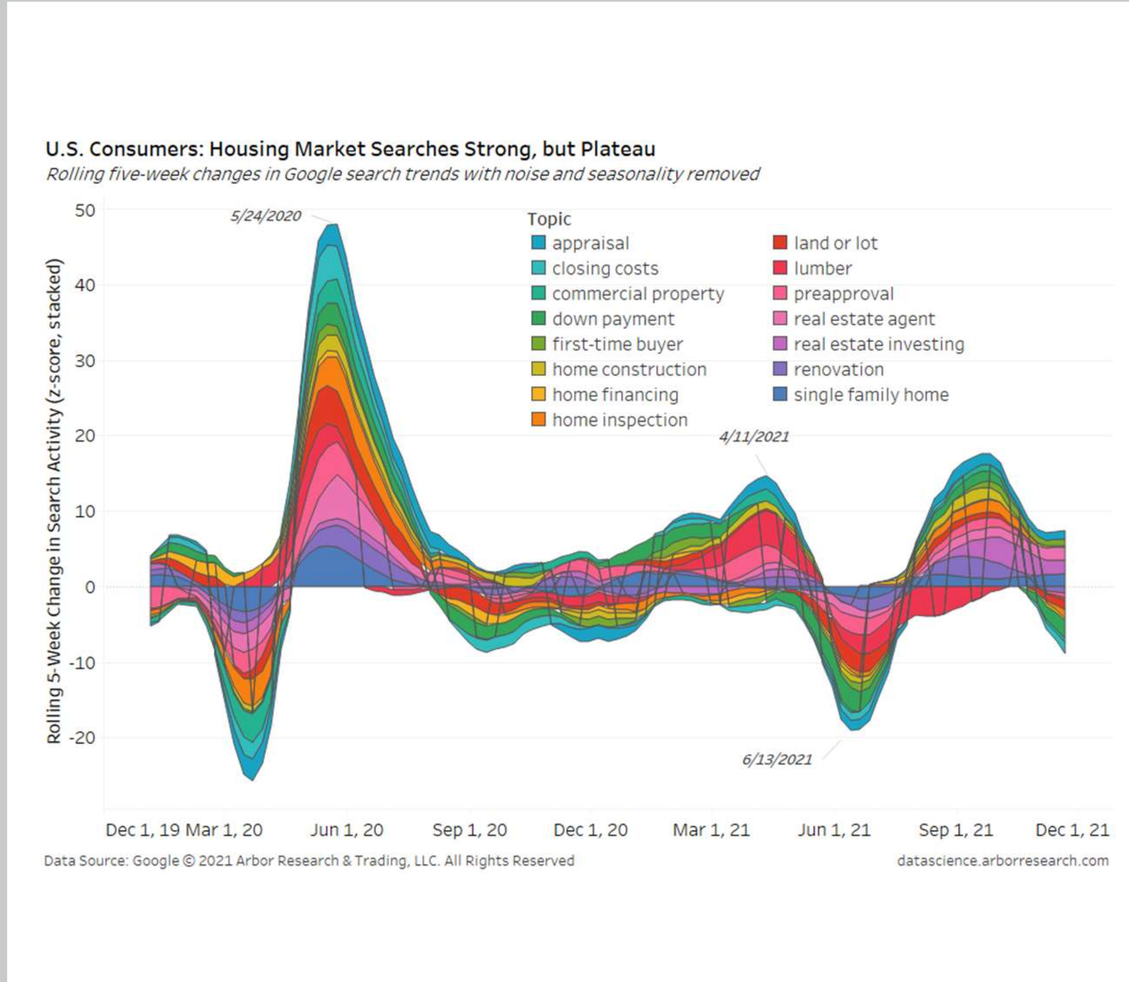
Northeast OER Lagging



Apartment Tightness Suggests ~5.5% YoY,
But Finally Begins to Improve



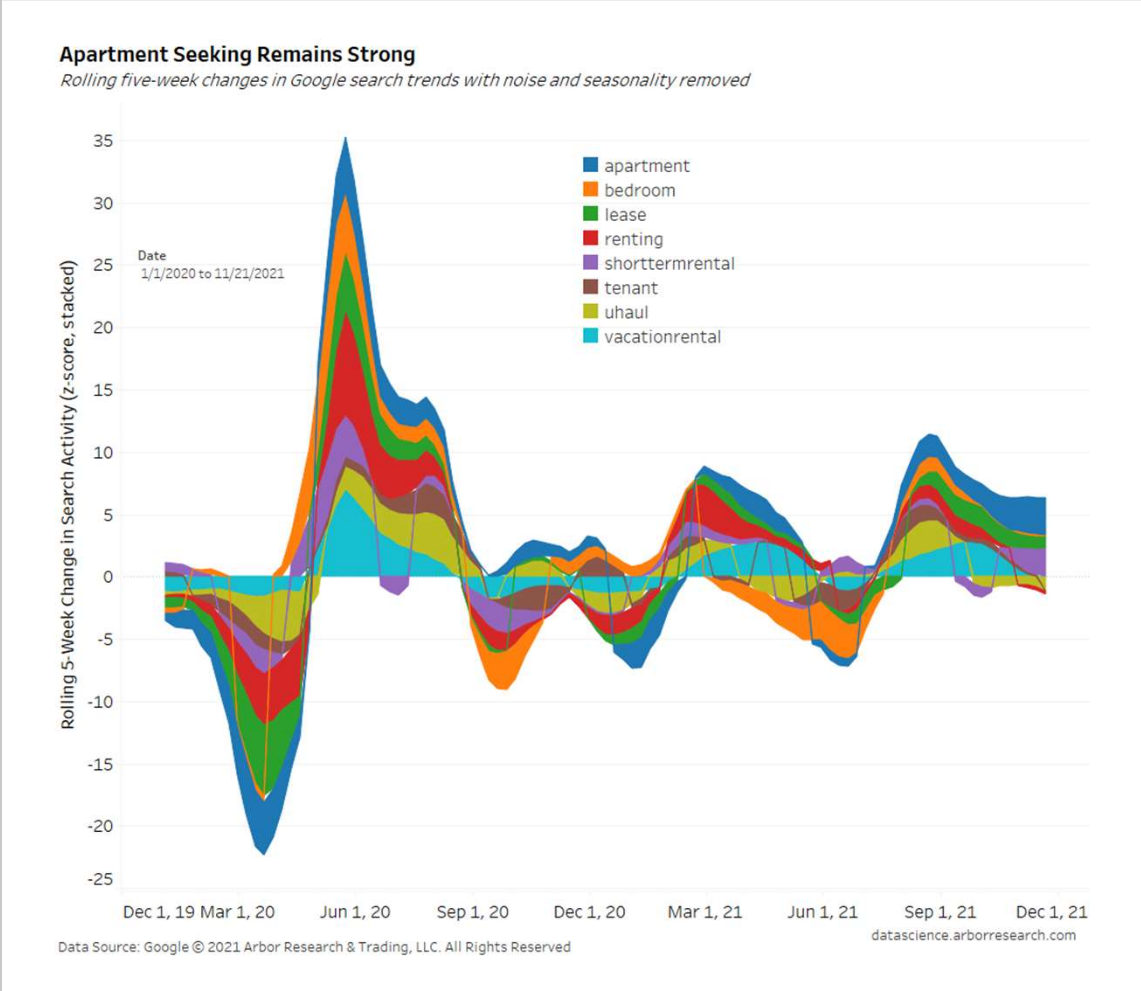
Housing Searches Surge, Suggesting Strong Demand



Rent Searches Revived Beginning in Mid-August

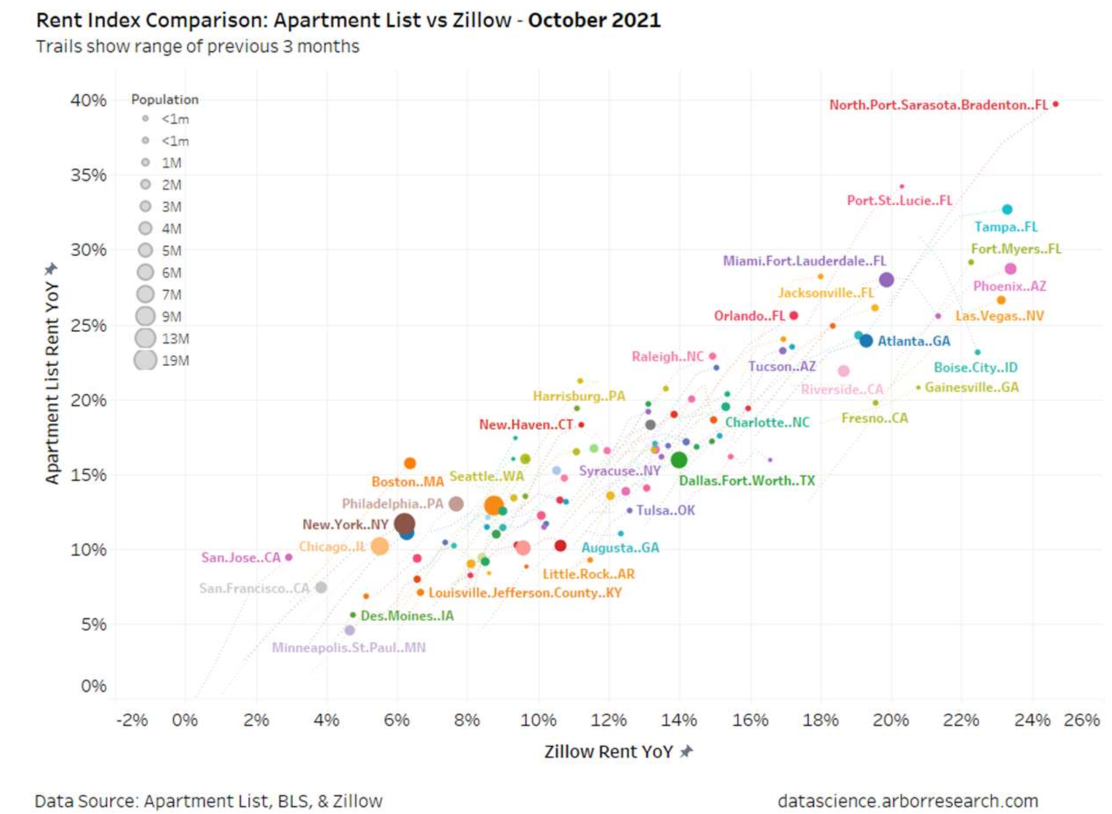
- Rent-favorable Google searches have rebounded in September, signaling renewed demand after a Delta variant retreat.

- We are watching favorable searches very closely as they tend to lead private rents by one to three months. Falling search activity (sub-zero z-score) would suggest shelter inflation (OER) would peak approximately 7 to 10 months ahead.



Now It's the Southeast's Turn to See Rampantly Rising Rents

- The chart compares YoY changes in Zillow and Apartment List rent estimates through September 2021.
- Many West Coast metros are finally seeing growth rates subside, while the Southeast catches fire.
- The biggest of the big metros are all posting positive growth.

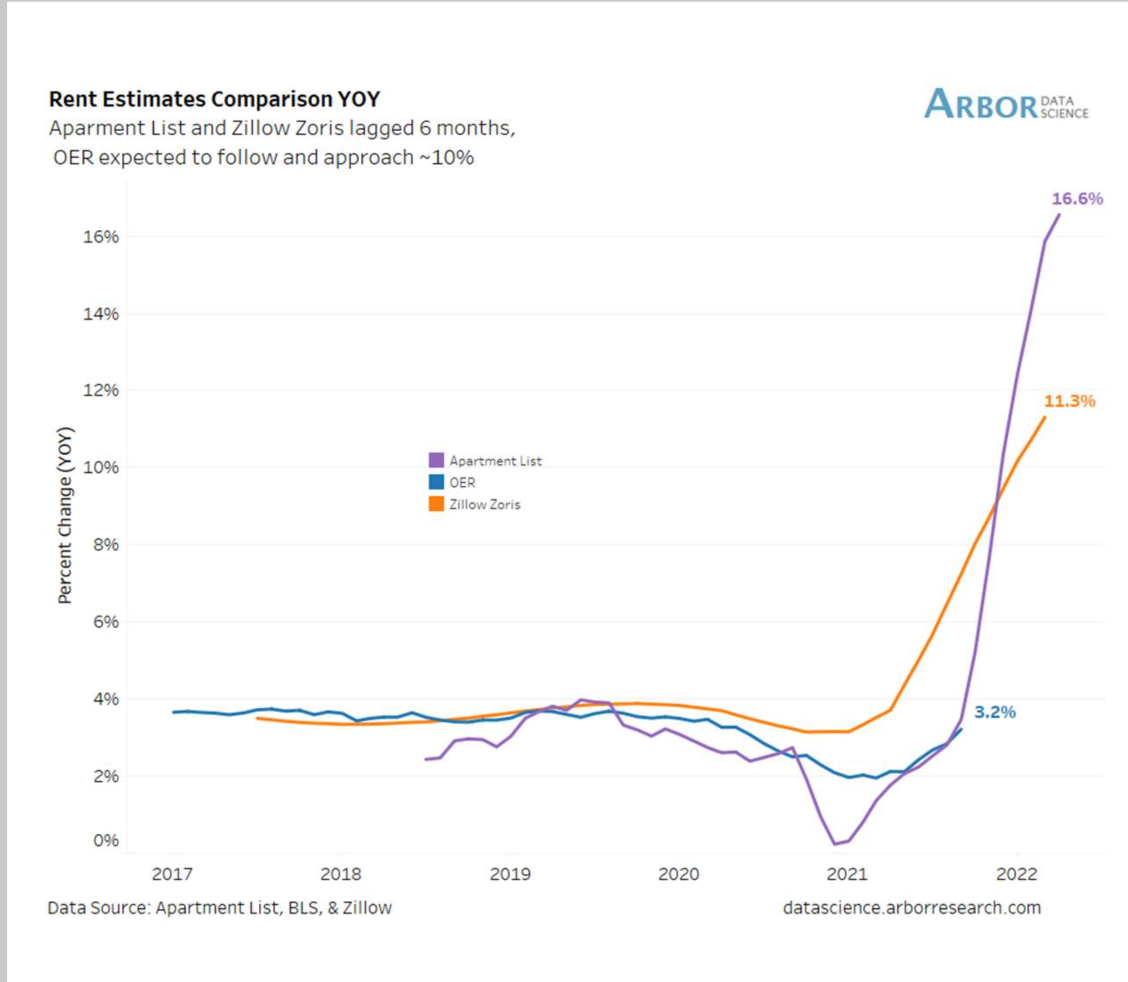


Apartment List and Zillow Rent Estimates Imply Big Rent Growth

- Rent estimates have a limited history from Apartment List and Zillow, which also have very different methods (e.g. collected vs asking rents).

- Lagging the moving averages of both data sets seemingly matches the slower moving OER. Meaning rising private rents will take time (potentially 12-18 months) to become reflected in OER.

- Private rents indicate OER could reside between 5.5% and 7% YoY by early 2022. However this assumes a one-for-one reflection, while a more dampened pace is most likely.

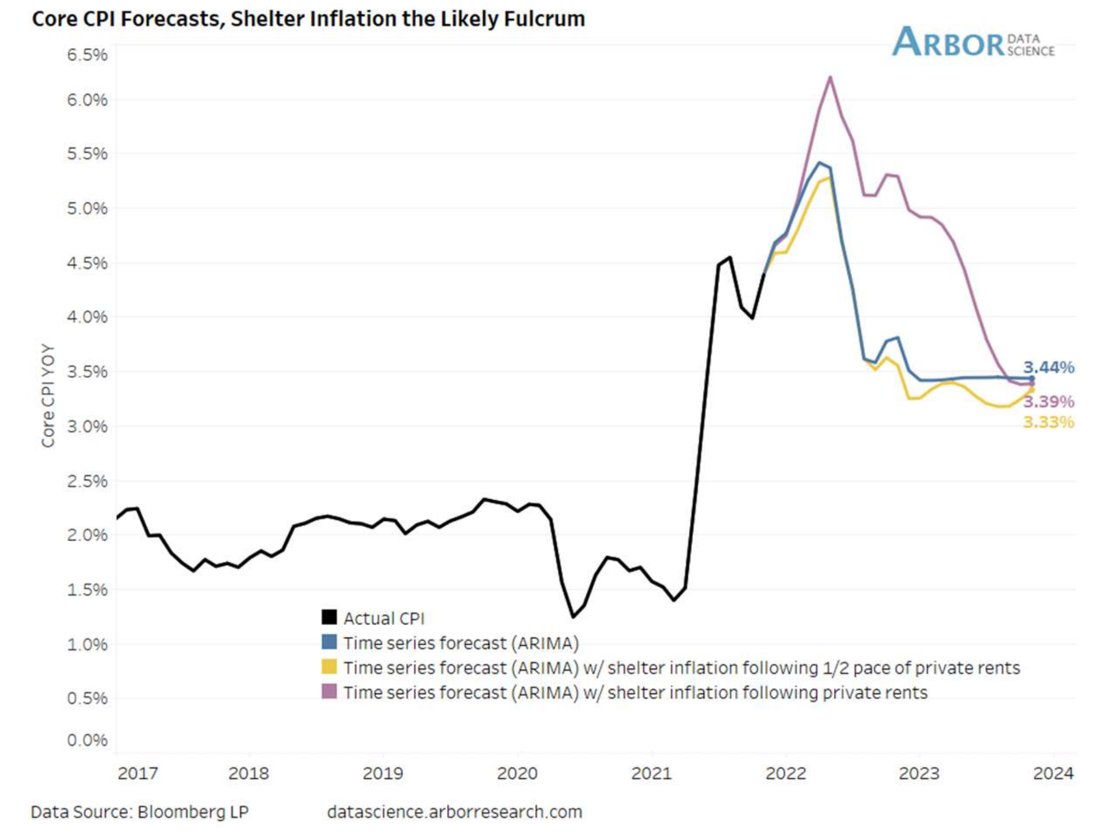


Impact of Rent on CPI

- We allow an ARIMA model to forecast all components away from OER of residences over the next two years.

- OER is then allowed to rise in line with expectations set by Apartment List and Zillow, as well as at half that pace.

- Bottom line, forecasting will be difficult for the year ahead. However the glide path for core inflation to ~3.5% YoY appears quite likely!

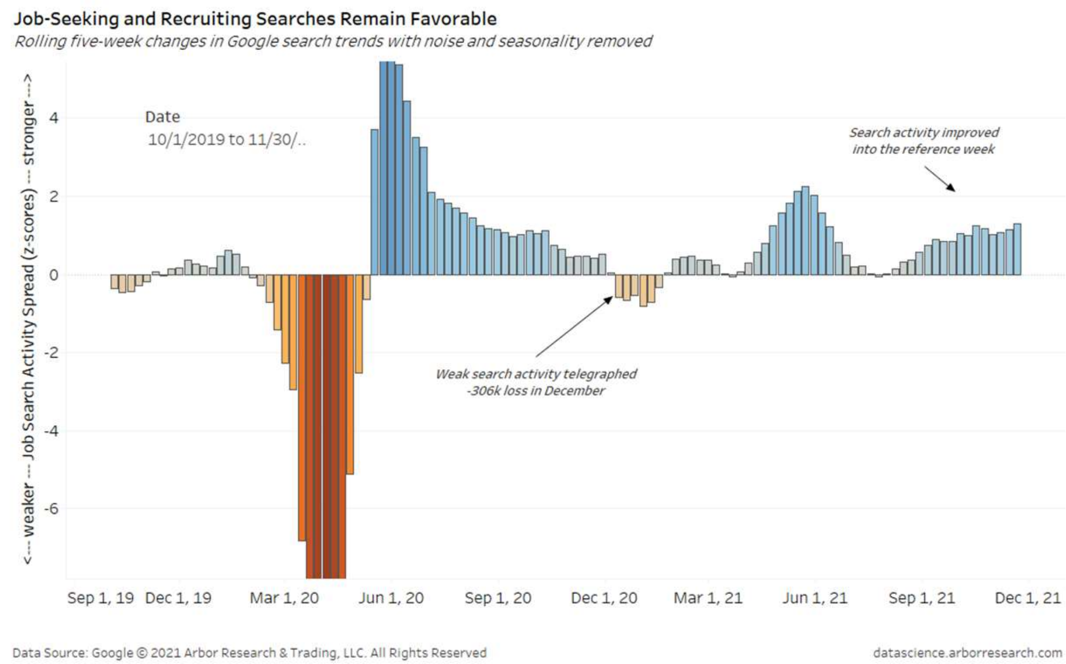


Never Count the Consumer Out

Job Searching Jumped Into October's Reference Week

- US search activity for topics relating to job-seeking have steadily improved since September, suggesting a consensus (548k) or better number for October.

- The spread between favorable and unfavorable search activity suggests labor demand is strong and weak prints should not persist.

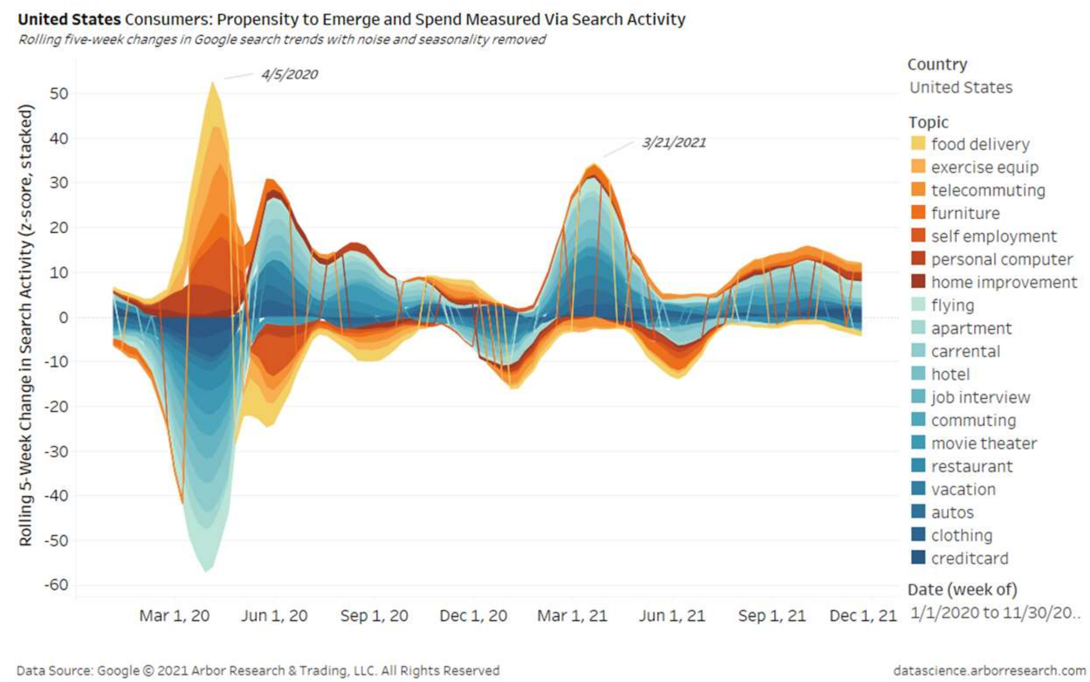


Consumers’ Intention to Spend Improving

- US search activity for topics relating going-out and staying-in items/services have improved into September before showing signs of slowing.

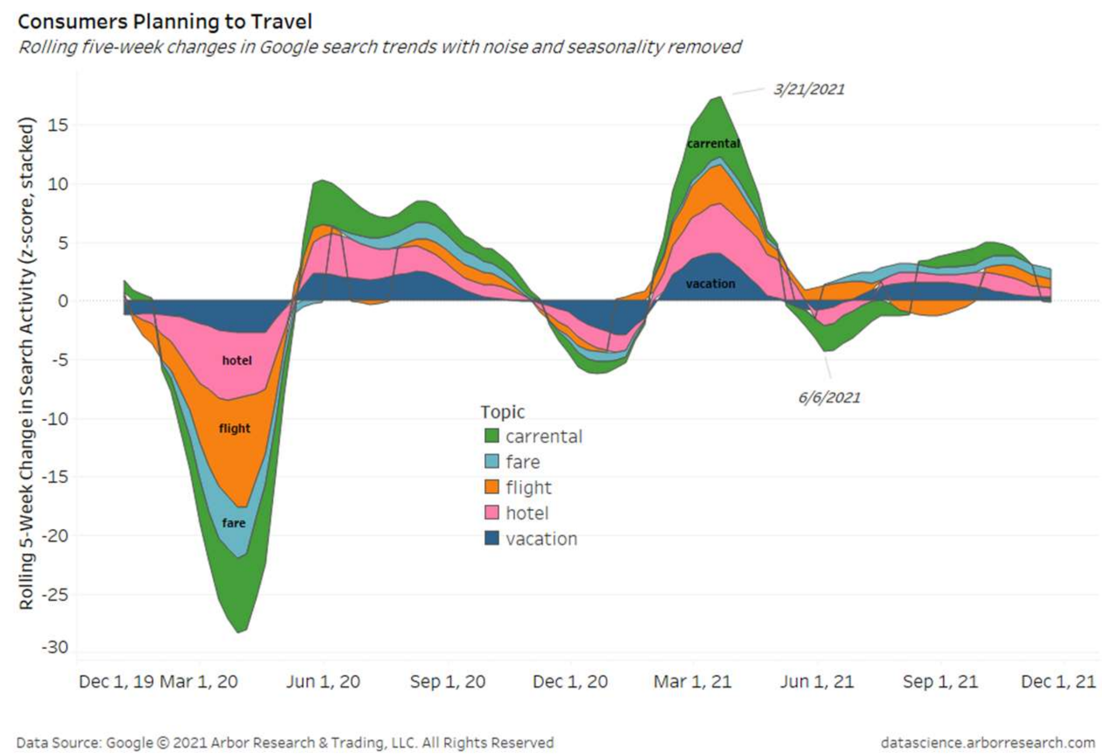
- Telecommuting remains a hot topic thanks to Delta, but consumers stand ready to spend.

- Delta has plateaued and is rolling over, but is poised to be upstaged by Omicron!



Consumer's Travel Plans Show Some Life

- US consumer search activity for travel is on the decline heading into the fall months.
- Searches for car rentals, fares, hotels, and vacation packages have waned in recent weeks.



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