U.S. Fixed Income Markets Weekly

Cross Sector *Phoebe White, Holly Cunningham, Liam Wash*
Extreme volatility in UK gilt yields led the BoE to intervene with temporary asset purchases as a financial stability measure. Gilt yields should be more stable, but the global policy backdrop remains uncertain. We review liquidity metrics across fixed income.

Governments *Jay Barry, Phoebe White, Afonso Borges, Liam Wash*
Valuations look cheap, but given a structural absence of demand and weak risk appetite, we remain neutral on duration. Fed tightening cyclicals and valuations support a flatter curve: maintain 2s/10s flatteners. We dive into the recent drop in Treasury liquidity. We continue to look for lower real yields: stay long Feb-51 TIPS.

Interest Rate Derivatives *Srini Ramaswamy, Ipek Ozil, Phil Michaelides, Mike Fu*
Swap spreads are considerably narrow to fair value – maintain wideners. Continue positioning for a steeper Eurodollar curve via box trades. Stay neutral on gamma on balance of risks. We discuss our preview for large banks' AOCI drawdowns ahead of 3Q22 earnings releases.

Short-Term Fixed Income *Teresa Ho, Pankaj Vohra, Holly Cunningham*
ON RRP usage hit another record high on Friday, increasing by $107bn to nearly $2.43tn. MMF AUMs could continue to rise, particularly heading into year-end. Fed funds volumes have increased by $44bn to about $110bn YTD, a level not seen since early 2018.

MBS and CMBS *John Sim*
Stay overweight current coupon MBS. We still think hiding out in SASB AAA floaters makes sense.

ABS and CLOs *Amy Sze, Rishad Ahluwalia*
ABS spreads widened on the week in line with the rest of credits amidst rate/market volatility.

Investment-Grade Corporates *E. Beinstein, N. Rosenbaum, P. Talreja, S. Doctor*
HG spreads hit new cycle wides this week as central bank actions led to heavy pension selling. We review the global pension landscape and the performance of high vs low dollar priced bonds this year.

High Yield *Nelson Jantzen, Tony Linares*
3Q's HY issuance totaling $18.9bn is tracking a low since 1Q09. We are adjusting our 2022 new-issue forecasts down due to the past months' significantly more hawkish Fed narrative and higher yield environment.

Municipals *Peter DeGroot, Ye Tian, Sabrina Spatz*
HG and HY muni indices outperformed similar term corporate indices, by an average of more than 4.5% and 10%, respectively, in past recessions. Default and rating transitions show better in economic downturns as well.

Emerging Markets *Luis Oganes*
In EM fixed income, we stay MW GBI-EM local rates and UW EMBIGD and CEMBI. EM bond flows were -$4.2bn (-1.09% of weekly AUM, down from -$2.6bn).

Fixed Income Strategy

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See page 171 for analyst certification and important disclosures.

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Summary of Views

SECTOR	CURRENT LEVEL Sep 30, 2022	YEAR-END TARGET Dec 31, 2022	COMMENT
Treasuries			
2-year yield (%)	4.21	4.45	Maintain 2s/10s flatteners.
10-year yield (%)	3.80	3.75	
Technical Analysis			
10-year TIPS breakevens (bp)	215	225	We expect breakevens to stabilize and form a new trading range.
10-year yield (%)	3.80	3.50	Look for the market form a new range following the late-3Q blowoff move.
TIPS			
10-year TIPS breakevens (bp)	215	235	Hold longs in Feb-51 TIPS.
Interest Rate Derivatives			
2-year SOFR swap spread (bp)	-1	10	Swap spreads are considerably narrow to fair value – maintain wideners. Continue positioning for a steeper Eurodollar curve via box trades. Stay neutral on gamma on balance of risks. We discuss our preview for large banks' AOCI drawdowns ahead of 3Q22 earnings releases.
5-year SOFR swap spread (bp)	-23	-25	
10-year SOFR swap spread (bp)	-23	-25	
30-year SOFR swap spread (bp)	-69	-40	
Agency MBS			
FNMA 30yr 5.5% Front Tsy OAS (bp)	58	50	Stay overweight current coupon MBS.
RMBS Credit			
CRT M1B/M2	1MS + 500bp	1MS + 415bp	Mortgage credit spreads continue to move wider. 2.0, non-QM AAA and CRT M1/M2 are all attractive, depending on risk profile. CRT M2s are 150-200bp wider than mid-August tights.
RMBS 2.0 PT	2-08bk of CK (3s)	2-16bk of CK (3s)	
AAA RPL	I + 185bp	I + 200bp	
AAA Non-QM	I + 220bp	I + 250bp	
ABS			
3-year AAA card ABS to Treasuries (bp)	50	50	We like the spread pickup in BBB subprime auto and AAA private credit student loan ABS.
CMBS			
10yr new issue LCF AAA spread to Treasuries (bp)	147	140	Conduit CMBS spreads have continued to hold in reasonably well, while Agency CMBS has continued to widen in sympathy with Agency mortgages.
Investment-grade corporates			
JULI spread to Treasuries (bp)	185	150	HG spreads are at YTD wides and likely to remain wide so long as rate volatility is high.
High yield			
Domestic HY Index spread to worst (bp)	579	525	We expect decompression among ratings to extend in 4Q.
Credit Derivatives			
High Grade (bp)	107.5	100	Synthetics are trading around recessionary levels and appear cheap relative to cash bonds
High Yield	$96/607bp	600bp	
Short-term fixed income			
SOFR* (%)	2.96	3.80	The supply-demand mismatch in the money markets should persist. ON RRP balances, along with MMF AUMs, could continue to rise in 4Q, as T-bills and SOFR continue to trade through RRP.
3m T-bill (%)	3.30	4.15	
3m Libor (%)	3.75	4.50	
CLOs			
US CLO Primary AAA (Tier 1, bp)	195	SOFR + 200	We believe spreads will be floored by more expensive funding in a new normal of financial tightening and less plentiful liquidity, with spreads reflecting a growth slowdown. This is still playing out, but we affirm the 200bps new issue US CLO AAA target.
Municipals			
10-year muni yield (%)	3.30	3.20	In 2H22, we expect credit tailwinds will largely persist. We recommend to buy the dips against a volatile rate/flow backdrop, hug benchmarks/peer composition, and overweight cheaper 3-4% coupons, airports, New York, AMT, Hosp & HSG. Stay with short-calls, and short-intermediate spread product.
30-year muni yield (%)	3.90	3.80	
Emerging Markets			
Hard currency: EMBIG Div (bp)	569	575	UW EMBIGD
Hard currency: CEMBI Broad (bp)	397	375	UW CEMBI Br
Local currency: GBI-EM yield (%)	7.36%	6.88%	MW local rates

* SOFR forecast reflects 1-month trailing average

Source: J.P. Morgan

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Cross Sector Overview

- Extreme volatility in UK gilt yields led the BoE to intervene with temporary asset purchases as a financial stability measure. Gilt yields should be more stable, but the global policy backdrop remains uncertain
- Given increased volatility, we review liquidity metrics across fixed income. Treasury market depth has deteriorated, and bid-ask spreads are wider in MBS. HG credit market liquidity does not look impaired
- **Treasuries:** Valuations look cheap, but given a structural absence of demand and weak risk appetite, we remain neutral on duration. Fed tightening cyclicals and valuations support a flatter curve: maintain 2s/10s flatteners. We continue to look for lower real yields: stay long Feb-51 TIPS
- **Derivatives:** Swap spreads are considerably narrow to fair value—maintain wideners. Continue positioning for a steeper Eurodollar curve via box trades. Stay neutral on gamma on balance of risks. We discuss our preview for large banks' AOCI drawdowns ahead of 3Q22 earnings releases
- **Short-Term:** ON RRP usage hit another record high on Friday, increasing by $107bn to nearly $2.43tn. MMF AUMs could continue to rise, particularly heading into year-end. Fed funds volumes have increased by $44bn to about $110bn YTD, a level not seen since early 2018
- **MBS:** The surge in mortgage rates has again moved origination to higher coupons, though it has been somewhat sticky in 5.5s relative to what a normal primary/secondary spread would imply. Stay overweight current coupon MBS
- **High Grade Credit:** Markets weakened as focus turned to the UK pension system with the policy response sparking a rally in credit spreads. Hedges responded more than underlying cash spreads though, with CDX tighter while the sharp push lower in UST yields led to wider bond spreads
- **Near-term catalysts:** Russia-Ukraine conflict (ongoing), September employment (10/7), September FOMC minutes (10/12), September CPI (10/13)

V for volatility

Over the past week, all eyes have been on the events unfolding in the UK, where long-end yields on both conventional and inflation-linked Gilts recorded historic moves through early Wednesday, before a policy response from the BoE drove yields sharply lower. This volatility spilled over to US Treasuries, with 5-year yield posting the largest daily move since the GFC on Wednesday, and 10-year yields traversing a 30bp range over the course of the week, as they continue to move within the shadow of Gilts (**Exhibit 1**). Specifically, the BoE issued a statement before the US open on Wednesday that it would postpone gilt sales until October 31 (previously set to begin next week) and engage temporary gilt purchases until October 14th "on whatever scale is necessary…at an urgent pace" in order to restore financial stability. Specifically, the yield rise that kicked off last week following the BoE MPC meeting and the unveiling of the Truss tax plan resulted in margin calls among LDI funds that manage pension fund assets and employ a significant use of derivatives. Thus,

Must Read This Week

This is not the QE you think it is: BoE intervention, LDI collateral and long end UK rates, Francis Diamond, et al, 9/30/22

US: Enter the slowdown: coming to a factory town near you, Michael Feroli, 9/29/22

UK: Another last chance to avoid recession, Allan Monks, 9/28/22

And Now Hear These…

At Any Rate – GBP vol shocks, vulnerabilities and valuations, Ladislav Jankovic, et al, 9/30/22

Cross Asset Strategy: How to position in UK rates and GBP after the colossal moves, Thomas Salopek, et al, 9/29/22

At Any Rate – Japan's Solitary Journey in a Volatile World, Tohru Sasaki, et al, 9/29/22

All into Account: Back to School Essentials – Putin's partial mobilization, Joyce Chang, et al, 9/27/22

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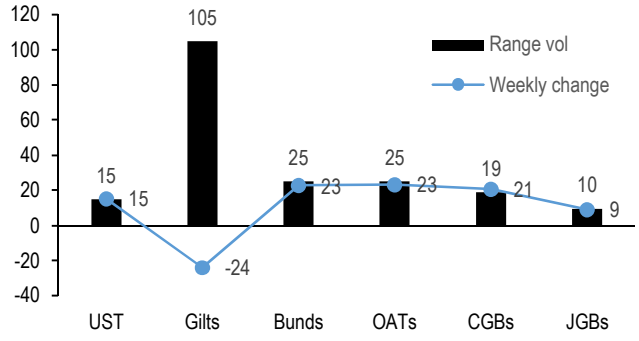
central bank's intervention on Wednesday was driven by concerns about potential fire sales of assets and a resulting liquidity spiral.

These developments were unique in a number of respects, and we don't see the same fragilities outside of the UK, for a number of reasons. First, the initial sell-off reflected market concern over the government's medium-term fiscal sustainability, as the ill-timed fiscal policies announced last Friday appeared to be at odds with the central bank's inflation-fighting efforts. Second, the UK has the second largest asset base after the US, the UK pension fund allocations to long-dated fixed income have climbed to 72% in recent years (**Exhibit 2**), compared to a 51% allocation by US pension funds as of the 2022 Milliman pension study. And third, the heavy use of derivative overlays made them even more vulnerable as our credit strategists note that the lack of domestic fixed income supply, for example, accentuated the need to take FX risk in search for fixed income yield (see *JPM Daily Credit Strategy & CDS/CDX am update*, Eric Beinstein, 9/29/22). However, the rest of the world is exposed to spillover effects from the events unfolding in the country. Importantly, in the US, financial conditions have tightened further, and dollar appreciation remains a concern, especially given the collapse in sterling earlier this week, coming on the heels of the MoF's FX intervention against JPY weakness last week. Our economists note that the 12% YTD surge in the dollar is expected to result in a 1%-pt drag on US GDP growth next year (see *US: Enter the slowdown: coming to a factory town near you*, Michael Feroli, 9/29/22).

Exhibit 1: DM government bonds carved out a wide range this week, driven by volatility out of the UK, and Treasury yields finished the week higher

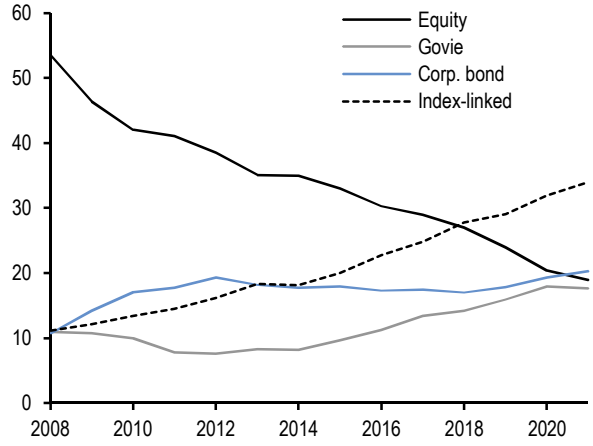
Weekly close to close range in various 30-year DM Government bond yields vs weekly changes, 9/23/22-9/30/22; bp



Source: J.P. Morgan

Exhibit 2: De-risking out of equities into fixed income is a long-term trend for DB pension schemes with index-linked gilt holdings as the largest proportion of assets

PPF pension fund asset allocation, weighted by PF scheme size; annual data; %



Source: PPF

Looking ahead, our colleagues in UK strategy argue that long-end Gilt yields should remain somewhat more stable going forward, as the political landscape should modestly improve over the coming weeks, allowing the BoE to conclude its temporary purchases (see *This is not the QE you think it is*, Francis Diamond, 9/30/22). However, away from the US, our colleagues in Tokyo argue that Governor Kuroda's dovish guidance runs at odds with the BoJ's own forecasts of rising price pressures, but in order for the BoJ to minimize the impact of declining JGB liquidity, it needs to dampen policy normalization expectations. They believe this policy mix is inherently unsustainable and that it is entering its final chapter. Thus, they now expect the BoJ to adjust its YCC in March 2023 (versus mid-2023 previously), with the risks skewed toward an earlier move (see *Japan: BoJ's YCC approaching its*

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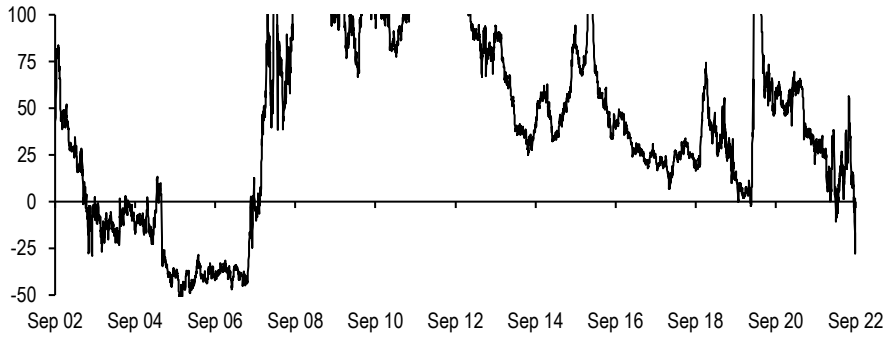
final chapter, Ayako Fujita, 9/28/22). **Thus, while the near-term risks of a further disruptive move in yields coming from global factors have been reduced, policy uncertainty outside the US remains high.**

Against this backdrop, we remain neutral on duration at current levels. Treasury valuations remain somewhat cheap, but demand technicals remain a headwind, as the Fed, banks, and foreign investors have all stepped back from the market this year. However, given historical evidence that the curve should flatten through the end of the tightening cycle, and the curve somewhat steep to its drivers, we maintain 2s/10s flatteners (see *Treasuries*). We also maintain longs in 30-year TIPS, which appear substantially cheap versus nominal Treasuries at current levels (see *TIPS*).

Similar to the technical challenges facing Treasury markets, we continue to highlight the dearth of reliable buyers of mortgages going forward. With the Fed and banks largely out of the picture, at least for the time being, there's no one to serve as a firm backstop and police mortgage spreads. Prior to the GFC, the GSEs played the role of market stabilizer, but their shrunken portfolios and tighter mandate precludes them from that sort of buying now. All this points to a somewhat higher resting level for the mortgage/Treasury basis—and potentially for other related assets like IG corporates, which finally caught up with some of the mortgage widening over the past few days (**Exhibit 3**). Nonetheless, we remain overweight FN 5.5s for now given attractive spread valuations, while lower coupons still look relatively rich (see *MBS*).

Exhibit 3: Mortgage ZVs outpaced IG widening this week, pushing the credit-mortgage spread to the most inverted levels since before the GFC
Spread between JULI 3-5yr portfolio and Zero volatility CC; bp



Source: J.P. Morgan

With Treasuries and mortgages cheapening sharply recently, a frequently asked question is whether they now offer more value than HG credit. Regarding Treasuries, the negative arguments towards Credit center on the percent of yield pickup one gets in owning credit rather than owning Treasuries. We have never been a proponent of this argument, as history shows almost no correlation between the level of UST yields and HG credit spreads. The owners of HG credit have historically bought HG bonds at all different UST yield levels, and the tightest period of HG bond spreads was actually when UST yields were considerably higher than they are this week. That said, there has been a strong correlation between the volatility in UST markets and HG credit spreads, and the elevated volatility this week is contributing to spread weakness (see *Corporates*).

Turning to interest rate derivatives, with the rise in delivered volatility this week, implied volatility has risen, though it fell from midweek highs following the BoE

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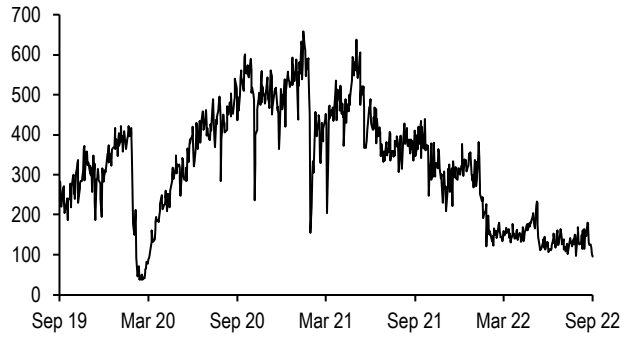
intervention. From here, we think risks to vol remain balanced: Recent Fed-speak remains committed to tightening but suggests we could be on the cusp of a slowdown in pace, which would support declines in volatility. On the other hand, jump risk remains high and exogenous factors loom large. Thus, we stay neutral on vol for now. Separately, this week's dislocations have left swap spreads considerably narrow to fair value in all sectors even after the late-week retracement. We find value in positioning for wider swap spreads across the curve (see *Interest Rate Derivatives*).

Money market watchers may have noticed that fed funds volumes have increased by $44bn to about $110bn year-to-date, a level not seen since early 2018. While this could be the initial signs of reserve scarcity, as banks are more actively borrowing in the wholesale funding markets, we think there is still some runway to go before we meaningfully start to see a narrowing in the EFFR/IORB spread. Indeed, even as volumes picked up this year, EFFR has stayed steady throughout, suggesting that there is still enough liquidity in the banking system. Normally, in a reserve-scarcity scenario, there should be a positive correlation between volumes and rates (see *Short-Term Fixed Income*).

Liquidity update

Given the volatility in macro markets this week, we think it's worth taking a look at liquidity metrics across fixed income. Starting with Treasury markets, our two preferred measures of liquidity are market depth and price impact. Market depth effectively measures how much can be traded at any given price level during the most liquid point of the US trading session, and price impact measures how much each Treasury trade moves the market. Not surprisingly, both metrics show liquidity conditions are relatively impaired right now: **Exhibit 4** shows that market depth this week declined to the lowest levels since April 2020. Similarly, **Exhibit 5** shows that the footprint of each trade in the Treasury market has increased recently, and remains elevated as well, also hovering near the highest levels seen since the spring of 2020.

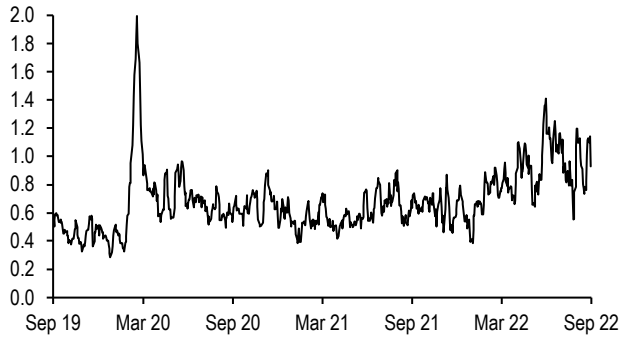
Exhibit 4: Market depth had reached YTD lows this week, underscoring relatively depressed liquidity conditions…
Duration-weighted Treasury market depth*; 5-day moving average; $mn 10-year Treasury equivalents



* Market depth is the sum of the three bids and offers by queue position, averaged between 8:30 and 10:30am daily. This is the sum of 2-, 5-, 10-, and 30-year depth in 10-year equivalents

Source: J.P. Morgan, BrokerTec

Exhibit 5: …and price impact has moved higher as well, indicating the footprint of each trade in the Treasury market has risen
10-year Treasury price impact, 5-day moving average; 32nds



* Price impact defined as the average move in order book mid-price against a $100mn flow in traded notional. See Drivers of price impact and the role of hidden liquidity, J. Younger et al., 1/13/17 for more details.

Source: J.P. Morgan, BrokerTec

What is driving the illiquidity in the government bond market? At its root, we think elevated macro policy uncertainty related to the expected path of monetary policy in the US and globally, as well as the interaction with fiscal policy, are all keeping implied volatility in US rates markets elevated near the highest levels since the GFC.

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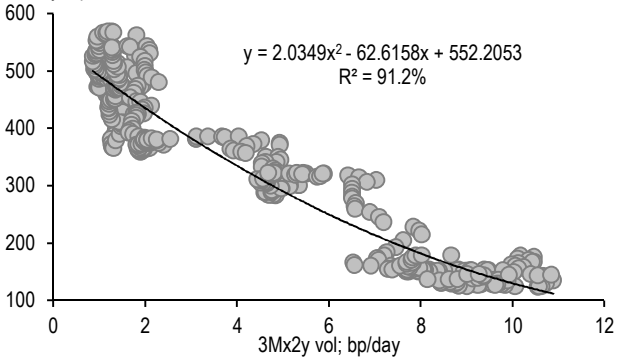
This matters because volatility has a pronounced impact on liquidity: Treasury market liquidity remains highly sensitive to volatility, with depth decreasing as volatility increases, and vice versa (**Exhibit 6**). Moreover this dynamic has only become more pronounced in recent years given the growing dominance of algorithmic traders on interdealer trading platforms (see *Far from the shallow now? Liquidity provision by high frequency participants in US rates*, 4/12/19). Given this historical relationship and increased sensitivity in recent years, it's not surprising that market depth has been sitting at levels that had been reserved for crises in the past.

Perhaps a more concerning liquidity measure is the dispersion in off-the-run Treasury yields, which is sitting well above levels observed in March 2020. **Exhibit 7** shows the root mean square error of our Treasury curve (RMSE), which we use to monitor dispersion and liquidity in off-the-run Treasuries. Dispersion has in aggregate risen modestly in the last week, and in most sectors of the curve, remains close to its highest levels over the last 3 years. However, this is not a new phenomenon and dispersion is broadly lower than the highest levels observed this summer. As we've noted in the past, this reflects a reduced ability for dealers to warehouse these more financing-intensive off-the-run securities. Importantly, intermediation hasn't kept pace with the growth of the Treasury market, which is now 50% larger since the initial COVID-19 outbreak. While the number of primary dealers is now larger than at any point since the turn of the century, risk-taking capacity has not grown commensurately as dealer positions represent less than 1% of total outstanding Treasuries, significantly below the pre-crisis peak. We continue to argue that these bouts of illiquidity will be commonplace until a more concerted effort is made to strengthen market resiliency and increase intermediation to keep up with the ongoing growth of the Treasury market.

Exhibit 6: Treasury market liquidity remains very sensitive to volatility, and will not improve significantly until macro policy uncertainty fades

Duration-weighted Treasury market depth*; 1-month moving average; regressed on 3Mx2Y implied swaption vol (bp/day), regression over the 2 years; $mn 10-year Treasury equivalents



* Market depth is the sum of the three bids and offers by queue position, averaged between 8:30 and 10:30am daily. This is the sum of 2-, 5-, 10-, and 30-year depth in 10-year equivalents

Source: J.P. Morgan, BrokerTec

Exhibit 7: In most sectors of the curve, RMSE remains close to its highest levels in over three years

Root mean square error* of J.P. Morgan Treasury curve, by sector and overall, 1-week change with 3-year statistics; bp unless otherwise indicated

Sector	Last	1wk chg	3y min	3y max	Percentile
0-2.25y	12.1	-4.7	0.8	59.3	83%
2.25-4.5y	2.6	0.1	0.4	2.9	99%
4.5-7y	4.2	0.0	0.3	4.6	99%
7-20y	6.8	-0.9	0.8	9.6	90%
20-30y	3.9	0.0	0.6	6.3	87%
Overall	4.1	-0.2	0.6	5.1	92%

* see The new and improved Treasury par curve model, 7/16/18

Source: J.P. Morgan

In mortgage space, it appears that transaction costs have increased. Utilizing TRACE data, we can estimate bid/ask spreads for Fannie 15- and 30-year as well as Ginnie 30-year bonds. While spreads are below their local wides in June, they have been widening out again recently and remain well above average levels of the last couple of years (**Exhibit 8**). More generally, the price action in MBS OAS this week

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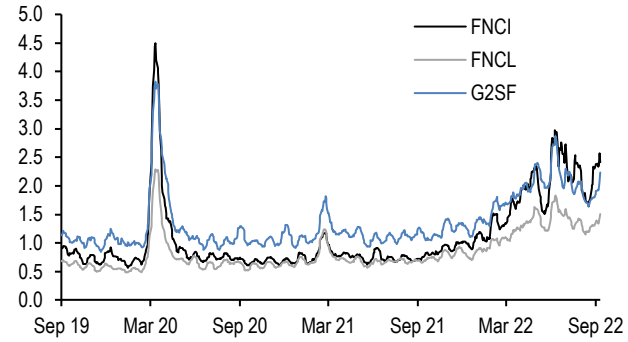
provided a sharp lesson in the new technical dynamics in the mortgage market. At least for the time being, there's no one to serve as a firm backstop and police mortgage spreads. The Fed finished tapering its reinvestments a few weeks ago. Meanwhile, banks are still siphoning away net supply via loan demand, but even as current coupon spreads hit 70 OAS earlier in the week, they showed no interest in serving as the marginal buyer. The leverage and risk capital constraints facing many of the largest institutions have made adding MBS (and duration broadly) sub-optimal, and that will continue to be the case for some time. Prior to the GFC, the GSEs played the role of market stabilizer, but their shrunken portfolios and tighter mandate precludes them from that sort of buying now. Foreign demand rarely serves as a relative value shock absorber, and recent monetary policy development have brought even the direction of that flow into question.

That's left money managers and lifers to face off against origination mostly on their own. When there are sharp moves to higher yields, the prospect of outflows can make it tougher for money managers to absorb more bonds, potentially linking sharp selloffs and spread widening in the current environment. Spread moves can cause mREIT deleveraging, which can in turn create these air pockets without significant demand. Dealers, meanwhile, continue to be hampered by SLR constraints, making it challenging for them to provide enough balance sheet to be a stabilizing force into big moves.

Exhibit 8: Bid-ask spreads have widened within the mortgage space, indicating increased transaction costs

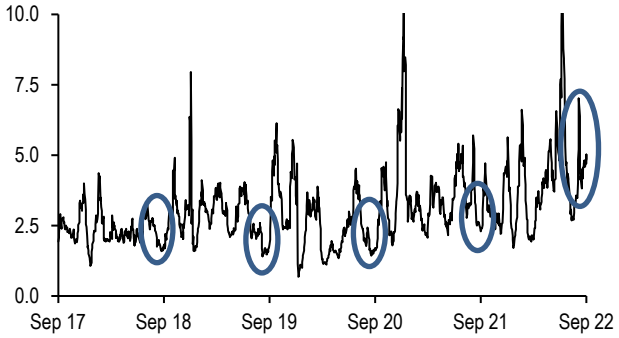
Bid-Ask spread for Fannie 15- and 30-year as well as Ginnie 30-year bonds; bp



Source: FINRA, J.P. Morgan

Exhibit 9: Corporate bond trading volumes have been unseasonably elevated

Issuance weighted trading volumes*, Septembers highlighted; $bn



* 21-day average of daily total trading volumes divided by issuance

Source: FINRA, J.P. Morgan

Lastly, turning to credit markets, the extreme volatility in yields this week has not seemed to impair liquidity, at least in the high-grade space: the past 4 days have been the most active trading days for HG credit since the end of Q1 2022 with $135bn trading and the 7th most active 4-day period ever. On the other hand, HY volumes are -22% versus that same period at end of Q1. More broadly, TRACE data show that corporate bond trading volume has remained elevated this month, especially given the muted primary issuance this month, which historically tends to be a key driver of secondary volumes (**Exhibit 9**).

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Cross-Sector Monitor

Exhibit 10: Treasury yields rose sharply, and the curve steepened; equities fell again week over week

Current levels, change since 9/23/22, 1-year average, minimum, maximum, and current z-score for various market variables; units as indicated

		Current	Chg from 9/23	1Y avg	1Y min	1-year range: ●9/30/22 ▲9/23/22 ═1M range	1Y max	Z-score
Global equities (level)	S&P 500	3586	-2.9%	4287	3586		4797	-2.3
	E-STOXX	3318	-0.9%	3879	3279		4401	-1.9
	FTSE 100	6894	-1.8%	7350	6882		7672	-2.5
	Nikkei 225	25937	-4.5%	27643	24718		30184	-1.6
Sovereign par rates (%)	2Y US Treasury	4.27	-0.7	2.04	0.26		4.39	1.9
	2Y Germany	1.64	-11.4	-0.03	-0.84		1.84	2.4
	2Y JGB	-0.05	2.2	-0.08	-0.13		-0.01	1.0
	10Y US Treasury	3.79	11.1	2.37	1.35		3.93	2.1
	10Y Germany	2.09	9.8	0.56	-0.43		2.18	2.1
	10Y JGB	0.33	1.0	0.21	0.06		0.36	1.5
Funding spreads (bp)	2Y EUR par swap/gov't spd	117	-0.4	67	30		125	2.0
	2Y USD par swap/gov't spd	21	-12.8	24	8		42	-0.3
	EUR FRA-OIS spd	5	0.2	1	-7		13	0.7
	USD FRA-OIS spd	29	1.8	19	5		36	1.0
	1Y EUR-USD xccy basis	-26	-0.2	-16	-32		-3	-1.6
	1Y USD-JPY xccy basis	-43	-4.5	-26	-47		-12	-2.0
Credit spreads (bp)	30Y FNCL 4.5% Front Tsy OAS*	38	-5.9	14	-26		54	1.5
	10Y AAA new issue CMBS spd to swaps*	142	4.0	98	62		145	1.7
	3Y AAA card ABS spd to Libor	55	5.0	30	11		55	2.0
	JULI portfolio spd to Tsy	185	15.1	144	106		190	1.7
	JPM US HY index spd to worst	575	26.6	456	368		637	1.8
	EMBIG Div spd to worst	560	42.7	439	347		594	1.8
	CEMBI Broad spd to worst	389	29.1	332	262		446	1.2
	iBoxx Euro HG spd to govies*	114	8.2	87	60		114	1.7
	US Financials spd to Tsy	170	18.0	118	74		174	1.8
	Euro Financials spd to govies	212	19.5	134	76		212	1.9
	10Y AAA muni spd to Tsy	-50	8.2	-39	-68		14	-0.7
	10Y AA taxable muni spd to Tsy*	122	7	86	49		122	1.4
Currencies	EUR/USD*	0.977	0.6%	1.084	0.962		1.168	-1.9
	USD/CHF*	0.981	-0.1%	0.945	0.910		1.005	1.5
	USD/JPY*	144.60	0.9%	124.55	110.89		144.71	1.9
	JPM Trade-weighted USD index	135.80	0.2%	125.42	120.10		136.70	2.4
	GBI-EM Global FX index	79.63	-0.3%	85.97	78.62		89.01	-2.3
	Bitcoin spot	19425	3.0%	37659	18731		67734	-1.3
Commod-ities	Gold futures ($/t oz)	1659	0.8%	1816	1624		2043	-2.0
	Brent oil futures ($/bbl)*	88.49	2.7%	96.48	68.87		127.98	-0.6
	LME Copper 3M rolling forward ($/tonne)*	7542	1.5%	9194	7170		10674	-1.8

* 9/29/22 levels for 30Y FNCL, AAA CMBS, iBoxx Euro HG, AA taxable munis, EUR/USD, USD/CHF, USD/JPY, brent oil, and copper; 9/30/22 levels for all others

Source: J.P. Morgan, Bloomberg Finance L.P., ICE, IHS Markit

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Exhibit 11: Year-to-date returns are negative all around, except for cash

Returns on various fixed income indices, current YTD and since last publication; %

Index	Since last publication (9/23/2022)	Year-to-Date
USD Cash	0.03%	0.5%
Aggregate GABI	-2.19%	-21.8%
UST Agg	-0.69%	-13.4%
UST 1-5y	-0.07%	-5.8%
UST 5-10y	-0.61%	-14.4%
UST 10y+	-2.49%	-31.2%
UK	-1.67%	-18.3%
Germany	0.15%	-28.5%
Italy	0.19%	-29.2%
Japan	-1.42%	-24.9%
EM Sovereign	-2.17%	-22.2%
Agencies	-0.20%	-7.1%
FN 3.0%	-0.78%	-14.8%
FN 2.5%	-0.69%	-16.9%
FN 2.0%	-0.67%	-18.6%
ABS Fixed	-0.02%	-3.7%
HG Bonds	-1.52%	-18.1%
AAA	-1.48%	-19.3%
AA	-1.48%	-17.4%
A	-1.46%	-17.1%
BBB	-1.57%	-19.0%
Fin	-1.21%	-15.0%
Non-Fin	-1.65%	-19.5%
HY Bonds	-1.45%	-14.5%
BB	-1.18%	-14.1%
B	-1.61%	-13.9%
CCC	-2.15%	-20.5%
EM Corporate	-1.47%	-18.0%
CLOIE	-0.72%	-2.1%
JUSTINE	-2.13%	-13.7%

Source: J.P. Morgan

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Economics

- **Real GDP growth in 3Q is now tracking around 2.0% annualized, a point higher than previously estimated**
- **But we continue to lower our sights on growth next year, as financial conditions continue to tighten**
- **PCE inflation trends stayed strong into August**
- **September payrolls, reported next Friday, will set the tone for the November FOMC meeting**

After last week's Fed meeting and ahead of next week's payroll report, this week was quiet for marquee economic developments, at least domestically. Even so, key GDP source data reports for August lead us to revise higher our tracking of 3Q growth from 1.0% annualized to 2.0%. If realized this would be the best outcome since 4Q21: even after the annual revision, GDP growth is still reported to have declined in 1H22. More broadly, a number of indicators released this week continue to point to ongoing resilience in economic activity. Most notable among these is the weekly jobless claims report. Whereas initial claims made a worrying move up over the spring and summer, they have been declining more recently and in the latest report dipped down to 193,000.

While current-quarter growth looks stronger and recent data have been resilient, we continue to mark down our medium-term growth outlook. The foreign exchange value of the dollar has continued its dizzying ascent this week, and as we discuss in this week's research note, the lagged effect of the dollar should hit hard next year. On top of the dollar strength, mortgage rates have continued to grind higher, and household wealth (both equity and now housing) has continued to drift lower. All told we are taking down our projection for 2023 GDP growth (4Q/4Q) from 0.9% to 0.7%.

The labor market has been front and center of the Fed's efforts to reduce inflationary pressures in the economy, and next week's September payroll report will be a key development on the road to the early November FOMC meeting. We look for the Committee to downshift from their recent 75bp hiking cadence to a 50bp move at the upcoming meeting. That said, should we get another strong jobs report next week it may be difficult for the Committee to get comfortable with stepping down the pace just yet, and so the market's pricing high odds of a 75bp hike doesn't look unreasonable to us. We look for the September employment report to show 300,000 jobs added that month with the unemployment rate ticking down to 3.6%. For their part, Fed speakers this week were generally hawkish, often emphasizing they will remain steadfast in their inflation fight even after cracks start to develop in the data.

Still looking for more disinflation

The FOMC is looking for compelling evidence that inflation is moving down, but the August data show that progress has been slow thus far, particularly for core. Core PCE inflation once again surprised higher in August, rising 0.6% on the month (0.563% to three decimals) and up 4.9%oya—firming from 4.7%oya in July. The August headline measure rose 0.3% as energy prices continue to fall sharply

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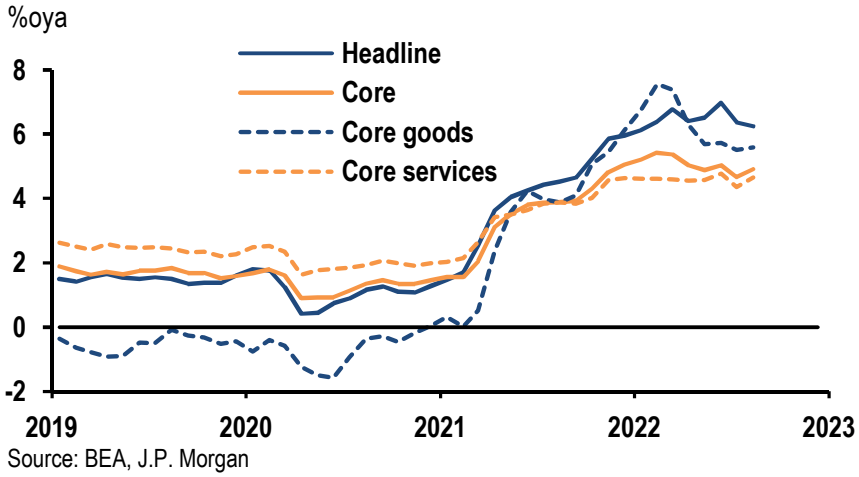
(although they were offset to some extent by higher food prices), with headline PCE inflation easing slightly to 6.2%oya (Figure 1). We are expecting more deceleration in coming months as goods price inflation slows significantly (especially for vehicles) while other prices boosted from reopening dynamics (namely travel-related services) should also cool materially.

Figure 1: PCE price indexes



Source: BEA, J.P. Morgan

However, away from these categories where we expect weakening in prices, a key issue is whether continued labor market strength may bolster other services prices for longer. This past week jobless claims slipped back below 200,000 for the first time since late April, pointing to a persistently tight labor market. The labor market differential in the September Conference Board consumer confidence report also improved, with confidence rising more than expected to its highest reading since January. Although the final September University of Michigan headline sentiment index was revised down slightly from the preliminary release, it has improved modestly over the past three months after hitting an all-time low in June. The easing of inflation, especially the $1.20/gal drop in gasoline prices since mid-June, has raised consumer spirits. In the University of Michigan survey, one-year-ahead inflation expectations inched down to 4.8% in September and are now 0.7%-pt below their early spring peak. Five-year-ahead expectations, at 2.7%, dipped to their lowest level since April 2021 (Figure 2).

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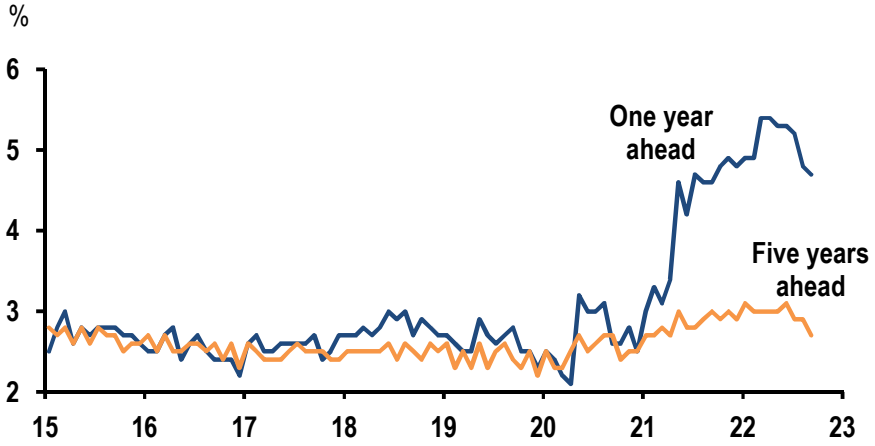
Figure 2: University of Michigan survey median inflation expectations



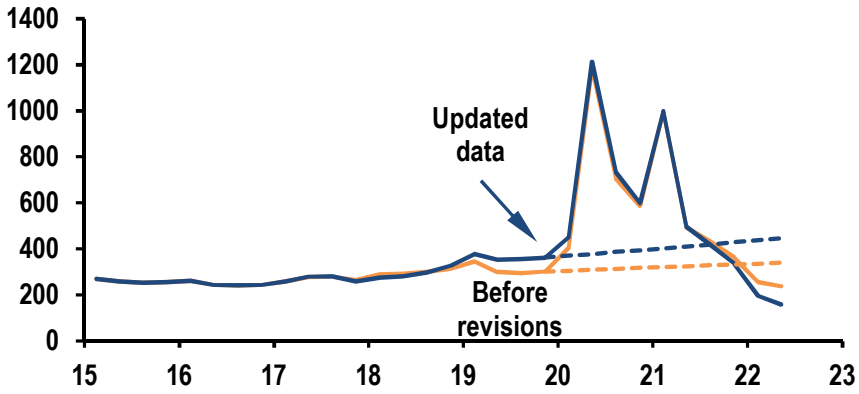
Source: University of Michigan, J.P. Morgan

3Q growth tracking up, mainly from trade

Although sentiment has improved as inflation starts to recede, the recent trend for real consumption has softened and is currently on track for a more modest 1% saar gain this quarter. The August 0.1%m/m rise in real consumer spending offset a similar-sized decline in July, while the saving rate held steady at 3.5% last month. Consumers continue to draw down the "excess saving" they had accumulated at earlier stages of the pandemic to fuel recent spending, as still-elevated inflation has eaten into household income growth: real disposable income fell 4.5%oya last month. Of note, the benchmark revisions (back to 2017) released this week now suggest there is about $1.5tn of extra saving relative to the pre-pandemic trend (through 2Q). Before the revisions, we had estimated this buildup to be around $2.4tn.

Figure 3: Personal saving

$bn, saqr, dashed lines represent pre-pandemic growth trends (avg: 2015-2019)



Source: BEA, J.P. Morgan

This week's trade data were stronger than expected and are the main reason we are now tracking a notably stronger 2%ar growth this quarter. We anticipate a sizable

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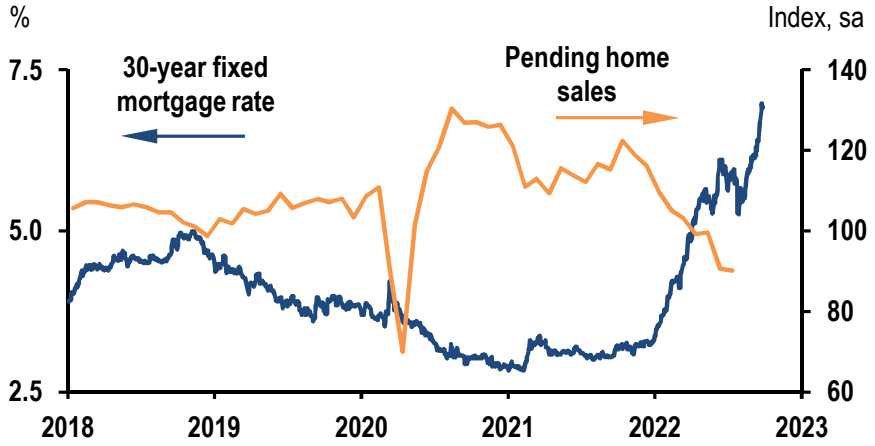
boost to 3Q GDP growth from the recent improvement in the trade deficit. The merchandise trade deficit has narrowed for each of the past five months, to $87.3bn in August, after widening late last year and early this year. Meanwhile, the "advance" August inventory data also beat expectations, with wholesale inventories rising 1.3% in August and retail inventories jumping 1.4% (in nominal terms). The Atlanta Fed's GDPNow measure, which had slipped as low as a 0.2% saar growth projection for 3Q, now stands at 2.4% after this week's data.

August durable goods were close to expectations: headline new orders slipped 0.2% last month but rose 0.2% excluding transportation. Also in line with expectations, core capital goods shipments (nondefense, ex. aircraft) increased 0.3%. But capital goods orders rose a better-than expected 1.3% in August, along with upward revisions to prior months. September capex intentions across the September regional Fed surveys confirm ongoing support for business investment spending, although the momentum has eased.

Housing continues to take it on the chin

The sharp tightening of financial conditions is weighing most heavily on the housing market. The national average 30-year fixed mortgage rate moved above 6.8% this week, continuing a vertiginous climb from around 3.25% at the end of last year. Against this backdrop, pending home sales fell 2% in August, continuing a sizable decline since late last year and signaling upcoming declines in existing home sales (Figure 4).

Figure 4: Mortgage rates and pending existing home sales



Source: *The Wall Street Journal*, NAR, J.P. Morgan

The broad-based weakness in the housing market has finally spilled over to house price measures. The S&P CoreLogic 20-city house price index fell 0.4% in July— its first decline since early 2012—while the July FHFA house price index tumbled 0.6%. Cities that saw some of the strongest demand as the pandemic took hold are now getting hit the most: San Francisco was down 3.6% and Seattle fell 2.5%. New York was flat while Miami posted the strongest rise, up 1.4%.

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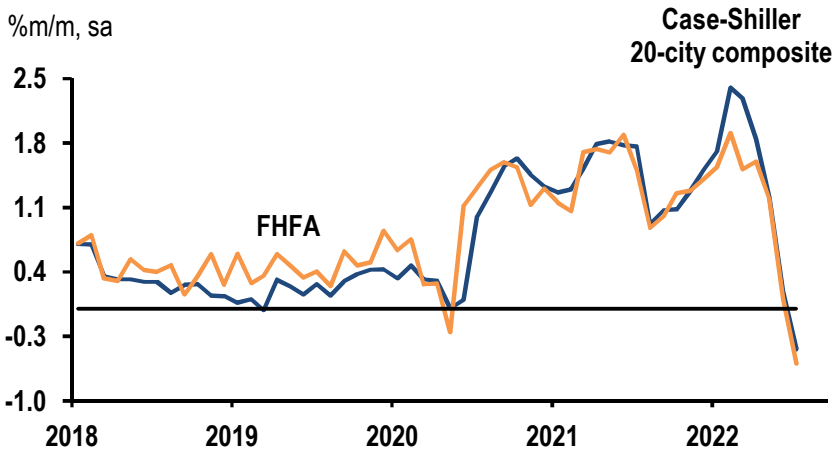
Figure 5: Two measures of house prices



Source: Case-Shiller, FHFA, J.P. Morgan

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Treasuries

- **The Treasury curve twisted steeper, and intermediate yields rose modestly, masking significant intra-week volatility**
- **The near-term prospects for a further disruptive move to higher yields stemming from the UK seem limited, but the BoJ looms as a medium-term risk. The market's Fed pricing seems fair and intermediate Treasuries remain somewhat cheap to their drivers, which should provide support for yields at current levels…**
- **…however, we cannot ignore the steep loss of demand from the three largest sources of demand, the Fed, US banks, and foreign investors, which is unlikely to shift any time soon. Moreover, risk appetite remains light and we do not envision an immediate improvement: stay neutral on duration**
- **Given historical evidence the curve has flattened through the end of prior tightening cycles, and appears somewhat steep relative to the market's Fed and inflation expectations: maintain 2s/10s flatteners**
- **We provide an update on market liquidity, and show that market depth and price impact remain at levels only previously observed during crisis periods. The dispersion in off-the-run yields also sits near 3-year highs, above the levels observed in March 2020…**
- **…we argue that this poor liquidity backdrop reflects the combination of increased macro volatility and structural issues that limit dealer intermediation capacity. However, we think that this structurally impaired liquidity backdrop is very different from the March 2020 episode, when a sudden external shock threatened a liquidity spiral and a breakdown in market functioning, necessitating an emergency response from the Fed**

Market views

The curve twisted steeper over the last week, with front-end yields relatively unchanged, while intermediate and long-end yields rose 10-17bp. However, this masks outsized volatility experienced over the week, as 10-year yields traded in a 30bp range, briefly trading above 4% on Wednesday morning and as low as 3.70% earlier in the week. Overall, there was little in the way of domestic developments to drive this move. Instead, the UK gilt market continued to exert significant influence over the US market this week: gilt yields climbed 60-80bp over the first two days of the week and OIS markets priced in a Bank Rate that would peak around 6%, with high probability being attached to an intermeeting hike prior to the November MPC meeting (**Exhibit 1**). However, this reversed quickly on Wednesday as the BoE issued a statement before the US open that it would postpone gilt sales until October 31 (previously set to begin next week) and engage in temporary long-dated gilt purchases over the next two weeks. This is not QE, but instead is a market stabilization tool to address the recent deterioration of market functioning in the long end of the curve. Our colleagues in the UK believe this announcement should cap the potential for any sharp move higher in gilt yields over the near term, (see *The BoE steps in but it's not QE : BoE announces temporary long-end gilt buying operations*, Francis Diamond, 9/28/22).

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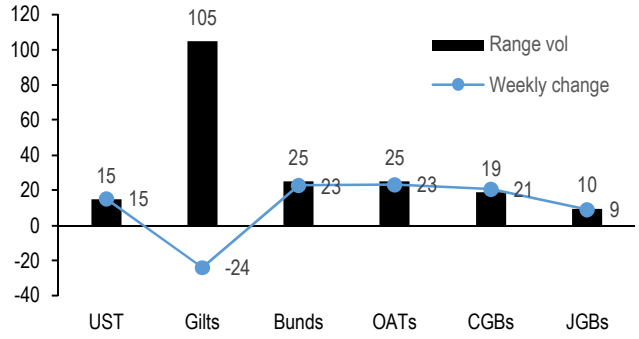
As we look ahead, it's challenging to discern signal from noise in this market, so we think we need to delve into global factors, fundamentals, valuations, and demand side dynamics to discern the direction of travel for Treasury yields. Turning first to global factors, we think the actions announced by the BoE earlier this week mean that long-end gilt yields should be capped within 10-15bp of current levels over the near term. Moreover, our colleagues in UK strategy argue that despite the temporary intervention, long-end yields are unlikely to materially rise as the political landscape should modestly improve over the coming weeks and they have removed their bearish cross-market bias on intermediate UK yields vs. US yields (see *This is not the QE you think it is, Francis Diamond*, 9/30/22). Thus, it's unlikely that gilts will exert a destabilizing force on Treasury yields like they did this week. Away from the US, our colleagues in Tokyo argue that Governor Kuroda's dovish guidance runs at odds with the BoJ's own forecasts of rising price pressures, but in order for the BoJ to minimize the impact of declining JGB liquidity, it needs to dampen policy normalization expectations. They believe this policy mix is inherently unsustainable; it is entering its final chapter. Thus, they now expect the BoJ to adjust its YCC in March 2023 (versus mid-2023 previously), with the risks skewed toward an earlier move (see *Japan: BoJ's YCC approaching its final chapter*, Ayako Fujita, 9/28/22). **Netting out these factors, while the near-term risks of a further disruptive move in yields coming from global factors has been reduced, the medium-term risks are rising, given expected developments in Japan.**

Exhibit 1: DM government bonds carved out a wide range this week, driven by volatility out of the UK, and Treasury yields finished the week higher

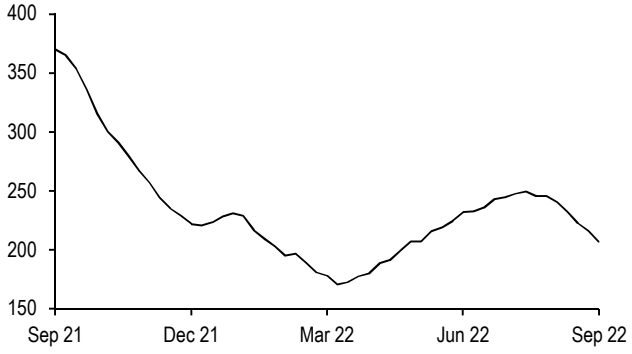
Weekly close to close range in various 30-year DM Government bond yields vs weekly changes, 9/23/22-9/30/22; bp



Source: J.P. Morgan

Exhibit 2: Initial claims have continued to decline, and are now at their lowest levels since late spring, indicating continued labor market tightness, and no reason for the Fed to stop in its tightening campaign

Initial jobless claims, 4-week moving average; 000s



Source: Department of Labor

Turning next to fundamentals, we are on the lookout for any sign that may cause the Fed to slow or end its rate hiking cycle. In that respect, the Fed Chair gave us markers during his press conference last week: "So we'll be looking at a few things. First we'll want to see growth continuing to run below trend, we'll want to see movements in the labor market showing a return to a better balance between supply and demand, and ultimately we'll want to see clear evidence that inflation is moving back down to 2 percent." In that vein, high-frequency data do not give any indication that labor markets are slowing: initial claims fell 16k to 193k for the week ending September 24, the lowest level since April (see *US: Initial claims beat expectations*, Daniel Silver, 9/29/22). The four-week average has declined more than 40k from its local peak in the beginning of August, and is back to levels which persisted for just three months earlier this year (**Exhibit 2**). **Thus, this gives little sense that the Fed should stop hiking soon, which should bias yields higher, all else equal.**

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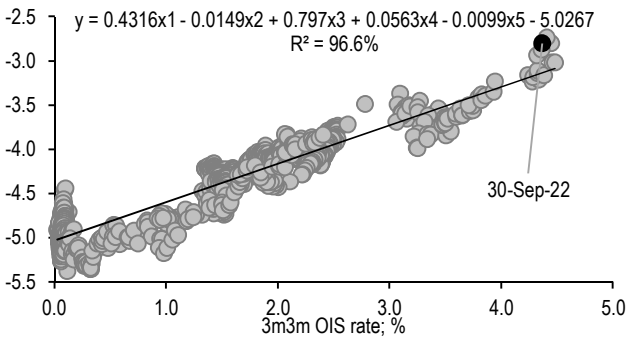
Turning to valuations, markets are pricing in the Fed funds rate will peak around 4.5% by spring of 2023, modestly below the latest Fed dots released last week, and modestly above our own forecast that the Fed will raise the target range to 4.25-4.5% by the February FOMC meeting. Propagating rates longer out the curve, yields are approximately 30bp off their local peaks and sitting near our year-end targets, but actually remain somewhat dislocated from their underlying drivers. Indeed, **Exhibit 3** shows that 10-year yields remain about 30bp high after adjusting for the market's medium-term Fed, inflation, and growth expectations, as well as investor positioning. This gap has been cut significantly from its peak earlier in the week, but remains a dislocation of more than 1 standard deviation. **Against this backdrop, valuations should be a support for Treasury yields locally.**

Exhibit 3: Treasury yields have retreated substantially from their local highs, but remain somewhat high after controlling for their fundamental drivers

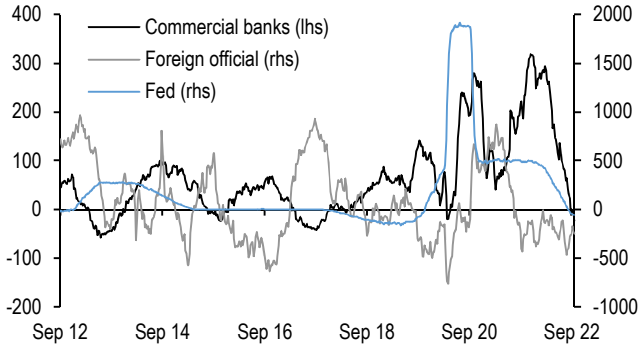
10-year Treasury regressed on yields on 5Yx5Y seasonally-adjusted TIPS breakevens (%), 3m3m OIS rates (%), Fed policy guidance (months), J.P. Morgan US Forecast Revision Index (%), and CFTC spec positions in interest rate futures (3y z-score), regression over the last 5 years; %



R-squared = 96.4%, SE = 15.1bp
Source: CFTC, J.P. Morgan

Exhibit 4: Support from three of the largest constituents of Treasury demand have swung sharply negative in recent months and is unlikely to reverse any time soon

Rolling six-month change in Federal Reserve, US commercial banks, and foreign official/international holdings of Treasuries; $bn



Source: Federal Reserve

Turning next to market forces, we remain concerned about the (lack of) structural demand for Treasuries. When we wrote our *Midyear Outlook* in June, we identified that the three main sources of demand for the Treasury market in recent years—the Fed—domestic commercial banks, and foreign investors —had all stepped away, and we found no reason for this dynamic to shift for the balance of this year nor over the medium term (see Treasuries, *US Fixed Income Markets Weekly*, 6/28/22). Indeed, **Exhibit 4** shows changes in Fed, bank and foreign official holdings over the last decade. The reversal in demand has been stunning as it has been rare for demand from each of these three investor types to all be negative at the same time.

The Fed's tapering and pivot to QT have been well advertised, and the SOMA's Treasury holdings are likely to decline by $180bn over the balance of the year. Certainly, this runoff is passive in nature, and while we have argued that the process of balance sheet normalization should provide limited bearish steepening pressure on the curve, the loss of a price-insensitive buyer lends an asymmetrically bearish backdrop to the tone of the Treasury market. Similarly, the drop in bank demand has been stunning: depository institutions added more than $700bn in Treasuries over 2020 and 2021, fueled by outsized deposit growth in the wake of the Fed's balance sheet expansion. As deposit growth has slowed sharply, this has reduced bank demand for Treasuries, particularly as the duration of their assets have extended

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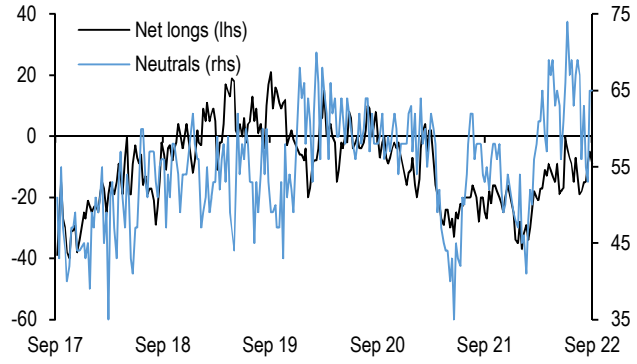
sharply this year, and bank holdings have dropped $60bn over the last 6 months. Finally, foreign official holdings have dropped $50bn over the last 6 months. Global foreign exchange reserves have declined $1tn from their local peak earlier this year: to the extent that the USD represents a 60% share of these reserves and that Treasuries account for a significant share of these reserve holdings, this development make intuitive sense. Our work has shown that over the past 2 decades, 10-year yields have declined 7bp, on average, for each 1% rise in foreign Treasury holdings relative to GDP, and the reversal of these trends would put further pressure on yields (see *Things ain't like they used to be: Drivers and outlook for foreign demand for Treasuries*, 10/22/18). **Thus, over the medium-term, the absence of demand from the strongest structural support for intermediate duration Treasuries represents ongoing bearish risk from current levels.**

Away from demand, it's evident that risk appetite remains impaired as well: our latest *Treasury Client Survey* shows investors retain a small bias toward higher yields, though it has been pared back significantly since the beginning of the year (**Exhibit 5**). More importantly though, nearly two thirds of respondents continue to report a neutral stance, at the upper end of the range we've observed in recent years. This was evident in this week's Treasury auctions as well: 2 of 3 auctions tailed even though the share of end-user demand did not decline materially (**Exhibit 6**). Thus, unless risk appetite improves amid hawkish central banks and rising rates globally, we think it will be hard for yields to find stability.

Exhibit 5: Our survey indicates investors retain a small bias toward higher yields, though it has been pared back significantly since the beginning of the year. The share of neutrals remains near multi-year highs

Net longs (lhs) and neutrals (rhs) in J.P. Morgan Treasury Client Survey; % both axes



Source: J.P. Morgan

Exhibit 6: Two of this week's 3 note auctions saw large tails amid a weakening in bid-to-cover ratios

Statistics for this week's Treasury auctions;

		2s	5s	7s
Auction tail (bp)	Sep	1.7	2.9	-0.4
	Aug	1.6	1.3	-2.6
	Prev 3M avg	0.6	1.3	-0.2
End-user demand (%)	Sep	77.8	78.3	87.2
	Aug	77.0	79.4	91.4
	Prev 3M avg	78.6	79.6	87.7
Bid-to-cover ratio	Sep	2.51	2.27	2.57
	Aug	2.49	2.30	2.65
	Prev 3M avg	2.53	2.35	2.58

Source: US Treasury, J.P. Morgan

Taking all these factors into account, though market-based Fed pricing is close to our forecast and outright valuations remain somewhat cheap, we are not compelled to add duration at current, especially when there remains a structural shortfall of demand, risk appetite remains light, and there is a medium-term risk other DM central banks pull back on extraordinary accommodation, which all point to higher yields. However, we continue to favor curve flatteners. As we discussed last week, historical precedents show the curve tends to flatten through the end of the tightening cycle (see *Treasuries 2022 Mid-Year Outlook*, 6/24/22). Moreover, the curve has lagged the flattening implied by its underlying drivers: **Exhibit 7** shows that 2s/10s appears more than 15bp too steep after adjusting for the level of 2-year yields and 5Yx5Y TIPS breakevens. We are cognizant that there is some risk to this trade with the curve within 10-15bp of its flattest levels of the cycle. Moreover, with front-end

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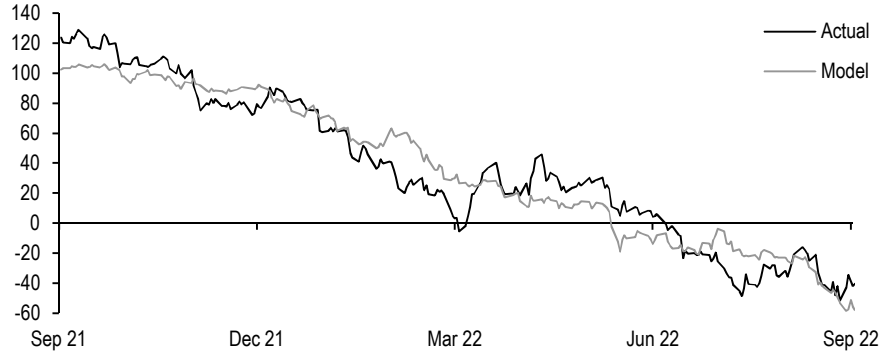
yields trading at their highest levels in 15 years, it's arguable the front end could offer value as a hedge to significant weakness in risk assets. **Nevertheless, we are comfortable with these risks for the time being and we recommend holding 2s/10s flatteners.**

Exhibit 7: 2s/10s remains steep after adjusting for monetary policy and inflation expectations
2s/10s Treasury curve, actual versus model*; bp

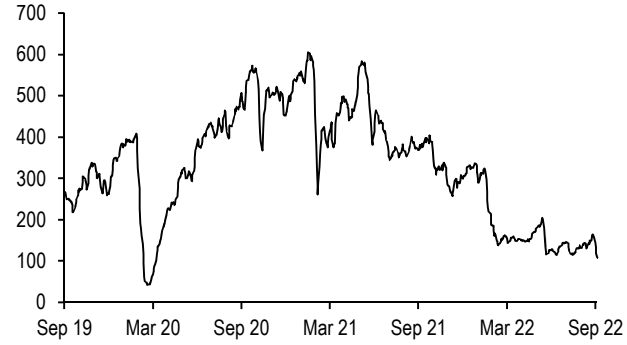


* 2s/10s curve = -41.1334* (2-year Treasury yields) + 36.1164* (5Yx5Y seasonally-adjusted TIPS breakevens + 37.7463. R-squared – 91.7%, Standard Error = 14.6bp

Source: J.P. Morgan

Treasury market liquidity update

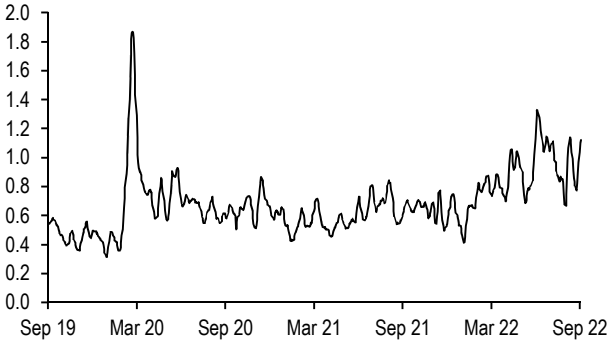
Exhibit 8: Market depth had improved modestly coming out of the Labor Day holiday, but has retraced lower over the last week, underscoring relatively depressed liquidity conditions…
Duration-weighted Treasury market depth*; 5-day moving average; $mn 10-year Treasury equivalents



* Market depth is the sum of the three bids and offers by queue position, averaged between 8:30 and 10:30am daily. his is the sum of 2-, 5-, 10-, and 30-year depth in 10-year equivalents

Source: J.P. Morgan, BrokerTec

Exhibit 9: …and price impact has moved higher as well, indicating the footprint of each trade in the Treasury market has risen
10-year Treasury price impact, 5-day moving average; 32nds



* Price impact defined as the average move in order book mid-price against a $100mn flow in traded notional. See Drivers of price impact and the role of hidden liquidity, J. Younger et al., 1/13/17 for more details.

Source: J.P. Morgan, BrokerTec

Given the outsized nature of moves in Treasury yields this month, we've received numerous questions on liquidity from investors, and we think it's appropriate to evaluate the state of affairs in the Treasury market at the moment. There are numerous ways to evaluate liquidity in markets, from bid/offer spreads, to trading volumes and turnover, but from a high-level perspective, we like to first look at market depth and price impact (**Exhibits 8 & 9**). Market depth effectively measures how much can be traded at any given price level during the most liquid point of the US trading session, and price impact measures how much each Treasury trade moves the market. Not surprisingly, both metrics show liquidity conditions are relatively impaired right now: Exhibit 8 shows that market depth improved modestly (from

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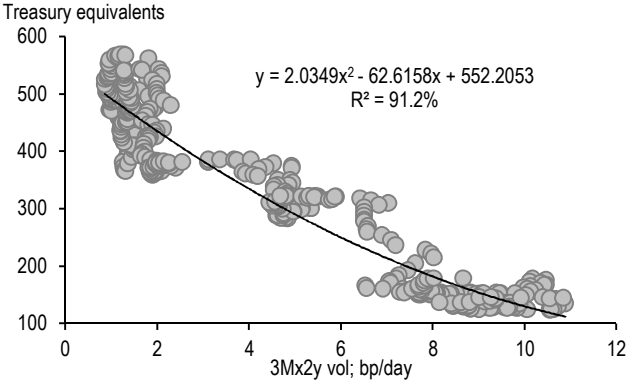
very low levels) in the period around Labor Day, but have moved lower over the last week. Despite these wiggles up and down, depth remains depressed around levels seen in April 2020 after the onset of COVID-19 in the US and the associated lockdowns in the spring. Similarly, Exhibit 9 shows that the footprint of each trade in the Treasury market has increased recently, and remains elevated as well, also hovering near the highest levels seen since the spring of 2020.

Naturally, this deterioration, alongside the volatility in the UK gilt market and the BoE's intervention, has led market participants to consider whether the ripple effects could drive a broader disruption in Treasury market functioning that would force the Fed to respond, as it did 2+ years ago. Before we can answer that question, we need to ask what is driving this illiquidity, and what similarities and differences we can observe in the Treasury market between now and March 2020.

At its root, we think elevated macro policy uncertainty related to the expected path of monetary policy in the US and globally, as well as the interaction with fiscal policy, are all keeping implied volatility in US rates markets elevated near the highest levels since the GFC. This matters because volatility has a pronounced impact on liquidity: Treasury market liquidity remains highly sensitive to volatility, with depth decreasing as volatility increases, and vice versa (**Exhibit 10** also see *US Treasury Market Structure and Liquidity: The changing dynamics of liquid markets*, 4/2/15). Moreover this dynamic has only become more pronounced in recent years given the growing dominance of algorithmic traders on interdealer trading platforms (see *Far from the shallow now? Liquidity provision by high frequency participants in US rates*, 4/12/19). Given this historical relationship and increased sensitivity in recent years, it's not surprising that market depth has been sitting at levels that had been reserved for crises in the past.

Exhibit 10: Treasury market liquidity remains very sensitive to volatility, and will not improve significantly until macro policy uncertainty fades

Duration-weighted Treasury market depth*; 1-month moving average; regressed on 3Mx2Y implied swaption vol (bp/day), regression over the 2 years; $mn 10-year Treasury equivalents



* Market depth is the sum of the three bids and offers by queue position, averaged between 8:30 and 10:30am daily. his is the sum of 2-, 5-, 10-, and 30-year depth in 10-year equivalents

Source: J.P. Morgan, BrokerTec

Exhibit 11: In most sectors of the curve, RMSE remains close to its highest levels in over three years

Root mean square error* of J.P. Morgan Treasury curve, by sector and overall, 1-week change with 3-year statistics; bp unless otherwise indicated

Sector	Last	1wk chg	3y min	3y max	Percentile
0-2.25y	12.1	-4.7	0.8	59.3	83%
2.25-4.5y	2.6	0.1	0.4	2.9	99%
4.5-7y	4.2	0.0	0.3	4.6	99%
7-20y	6.8	-0.9	0.8	9.6	90%
20-30y	3.9	0.0	0.6	6.3	87%
Overall	4.1	-0.2	0.6	5.1	92%

* see *The new and improved Treasury par curve model*, 7/16/18

Source: J.P. Morgan

Perhaps a more concerning liquidity measure is the dispersion in off-the-run Treasury yields, which is sitting well above levels observed in March 2020. **Exhibit 11** shows the root mean square error of our Treasury curve (RMSE), which we use to monitor dispersion and liquidity in off-the-run Treasuries. Dispersion has in aggregate risen modestly in the last week, and in most sectors of the curve,

remains close to its highest levels over the last 3 years. However, this is not a new phenomenon and dispersion is broadly lower than the highest levels observed this summer. As we've noted in the past, this reflects a reduced ability for dealers to warehouse these more financing-intensive off-the-run securities.

Importantly, intermediation hasn't kept pace with the growth of the Treasury market, which is now 50% larger since the initial COVID-19 outbreak. While the number of primary dealers is now larger than at any point since the turn of the century, risk-taking capacity has not grown commensurately as dealer positions represent less than 1% of total outstanding Treasuries, significantly below the pre-crisis peak. Regulatory developments over the past decade have limited the accumulation of inventory, and leaned heavily on the principal trading model. The Fed, FDIC, and OCC temporarily excluded reserves and Treasuries from the denominator of the SLR in the spring of 2020, but this relief expired a year ago. In their testimonies before the Senate Banking Committee late last year, FOMC Chair Powell and Vice Chair Brainard advocated adjusting the SLR in a way that does not reduce overall capital levels, and former policy makers made the same argument in a panel at the 2021 Treasury market conference (see *US Treasury Market Daily*, 11/17/21). Nevertheless, there has been no further progress on adjusting the SLR, even with Michael Barr now installed as Vice Chair for Regulation. While regulatory agencies have taken some of the recommendations made to improve the resilience of the Treasury market in times of stress, these advances have been slow and somewhat secondary in importance relative to others that would address intermediation directly. As we discussed recently, the SEC's announcement on central clearing for Treasury cash and repo transaction does have some benefits (there are also associated costs) that do not necessarily increase intermediation and may actually lead to a deterioration in liquidity (see *Fixing the roof while the sun is shining*, 9/19/22).

On balance, Treasury market liquidity remains severely impaired, and is amplifying moves in rates, as evident in the divergence between the current level of Treasury yields and their model-implied drivers. We believe this reflects the combination of increased macro volatility and structural issues that continue to limit intermediation capacity. **We continue to argue that these bouts of illiquidity will be commonplace until a more concerted effort is made to strengthen market resiliency and increase intermediation to keep up with the ongoing growth of the Treasury market. However, we think that this structurally impaired liquidity backdrop is very different from the March 2020 episode, when a sudden external shock threatened a liquidity spiral and a breakdown in market functioning, necessitating an emergency response from the Fed.**

Importantly, the TIC data from March and April 2020 showed that nearly half of the sales of Treasuries by foreign investors in that period came from the Cayman Islands, suggesting mass unwinds of levered positions by hedge funds. These levered carry trades, financed via repo, had been popular in the low-yield, pre-pandemic environment, but faced widespread margin calls, as end-users throughout the Treasury market scrambled for cash. We are unlikely to see the same type of liquidity spiral in the current environment, since the aforementioned macro volatility has limited the attractiveness of levered carry trades over the past year. Moreover, though primary dealer statistics are released with a lag by the New York Fed, the latest weekly release suggests we have not yet seen a significant rise in off-the-run inventories, which could be suggestive of mass liquidations. Meanwhile, across the pond, UK Gilt markets did face a potential liquidity spiral—as our colleagues note, the large sell-off in long-end yields led to some concerns that collateral and margin calls for certain long-term domestic investors would drive forced selling of assets.

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Thus, overall, while we note structural issues are likely to keep liquidity depressed, and regulatory policy makers should take additional steps to improve the resilience of the market, we don't think the events of the past week will necessitate an emergency response from the Fed, like we saw from the BoE on Wednesday.

Trade recommendations

- **Maintain 2s/10s curve flatteners**
  - Stay short 100% risk, or $276.9mn notional of T 3.25% Aug-24s
  - Stay long 100% risk, or $64mn notional of T 2.75% Aug-32s
  - (*US Fixed Income Markets Weekly*, 9/23/22): P/L since inception: -11.1bp.
- **Hold Feb-46s/May-51s level-neutral steepeners**
  - Stay long 100% risk, or $18.5mn notional of T 2.5% Feb-46s
  - Stay short 87% risk, or $14mn notional of T 2.375% May-51s
  - (*US Fixed Income Markets Weekly*, 9/9/22): P/L since inception: -5.0bp.
- **Maintain 5s/10s/30s belly-cheapening butterflies**
  - Stay long 44% risk, or $24mn notional of T 3.125% Aug-27s
  - Stay short 100% risk, or $29.7mn notional of T 2.75% Aug-32s
  - Stay long 88% risk, or $11.8mn notional of T 3% Aug-52s
  - (*US Fixed Income Markets Weekly*, 8/26/22): P/L since inception: -9.3bp.

Closed trades in last 12 months

P/L reported in bp of yield unless otherwise indicated

TRADE	ENTRY	EXIT	P/L
Duration			
2-year duration longs	10/18/21	11/04/21	5.0
10-year duration shorts	06/11/21	02/11/22	36.2
Curve			
3s/7s steepener	04/09/21	01/07/22	-34.8
10s/30s steepener	09/28/21	01/07/22	-15.0
10s/30s flattener	03/05/22	03/09/22	7.0
5s/30s flattener	04/13/22	04/21/22	19.2
5s/20s flattener	05/06/22	06/14/22	22.3
10s/30s flattener	09/09/22	09/20/22	12.3
Relative value			
99:100 weighted 2.75% Feb-28s/3.125% Nov-28s flatteners	06/11/21	09/17/21	2.8
146:25 weighted old 2s/old 3s/5s belly richening butterfly	09/10/21	09/30/21	2.6
100:85 weighted 2.875% May 25s/ 2.125% May 26s steepeners	08/20/21	10/01/21	3.1
19:86 weighted 10s/20s/30s belly-richening butterflies	10/29/21	11/05/21	2.8
100:93 weighted 2.25% Oct-24s/ 0.25% Sep-25s curve flatteners	02/18/22	02/23/22	2.5
100:100 weighted 1.125% Feb-31s/ 1.25% Aug-31s curve flatteners	11/12/21	03/18/22	-3.0
40:56 weighted 1.375% Nov-31s/2.25% May-41s/2.0% Feb-50s belly-richening butterflies	02/25/22	04/01/22	3.2
60:46 weighted 2.25% Mar-24s/1.5% Feb-25s/1.875% Feb-27s belly-richening butterflies	04/01/22	04/06/22	2.2

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67:37 weighted 2s/3s/5s belly-cheapening butterflies	04/22/22	05/18/22	1.7
50:50 weighted 3s/7s/10s belly-cheapening butterflies	07/29/22	09/01/22	2.1
Number of positive trades			15
Number of negative trades			3
Hit rate			83%
Aggregate P/L			72.2

Source: J.P. Morgan

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Technical Analysis

- **10-year TIPS breakevens collapse through anticipated range support at 225-230bp and narrow to next support near 209bp. We will watch for signs of base building to develop over the near-term. Next support is layered at 189.5bp and then 175-177bp. The 225-230bp area now marks a key short-term resistance. The inability to get back into the 2021-2022 trading range would represent an important broader signal across markets, in our view.**
- **Led by the sharp swings in the UK markets, the 30-year bond overshot resistance clustered near 3.71%, but fell short of the next resistance near 3.975-4.015% before reversing richer by the end of the week. The move stopped us out of our suggested long trade. Key resistance now rests at 3.445-3.495%. A break richer would confirm a medium-term trend reversal in our view.**
- **The 5s/10s UST curve stages a potential trend reversal after tagging long-term chart support surrounding -30bp. Sustained closes above -20bp/-15bp are required to confirm a medium-term trend reversal in our view. If confirmed, an inflection in the curve trend could have important implications for risky markets into 2023. During the period when the supply side seemed to dominate monetary policy, the equity-yield curve correlation persistently stayed in positive territory, and cyclical equity bottoms unfolded in the months after the curve reversed.**

Treasuries: Too many stories for one concise headline

While UK rate moves drove the early-week price action and led to a potential blow-off top on US yield charts, multiple developments are worth noting beyond that, including early signs of a potential shift in some of the yield curve trends, and a TIPS breakevens collapse out of the 2021-2022 trading range. While we do not see enough technical evidence to suggest any of the changes in trend or pattern breaks are long lasting at this point, all of those developments have the potential to mark critical inflections that can have material implications for broader market outlooks into 2023.

The **10-year TIPS breakevens** impulse through anticipated pattern support at **225-230bp** and immediate drop to next support at the **209bp** Mar 2020 38.2% retrace leaves the market trading below a potential multi-quarter top pattern (**Exhibit 1**). There is currently nothing in the price action to suggest an immediate halt to the sharp move. Next support is layered at the **189.5bp** Sep 2020 78.6% retrace and then the **175-177bp** Nov 2020 breakout zone and Mar 2020 50% retrace. While we don't expect the market to extend to those levels over the near term, we recognize the market remains vulnerable while below the **225-230bp** recent breakdown area or until we see a base pattern start to develop. The 2021-2022 pattern measured move objective sits at **155bp** and near the **150.5bp** Mar 2020 61.8% retrace. Alternately, additional medium-term resistance includes the **244bp** Aug range lows and **245bp** 50-day MA. Broader resistance sits through there at the **257.5bp** Sep 6 close and **259bp** 200-day moving average.

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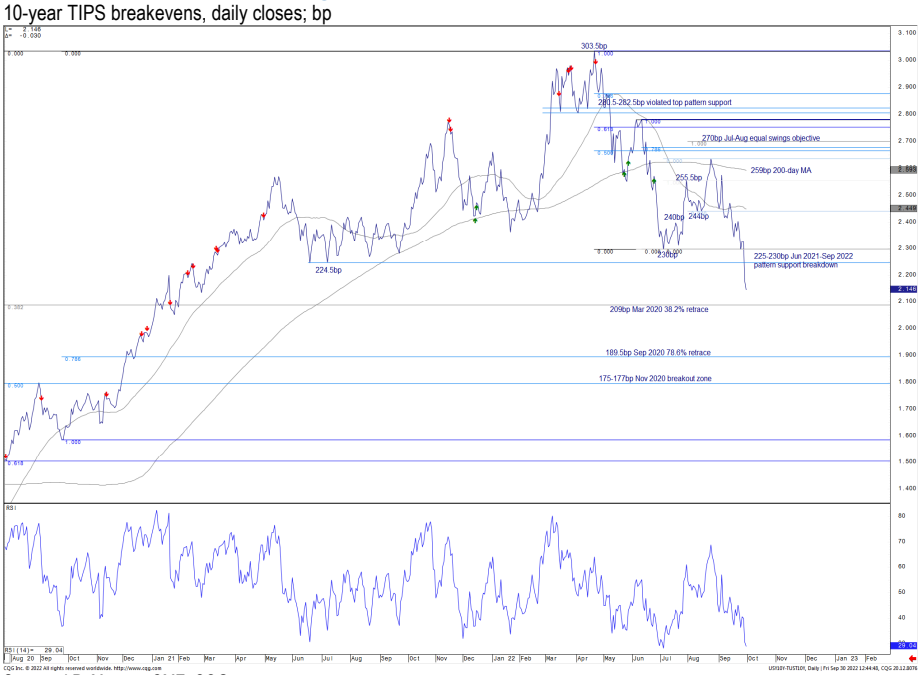
Exhibit 1: 10-year TIPS breakevens collapse through anticipated range support at 225-230bp and narrow to next support near 209bp. We will watch for signs of base building to develop over the near term. Next support is layered at 189.5bp and then 175-177bp. The 225-230bp area now marks a key short-term resistance. The inability to get back into the 2021-2022 trading range would represent an important broader signal across markets, in our view.

10-year TIPS breakevens, daily closes; bp



Source: J.P. Morgan, CME, CQG

Shifting our attention to duration, we had thought the long end of the market would stabilize and bullishly reverse ahead of points further in on the curve. In fact, the **30-year bond** bear trend saw an appreciable amount of trend deceleration as the market tested anticipated support levels surrounding **3.50%**, so much so that it triggered momentum diverging buy signals on our model (**Exhibit 2**). As we noted in prior publications, that price pattern statistically favors mean reversion on the heels of a maturing trend. The developments in UK markets unfortunately ran over that setup and led to a reacceleration to higher yields. The move exceeded a cluster of retracement and trend-line levels near **3.71%**, stopped us out of our suggested long trade, but fell short of the next cluster of support near **4.00%** before reversing. We continue to think the market is likely setting its high yield for the cycle as it moves into the fourth quarter, particularly at the long end. One can theorize bond yields peaking if either inflation data prints start to fall sharply and eventually impact policy expectations for 2023-2024, or if continued Fed tightening drives the economy into a recession in 2023. From a pure technical perspective, oversold monthly Relative Strength Index momentum readings that rival the early 1980s, extreme bearish sentiment readings, and a potential weekly momentum diverging buy signal setup lay the groundwork for a low-frequency trend reversal as well. On a near-term basis, a sustained bond rally through the **3.495%** Jun yield high and **3.445%** mid-Sep pattern yield low would confirm a change in trend, in our view. Initial medium-term resistance rests at the **3.19-3.29%** moving averages and mid-summer pattern breakdown.

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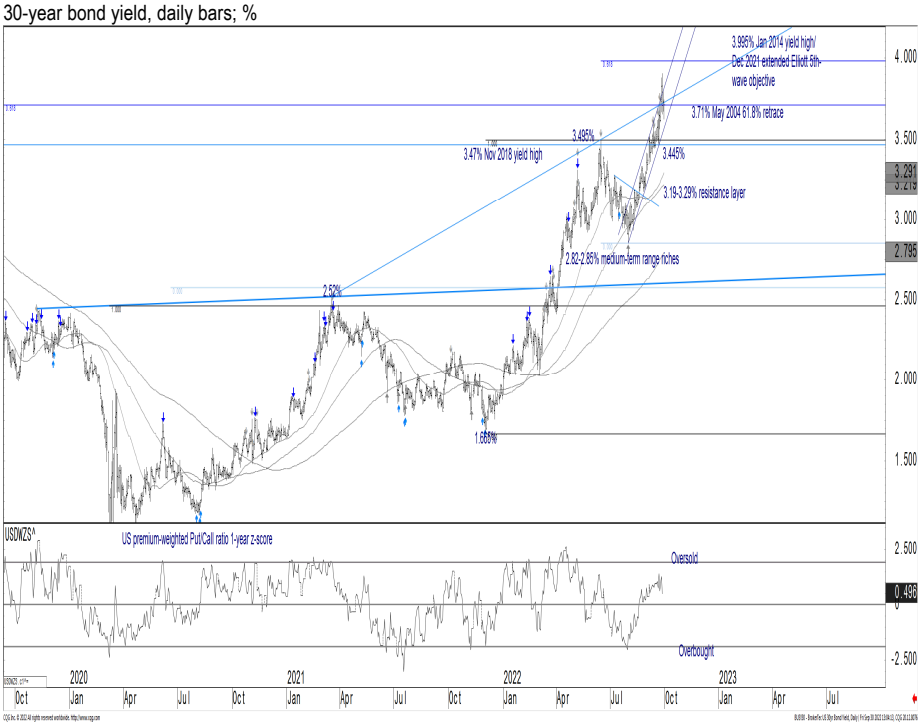
Exhibit 2: Led by the sharp swings in the UK markets, the 30-year bond overshot resistance clustered near 3.71% but fell short of the next resistance near 3.975-4.015% before reversing richer by the end of the week. The move stopped us out of our suggested long trade. Key resistance now rests at 3.445-3.495%. A break richer would confirm a medium-term trend reversal in our view.

30-year bond yield, daily bars; %



Source: J.P. Morgan, CME, CQG

The **10-year note** bullishly reversed after meeting the **3.995%** Aug 2021-Aug 2022 .618 swing objective and **4.015%** Apr 2010 yield high (**Exhibit 3**). While the long end showed meaningful signs of trend deceleration through late last week and before the UK driven blow off, the intermediate sector did not yet present that setup or signaling despite its retest of the **3.50%** June yield high. That yield high along with the **3.565%** Aug trend line now marks key short-term resistance. A break richer and follow-through past the **3.38%** late-summer consolidation pattern cheap would likely drive further buying flows and really cement a change in the underlying price trend, in our view. Medium-term resistance now rests at the **3.06-3.13%** cluster of moving averages and Jul/Aug yield highs. To higher yields, a sustained break through **4.00%** would turn our attention to the **4.28%** Jun 2008 yield high, **4.29%** Sep 2007 yield low, and **4.40**% 2006-2007 range yield low.

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Exhibit 3: The 10-year note held support near 4.00% after what looks like a potential blow-off to higher yields. Sustained closes richer than resistance in the 2.50s are required to confirm a medium-term trend reversal now.

10-year note yield, daily bars; %

Source: J.P. Morgan, CME, CQG

The **5-year note** yield rise stalls after meeting the **3.935%** Oct 2007 yield low, but falling shy of the **4.345%** Dec 2006 yield low (**Exhibit 4**). Given the multi-year extremes and momentum in the belly and front end over the past few months, pattern is more important than level for our view. While terminal rate expectations that approached the 5% area late last week start to make us look for signs of trend exhaustion in the front end and belly, we do not yet see trend deceleration, price base building, or a sharp enough trend reversal to suggest the market is there yet. Short-term resistance rests at the **3.74%** Aug trend line, **3.615%** Jun yield high, and **3.47%** late-summer tactical pattern breakdown. We expect initial rallies into that area to find selling pressure.

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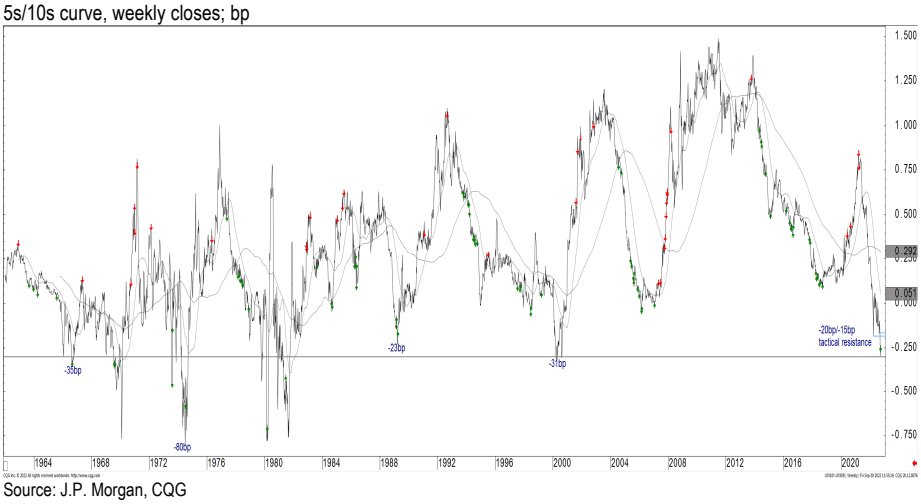
Exhibit 4: The 5-year note yield rise stalled in the middle of 3.935% and 4.345% 2006-2007 chart pattern levels. Short-term resistance rests at the 3.74% Aug trend line, the 3.615% Jun yield high and 3.47% late-summer tactical pattern breakdown.

5-year note yield, daily bars; %

Source: J.P. Morgan, CQG

Exhibit 5: The 5s/10s UST curve stages a potential trend reversal after tagging long-term chart support surrounding -30bp. Sustained closes above -20bp/-15bp are required to confirm a medium-term trend reversal in our view...

5s/10s curve, weekly closes; bp



Source: J.P. Morgan, CQG

With the tactical reversal from aggressive front-end pricing late last week, some yield curves show initial and tentative signs of trend reversal. The **5s/10s curve** bounce from longer-term support near **-30bp** triggered a weekly momentum diverging steepening signal (**Exhibit 5**). Looking back over the long history of the yield curve, the cycles either troughed near **-30bp** or **-80bp**. The latter developed during the 1970-1982 period. While the inflation pressures now present may lead one

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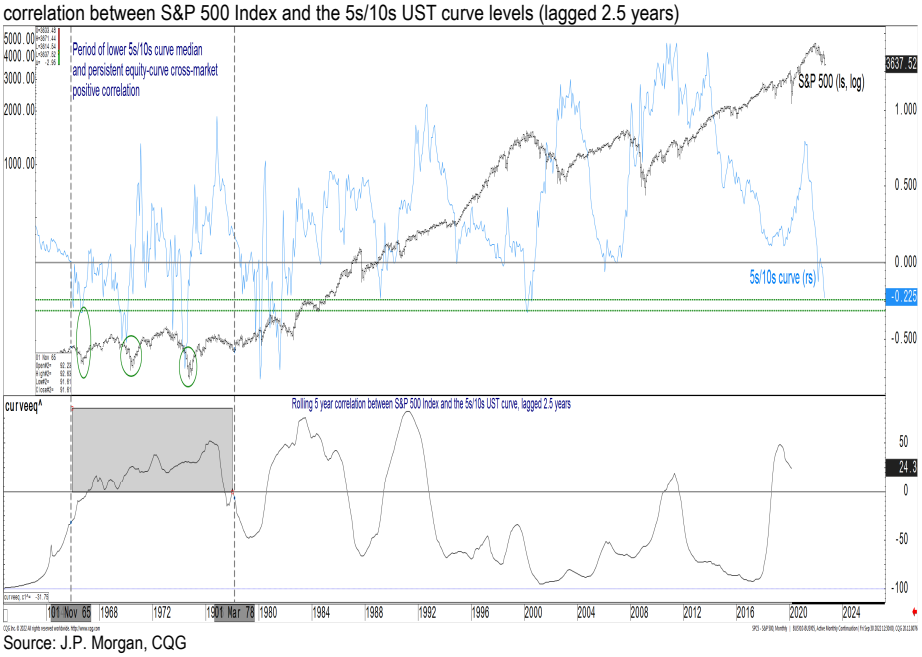
to focus on those analogs, it's important to point out that the late-1960s cycle low unfolded in the early phase of that era of higher inflation readings. Key short-term resistance rests at the **-20bp/-15bp** recent pattern breakdown area. In our view, closes above that would confirm a medium-term trend reversal and set the stage for a move back into positive territory.

Aside from such an event marking a cycle trough for the curve, we believe it could send an important message across asset classes. During the period of elevated inflation readings in the 1960s and 1970s, the equity market saw a persistent and positive correlation with the yield curve. That stands in stark contrast with what became the new normal, especially following the early-1990s, when the equity-curve relationship saw a strong negative correlation. Additionally, the three major cycle lows during the period of high positive correlation saw equities bottom in the months after the yield curve trough. Taking a step back and thinking through what a transition to sustained curve steepening would likely imply for monetary policy expectations for late-2023 and 2024 and putting that in the context of this week's TIPS breakevens performance, one can rationalize their way to a substantial transition in markets in the fourth quarter. We believe it is far too early and there simply isn't enough technical evidence to lean on that outcome with high conviction at this point. That said, we will carefully monitor breakevens, the curve, and equity price action to see if more pieces fall into place.

Exhibit 6: ... If confirmed, an inflection in the curve trend could have important implications for risky markets into 2023. During the period when the supply side seemed to dominate monetary policy, the equity-yield curve correlation persistently stayed in positive territory, and cyclical equity bottoms unfolded in the months after the curve reversed.

Upper panel: 5s/10s curve (monthly closes; ls), S&P 500 Index (monthly bars; rs), Lower panel: rolling 5 year correlation between S&P 500 Index and the 5s/10s UST curve levels (lagged 2.5 years)



Source: J.P. Morgan, CQG

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Trade	Entry Date(s)	Size	Exit Date(s)	Avg Entry Price/Yld	Avg Exit Price/Yld	realized bp+carry
5-year note short	5/21/2021	0.50	10/13/2021	0.815	1.075	**11.0**
10-year JGB short	7/11/2021	0.50	11/1/2021	0.025	0.095	**3.0**
EDM3 long	11/2/2021	0.50	11/10/2021	98.81	98.665	**(7.5)**
30-year bond short	7/12/2021	0.50	12/3/2021	2.008	1.719	**(15.5)**
10-year TIPS breakevens widener	12/8/2021	0.50	12/14/2021	250.5	239	**(10.5)**
10-year Bund short	11/10/2021	0.50	1/21/2022	-0.295%	-0.06%	**10.0**
10-year note short	3/4/2022	0.25	3/9/2022	1.72%	1.93%	**5.25**
10-year Bund long	3/21/2022	0.25	3/21/2022	0.375%	0.465%	**(2.25)**
10-year TIPS breakevens tightener	3/15/2022	0.25	3/24/2022	286	302	**(4.0)**
30-year bond long	5/3/2022	0.50	5/5/2022	3.0275	3.18	**(7.625)**
10-year note short	7/29/2022	0.50	8/19/2022	2.5925	2.9125	**20.0**

Source: J.P. Morgan

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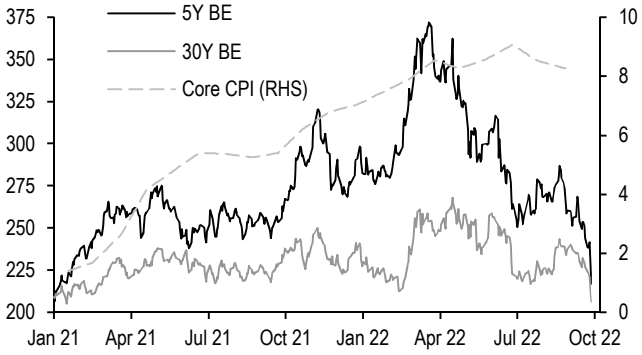
TIPS

- **On the back of this week's events, financial conditions have tightened further, and the trade-weighted dollar is well above its March 2020 crisis peak. The surge in the dollar YTD should result in a 1%-pt drag on GDP growth next year**
- **We explore what a higher dollar means for CPI inflation: we argue dollar moves have a quick and significant impact on energy prices, while the lagged effects on core goods inflation are likely more limited**
- **Even when controlling for USD moves, breakevens appear sharply dislocated versus our fair value framework. We acknowledge the sharp decline in the beta to nominal yields over recent months is obscuring the signal from this model, but our framework for real yields also flags TIPS as significantly cheap**
- **We think that technicals played a role in the magnitude of this week's TIPS underperformance, although notably the inflation swap/breakeven basis has been stable and ETF outflows have been slower compared with March 2020**
- **While poor liquidity may continue to exacerbate volatility, we look for lower real yields over the medium-term and hold longs in Feb-51 TIPS**

Market views

Exhibit 1: Benchmark breakevens declined to their lowest levels since January 2021…

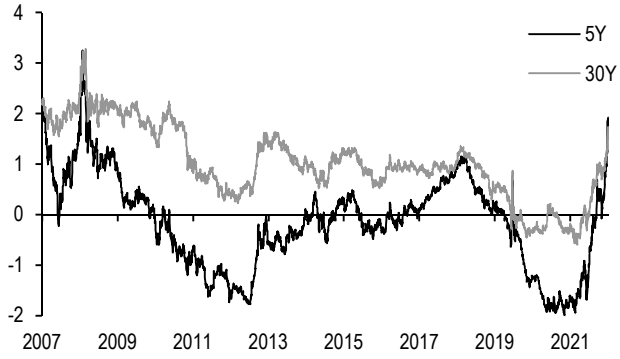
5- and 30-year breakevens (bp; LHS) versus core CPI inflation (% oya; RHS)



Source: Bureau of Labor Statistics, J.P. Morgan

Exhibit 2: …as real yields rose 31-36bp to new decade highs

5- and 30-year TIPS real yields; %



Source: J.P. Morgan

Over the past week, all eyes have been on the events unfolding in the UK, where long-end real yield volatility was historic: 30-year Gilt linker real yields rose from 50bp on Monday to an intra-day high of 250bp on Wednesday, before the BoE announced temporary gilt purchases until October 14th "on whatever scale is necessary…at an urgent pace" in order to restore financial stability. Specifically, the yield rise that kicked off last week following the BoE MPC meeting and the unveiling of the Truss tax plan resulted in margin calls among LDI funds that manage pension fund assets and employ a significant use of derivatives. Thus, central bank's intervention on Wednesday was driven by concerns about potential fire sales of assets and a resulting liquidity spiral (see *This is not the QE you think it is*, Francis Diamond, 9/30/22). Despite the action taken by the BoE, with Prime

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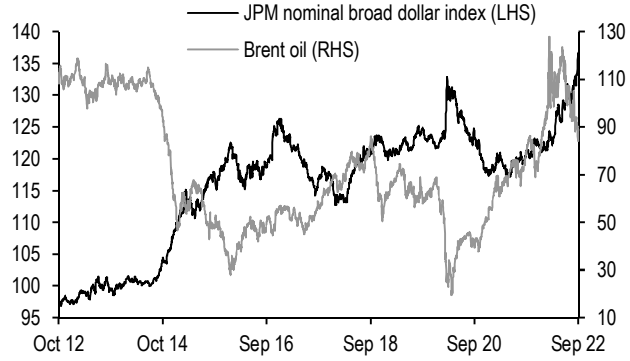
Minister Truss not signaling any change in approach to her tax cut plan, risk assets declined, US Treasury market liquidity deteriorated, and breakevens sharply underperformed, with 5-year breakevens staging their largest one-day narrowing move since June 14 and benchmark breakevens across the curve falling to their narrowest levels since January 2021 (**Exhibit 1**). On net, breakevens ended 21-28bp narrower on the week, while real yields ended 32-36bp higher (**Exhibit 2**).

Certainly the crisis that occurred in the UK this week was unique in a number of respects and we don't see the same fragilities outside of the UK, for a number of reasons: the initial sell-off reflected market concern over the government's medium-term fiscal sustainability, as the ill-timed fiscal policies announced last Friday appeared to be at odds with the central bank's inflation-fighting efforts, the UK has the second largest asset base after the US, the UK pension fund allocations to long-dated fixed income have climbed to 72% in recent years (compared to a 51% allocation by US pension funds as of the 2022 Milliman pension study), and the heavy use of derivative overlays made them even more vulnerable—our credit strategists note that the lack of domestic fixed income supply, for example, accentuated the need to take FX risk in search for fixed income yield (see *JPM Daily Credit Strategy & CDS/CDX am update*, Eric Beinstein, 9/29/22). However, the rest of the world is exposed to spillover effects from the events unfolding in the country. Importantly, in the US, financial conditions have tightened further, and dollar appreciation remains a concern, especially given the collapse in sterling earlier this week, coming on the heels of the MoF's FX intervention against JPY weakness last week. Our economists note that the 12% YTD surge in the dollar is expected to result in a 1%-pt drag on US GDP growth next year (see *US: Enter the slowdown: coming to a factory town near you*, Michael Feroli, 9/29/22).

Exhibit 3: The trade-weighted dollar has a significant impact on energy prices, and the acceleration in dollar strength in recent months likely accounts for much of the decline in Brent

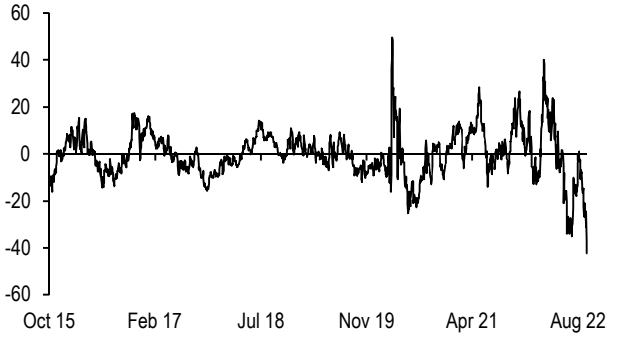
J.P. Morgan nominal broad trade-weighted dollar index (LHS; index) versus front Brent oil contract price (RHS; $/bbl)



Source: J.P. Morgan

Exhibit 4: Breakevens have dislocated further from our fair value model

Residual on J.P. Morgan 10-year breakeven fair value model*; bp



* 1-month forward seasonally-adjusted breakevens (bp) regressed against y/y core CPI inflation (%), log of rolling front Brent oil futures contract price, JULI (our high grade credit index) portfolio spread to Treasuries (bp), share of par TIPS outstanding held in Fed's SOMA portfolio (%), and closest-maturity on-the-run Treasury yields (bp); model uses daily data over the past seven years; R2=93%; SE=10.8bp

Source: Bureau of Labor Statistics, Federal Reserve, U.S. Treasury, J.P. Morgan

How should we think about the effect of a strengthening dollar on CPI inflation? Most importantly, the trade-weighted dollar has a significant impact on energy prices, given that oil is traded almost entirely in USD, so any appreciation in the dollar ultimate hurts consumers' purchasing power and can quickly act to drive prices lower (**Exhibit 3**). Our commodities strategists estimate a 1% appreciation of the J.P. Morgan nominal broad dollar index within a month decreases the price of

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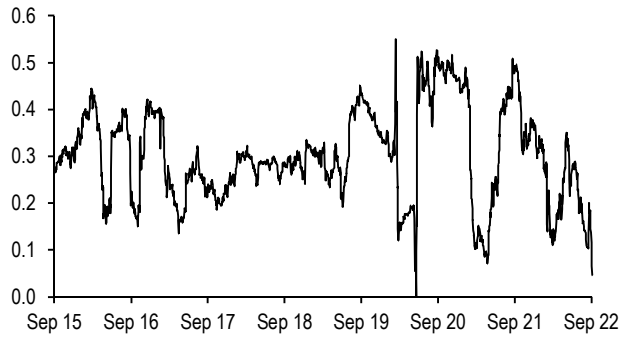
Brent by around 3% over the same month, and note that the acceleration in dollar strength in recent months likely accounts for a substantial portion of the repricing in energy markets (see *Oil Weekly*, Natasha Kaneva, 9/21/22). We also find a similar empirical sensitivity of RBOB gasoline prices to the dollar. Given the pass-through of gas prices to energy CPI we've estimated previously, as well as the 7.43% weight of energy in the headline CPI basket, this implies that a 10% appreciation in the effective dollar index could account for roughly a 0.5%-pt decline in headline CPI through this indirect channel (see *De-energizing inflation breakevens*, 4/20/20). Meanwhile, though much focus is often put on the effects of dollar appreciation on reducing core goods inflation via lower import prices, our economists have shown that the link between the dollar and core goods inflation appears erratic at best, and comes with much longer lags: they estimate that about 4.3% of dollar appreciation is passed into lower core goods prices within one year but also acknowledge that given substantial standard errors, the dollar effect is not statistically different from zero (see *Be prepared for more low core inflation*, Jesse Edgerton, 3/4/15).

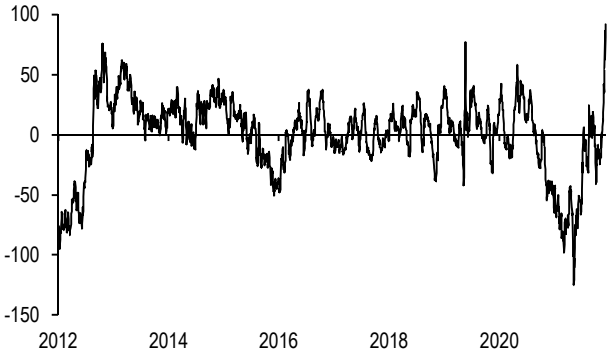
So how should we think about a strengthening dollar on inflation expectations? Recall that in past years we included our broad trade-weighted dollar index in our fair value model for breakevens, with breakevens displaying a statistically significant negative correlation with the factor over the medium term. However, we removed the factor given that we think the negative relationship largely reflects (a) the fact that the dollar and breakevens are jointly impacted by global risk aversion, and (b) the feedthrough of dollar appreciation to inflation by way of lower energy prices—two factors that we already control for. Thus, our current, simplified model regresses breakevens on nominal yields, oil prices, high-grade credit spreads, realized core CPI inflation, and the size of the TIPS market held by the Fed: **Exhibit 4** shows that breakevens have dislocated further from these fundamental drivers and now appear over 40bp narrow. Indeed, adding our broad dollar index to this regression does little to explain this dislocation.

Exhibit 5: The sensitivity of breakevens to nominal yields has fallen sharply in recent months, to the lowest level since 2Q20
Rolling 3-month beta of changes in 10-year breakeven regressed on 10-year nominal yields



Source: J.P. Morgan

Exhibit 6: Separately, our 10-year real yields appear too high relative to our fundamental framework
Residual on our fair value framework* for 10-year real yields; bp



* Model regresses 10-year TIPS real yields on 3Mx3M OIS rate (bp), Fed policy guidance (months), SOMA share of Treasury market (ex bills) (%), net speculative positioning in Treasury futures (3-year z-score), and TIPS trading volumes as a share of overall Treasury volumes (ex bills) (1m mov avg, %); R2 = 74.2%; SE = 31.1bp

Source: J.P. Morgan

Of course one drawback of using a long regression window in our fair value model is that it doesn't capture the instability of nominal yield betas, particularly around inflections in monetary policy regimes. **Exhibit 5** shows that the rolling 3-month beta of changes in 10-year breakevens regressed on changes in nominal yields has

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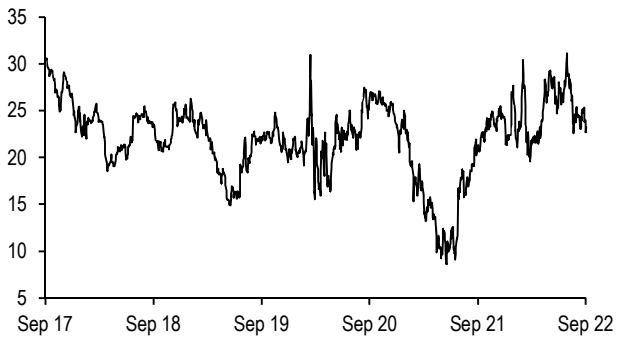
fallen to the lowest level since 2Q20, as the narrowing in breakevens has been accompanied by a historic rise in real yields. This relationship is likely to remain well-below historical averages at least over the near term, given global central bank hawkishness, obscuring the signal from our breakeven fair value model. Meanwhile, however, it is noteworthy that our fundamental framework for 10-year real yields sends a similar signal on valuations: we control for 3Mx3M OIS rates, Fed forward guidance, the SOMA ownership share of the Treasury market, speculative positioning in rate futures, and TIPS trading volumes as a share of coupon Treasury volumes as a proxy for the liquidity premium in TIPS. **Exhibit 6** shows that against this framework, 10-year real yields appear 90bp too high, exceeding the divergence observed in March 2020 and the peak of the 2013 taper tantrum.

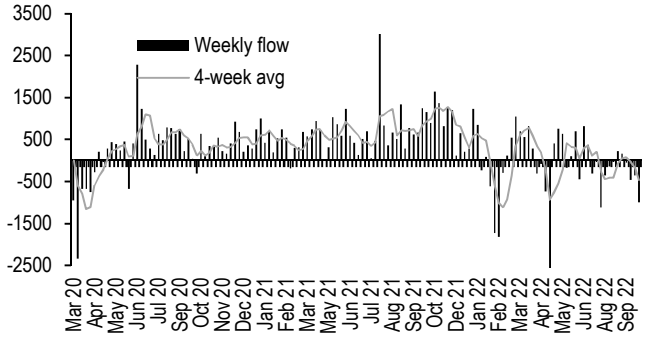
Given these extreme dislocations, we think that technical factors were partially to blame for the scale of the moves over the last few sessions. Indeed, we can see that liquidity deteriorated across Treasury markets, with nominal Treasury market depth falling Thursday to the weakest levels since early-April 2020 (see *US Treasury Market Daily*, 9/29/22). We do not have the same data on order sizes in the TIPS interdealer market—we can proxy depth based on the amount of volume that is being transacted for a given level of volatility, but trading volume data is released with a lag. Interestingly, the inflation swap/breakeven basis, which is another liquidity proxy that we watch, has remained remarkably stable this week, in contrast to the sharp spike observed in March of 2020, when liquidations in cash space drove breakeven underperformance. Moreover, we have seen ETF outflows totaling $1.8bn over the last three weeks, but this is well below the magnitude observed at the outbreak of the pandemic, when ETFs recorded $5.3bn of selling in one month. Nonetheless, the speed of the moves in recent sessions does not appear to be justified by the fundamental backdrop in our minds and has likely been exacerbated by technical factors. **While poor liquidity may continue to exacerbate near-term volatility, we think breakevens are too low versus fundamentals, and real yields should be biased lower over the medium term. Thus, we continue to hold longs in Feb-51 TIPS.**

Exhibit 7: Though we think weak liquidity contributed to the outsized move in TIPS breakevens, it is notable that we did not see a material underperformance in cash versus inflation swaps
10-year matched-maturity inflation swap/breakeven basis; bp



Source: J.P. Morgan

Exhibit 8: TIPS ETFs recorded outflows over the past week but well below the magnitude of selling observed in March 2020
Estimated weekly inflows into the top 10 TIPS-related ETFs and 4-week moving average; $mn



Source: Bloomberg Finance L.P., J.P. Morgan

Trade recommendations

- **Maintain longs in 0.125% Feb-51 TIPS**

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– Buy 100% risk, or $23mn notional of TII 0.125% Feb-51s[1] (*TIPS Strategy*, 9/23/22): P/L since inception: -39.0bp

Trade performance over the past 12 months

P/L reported in bp of yield unless otherwise indicated

TRADE	ENTRY	EXIT	P/L
Oct-25 TIPS breakeven narrowers	8/25/2022	9/1/2022	39.4
5Y5Y breakeven wideners	7/27/2022	8/5/2022	3.6
5-year breakeven wideners	6/9/2022	6/16/2022	-18.5
5Yx5Y inflation swap shorts	4/29/2022	5/20/2022	10.4
Sell Apr-25 TIPS vs. 36% long in Apr-23 TIPS	4/1/2022	5/5/2022	12.0
5Yx5Y inflation swap shorts	3/9/2022	3/18/2022	6.9
5Yx5Y inflation swap shorts	1/27/2022	2/17/2022	7.0
Sell Apr-26 TIPS vs. 14% long in Apr-22 TIPS	8/19/2021	10/15/2021	19.7
AGGREGATE:			
Number of trades	8		
Number of winners	7		
Hit ratio	88%		
Average P/L (bp of yield)	10.1		

Source: J.P. Morgan

[1] For a list of trades closed in the last 12 months, see *TIPS Strategy*, 9/23/22.

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Interest Rate Derivatives

- **The inflation backdrop is global, but policy has begun to diverge. In Japan, monetary policy has remained stimulative, forcing fiscal authorities to "tighten" through intervention in currency markets. In the UK, fiscal easing has triggered sharply higher rates and expectations of an even more aggressive monetary policy, which then eventually forced the BoE into temporarily purchasing bonds to stabilize markets. Thus, differences exist across countries, across fiscal and monetary wings of governments, and even between rate-centric and balance-sheet-centric policy**
- **Thus far, such tensions have remained well contained in the US, but global developments are nevertheless a reminder of potential risks. In addition, US markets have not been spared, as global developments likely triggered a bout of selling in liquid financial assets including US Treasuries. Global risks are also helping to keep US markets volatile in overnight hours, and raise the risk of de-correlation between the Fed's rate hikes and balance sheet policy**
- **The sharp rise in rates in 3Q22 is also impacting US banks, albeit in a now-familiar manner. We discuss our AOCI preview ahead of upcoming earnings releases in a quarter that once again saw 5Y rates rise by 100bp. Our estimate is that the four largest domestic banks experienced a combined AOCI drawdown of about $18bn, which is comparable to 2Q22 despite a much larger increase in rates**
- **All that said, this week's dislocations have left swap spreads considerably narrow to fair value in all sectors even after the late-week retracement. We find value in positioning for wider swap spreads across the curve**
- **The 2nd/6th Eurodollar curve has been dis-inverting in line with our expectations, but we continue to see further steepening potential. Initiating 2Y forward 2s/15s swap curve flatteners paired with 3M forward 7s/30s steepeners is an attractive way to position for this Eurodollar curve steepening**
- **The belly of the H3/U3/H4 3M SOFR futures butterfly looks rich - sell the belly of the level-and-curve-neutral butterfly**
- **In the options markets, risks are large but balanced. Recent Fed-speak remains committed to tightening but suggests we could be on the cusp of a slowdown in pace, which would support declines in volatility. On the other hand, jump risk remains high and exogenous factors loom large - stay neutral on volatility**

Globally convergent inflation confronts diverging policy

Global developments behind the wild market moves of the past two weeks have served as a reminder of how difficult it can be for developed economies to coordinate fiscal and monetary policy in response to the biggest inflation challenge seen in many decades. While **inflation pressures are global in nature** and fairly well correlated across developed market economies (**Exhibit 1**), the **policy response has begun to diverge**, in some cases by intent and in others by necessity. Differences

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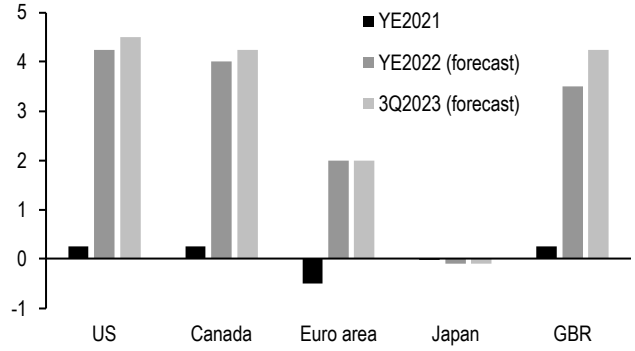
across countries, differences between monetary and fiscal authorities, and even differences across policy tools are all now evident across the globe. The UK encapsulates all of these tensions, with fiscal easing (in the form of recently announced tax cuts) coming even as the BoE is tightening aggressively. Moreover, the BoE has itself been forced to buy Gilts (to stabilize the market) even as it may well be forced to hike rates more aggressively than previously expected, putting its balance sheet policy at odds with its rate hikes, even if only on a temporary basis. Outside of the UK, in Japan monetary policy remains steadfastly loose, forcing fiscal authorities to enact some tightening (in the form of currency stabilization).

In the US, such tensions have thus far remained reasonably well contained - the Fed remains aggressively hawkish, while fiscal policy inclinations (as indicated by, for instance, last month's Inflation Reduction Act) reveal a preference for inflation-neutrality. Nevertheless, these global developments are impacting the US markets in at least three different ways.

Exhibit 1: Policy rates across developed economies have been rising sharply this year, with the exception of Japan
YE 2021 actual, and YE 202 & 3Q2023 JPMorgan policy rate forecast for various developed market economies; %



Source: JPMorgan

Exhibit 2: Swap spreads narrowed sharply this week, likely due to selling of US Treasuries driven by exogenous global developments
Current levels and 1-week stats for SOFR swap spreads (bps); 9/23/2022-9/30/2022

	start	change	end	min	mean	median	max
2Y	13.9	-15.8	-1.9	-1.9	3.6	1.3	13.9
3Y	-12.3	-9.2	-21.5	-25.0	-20.1	-20.8	-12.3
5Y	-20.2	-1.9	-22.1	-27.1	-22.8	-22.4	-20.2
7Y	-27.6	-0.4	-28.1	-34.3	-29.5	-28.4	-27.6
10Y	-23.9	0.8	-23.1	-29.2	-25.0	-23.9	-23.1
30Y	-64.0	-5.1	-69.1	-72.6	-68.6	-68.8	-64.0

Source: JPMorgan

First, **developments in the UK as well as Japan likely resulted in selling of liquid securities such as US Treasuries**, albeit for different reasons. As has been widely reported, the rise in long term gilt yields has been large enough to trigger significant MTM losses on swap positions in LDI strategies, and in turn force some asset sales by pension funds in order to boost liquidity positions and/or meet margin requirements. Under such circumstances, history has shown that asset sales will be determined less by value considerations and more by just the ability to sell a large quantity, which often means selling US Treasuries. On the Japanese front, diverging monetary policy between Japan and other regions has led to a dramatic weakening in the yen, which has eventually caused fiscal authorities to intervene in currency markets. This too likely implies selling assets denominated in foreign currencies versus buying yen-denominated assets (see US Treasury Market Daily: 20-year auction preview; July TIC update, Jay Barry, 9/19/2022). All in all, with such selling occurring in a heavy Treasury auction week, the result has been a sharp narrowing in US Treasury swap spreads led by the front end, and spreads across the curve remain narrow to fair value in all sectors despite rebounding from their troughs earlier this week (**Exhibit 2**).

Second, as we noted last week, **the correlated nature of the inflation backdrop has made US rates more sensitive to developments abroad, which is helping to**

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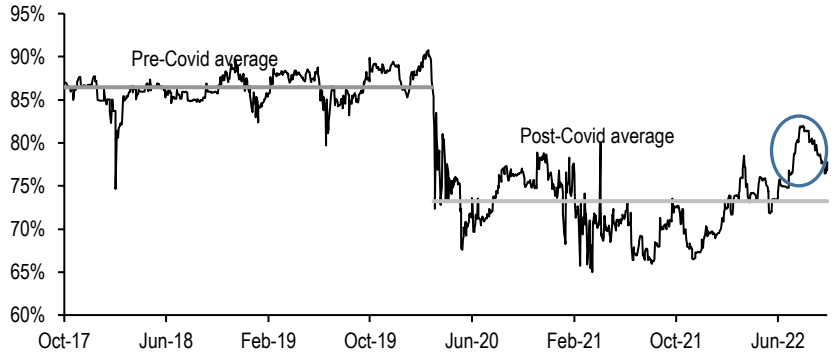
support higher volatility in the overnight hours and making "2-look" realized volatility (measured using open and closing yields) higher than close-to-close realized volatility (see Central banks and the frumious inflation bandersnatch).

Third, **recent developments have highlighted the potential central bank interventions aimed at market stabilization**, which **in turn raises the risk that long and short rates can de-correlate** going forward even rates remain correlated globally. To be clear, there are no indications that US markets are anywhere close to a situation warrant such intervention. Indeed, the Fed is only letting USTs and MBS run off its balance sheet (as opposed to asset sales), and Treasury issuance is not being aggressively termed out, making the curve dynamic in the US less threatening in that regard. Nevertheless, recent developments in the UK are a reminder that US yield curve movements are not all about rate hikes. **Indeed, implied correlation between 2- and 10-year swap yields inferred from YCSOs has recently declined, in contrast to the usual trend in a maturing hiking cycle** where rate hikes emerge as the largest single factor and correlations tend to rise (**Exhibit 3**).

Exhibit 3: Implied correlations have declined recently on the back of global DM central bank interventions, and remain stubbornly below pre-Covid averages
Implied correlation of 2s10s curve for a 1Y expiry YCSO; 10/2/2017-9/2/2022



Source: JPMorgan

Banks AOCI Preview

Domestic demand for US duration assets appears destined to remain considerably poor. As we wrap up 3Q22, it is worth highlighting that this quarter saw a rise in rates almost as large in magnitude as 1Q22. Indeed, 5Y UST yields reached a high of 4.2% this week (representing a 115bp rise over the quarter) before pulling back slightly to finish the quarter a touch above 4%. **With such a large move in rates, we expect large banks to once again print large negative AOCI swings in this quarter's earnings**. We discuss our preview for bank AOCI changes below.

At a high level, our methodology for these projections can be described as follows. First, we regress actual QoQ changes in AOCI versus the QoQ change in 5Y UST yield as well as the squared change in yield, over the 8-quarter historical period ending in 4Q21. Since this was a period of relatively significant negative convexity in the mortgage universe, such a regression allows us to estimate the duration as well as convexity characteristics of bank AFS portfolios coming into 2022, and we used these coefficients, coupled with actual moves in 5Y UST rates, to project the change in AOCI for the top four banks in 1Q22. For 2Q22, we projected new coefficients for the linear and quadratic terms (representing duration and convexity respectively), by assuming that 50% of the prior quarter's extension was hedged away and by assuming that the quadratic coefficient changes in proportion to the Mortgage index

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convexity (since the bulk of negative convexity likely stems from MBS). Our methodology has thus far resulted in reasonable approximations to the subsequently reported AOCI in 1Q22 as well as 2Q22 (see Term - yes, structure - maybe not?). Details of this approach are shown in **Exhibit 4**.

Looking ahead to this quarter's results (which will soon be forthcoming), it is of course hard to know how much additional duration hedging has taken place by major banks. But we note the following:

(i) Rates have risen and remained at levels where the negative convexity in MBS is much smaller. **Therefore any organic duration extension in 3Q22 due to rising rates is likely to be small compared to banks' starting duration levels.** In addition, since rates were already high enough at the start of 3Q22, we assume that changes in convexity are relatively minor (and thus we assume an unchanged quadratic coefficient value for 3Q22 projections).

(ii) Banks have moved securities from their AFS portfolios to their HTM portfolios (which are shielded from AOCI) in recent quarters, and this picked up steam in 2Q22. As seen in **Exhibit 5**, the size of the top four US banks' AFS portfolios fell by about 17% in 2Q22, with an associated increase in the size of HTM portfolios. If we assume that transfers to HTM are for the purpose of managing AOCI duration risk, it stands to reason that the transfers are likely dominated by duration-heavy assets. **Therefore, we assume that duration risk in AFS portfolios was mitigated by twice that amount, or 35%. Thus, we assume that the top four banks came into 3Q22 with AFS duration risk of about $160mn/bp**.

Exhibit 4: Statistical coefficient estimates from 2019-21, adjusted coefficients for 3Q22, and combined AOCI change projections for the largest four domestic banks based on a reduced form quadratic model relying on rate changes

Statistics from regressing quarterly AOCI changes (2Q19-4Q21) against the (i) change in 5Y UST yield (bp) and (ii) squared change in 5Y UST yield (bp^2), adjusted coefficients that we believe are likely to be more appropriate for 2Q22 and 3Q22*, and estimated AOCI change ($mn) for 3Q22

Model for AOCI changes for the largest four domestic banks						
	Regression	Assumption	Assumption	Change in factor		
	4Q19-4Q21	2Q22	3Q22	1Q22	2Q22	3Q22
Intercept	-268.7	-268.7	-268.7			
Chg in 5Y UST yield (bp)	-183	-240	-160	116	58	104
Squared chg in 5Y UST yield (bp^2)	-0.47	-0.094	-0.094	13456	3364	10816
Actual AOCI change, $mn				-27681	-13810	
Predicted AOCI change, $mn				-27821	-14505	-17925
Due to duration				-21228	-13920	-16640
Due to convexity				-6324	-316	-1017

* See *Term - yes, structure - maybe not?* for more details

Source: JPMorgan, Bloomberg Finance L.P.

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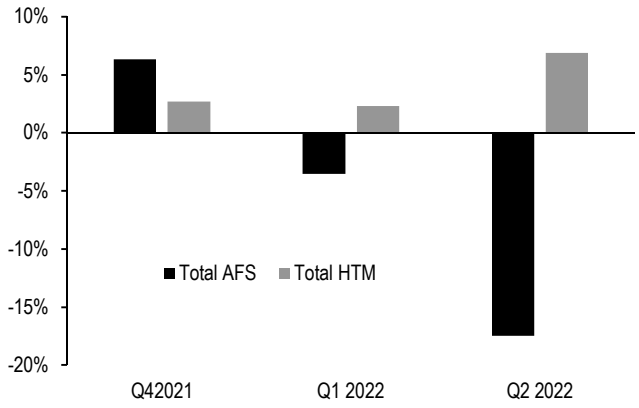
Exhibit 5: Likely motivated by the need to mitigate AOCI sensitivity to rates, banks have been shrinking AFS portfolios and growing HTM

Quarterly percent change in reported AFS and HTM portfolios for the four largest domestic banks*, 4Q21 - 2Q22

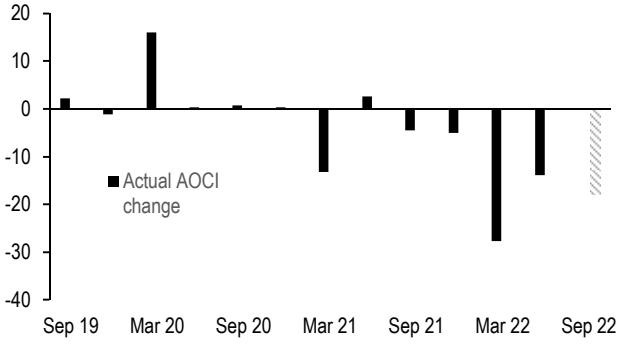


* Includes JPM, C, BAC, WFC

Source: FFIEC, Bloomberg Finance, L.P., JPMorgan

Exhibit 6: AOCI drawdown is projected to be sharply negative, mostly driven by duration risk

Changes in reported AOCI for the four largest domestic banks*, 3Q19 - 3Q22**, $mn



*Includes JPM, C, BAC, WFC

** 3Q22 is projected using the methodology from Exhibit 4

Source: FFIEC, Bloomberg Finance, L.P., JPMorgan

With these assumptions, **we project that AOCI changes in the aggregate are likely to once again be sharply negative to the tune of ~$18bn, mostly driven by duration risk**. This is roughly comparable in magnitude to the AOCI drawdown in 2Q22 despite a larger rise in yields (**Exhibit 6**). It is also worth noting that upcoming earnings releases will shed light on banks' duration management activities in recent months. **A much smaller drawdown in magnitude (relative to our estimate of $18bn) would indicate much more aggressive de-risking in AFS portfolios**, while a larger drawdown would indicate the opposite.

Swap spreads & swap yield curve

Recent dislocations have created several opportunities, most notably in swap spreads. As seen in **Exhibit 7**, this week's sharp narrowing has left spreads considerably below fair value, despite the partial retracement later in the week. With the auctions now behind us, and with the BoE stabilizing the gilt market (mitigating a further worsening in cross-over selling of USTs), we think **conditions are opportune for re-entering and/or maintaining swap spread wideners in virtually every sector of the curve**.

On the swap curve, our main theme remains unchanged, and centers around our view that considerable inversion in the Fronts/Reds curve is inconsistent with the Fed's clear message regarding sustaining tight monetary policy conditions. Of particular note, Chair Powell has been fairly unambiguous in noting that history cautions against premature easing of conditions when combating high inflation. Furthermore, recent Fedspeak, while cognizant of global developments, continues to point to a Fed that is likely to keep tightening, albeit at a possibly moderating pace (**Exhibit 8**). In our view, all this continues to argue for Eurodollar curve dis-inversion. Indeed, this has been playing out - the 6Mx3M / 18Mx3M SOFR forward swap curve has indeed steepened from its recent trough, but there is likely more to go (**Exhibit 9**). Therefore, **we continue to favor trades that are positively exposed to a steepening in this sector**. One such example is initiating **3M forward 7s/30s swap curve steepeners paired with 2Y forward 2s/15s swap curve flatteners**. As seen in **Exhibit 10**, the yield spread corresponding to this trade has itself been well

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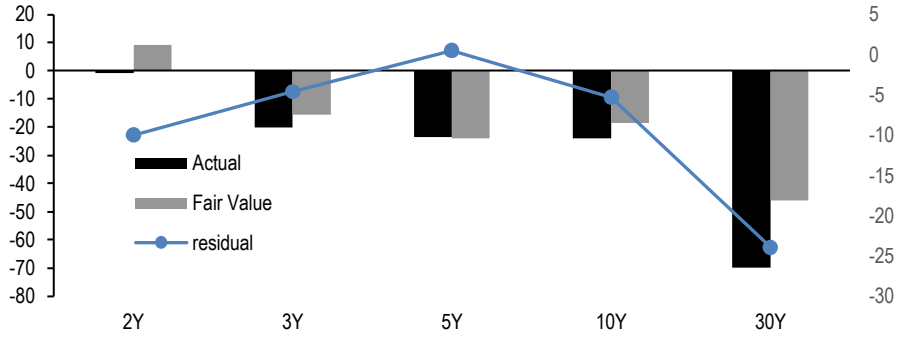
correlated to the 6Mx3M / 18Mx3M forward swap curve. In addition, the yield spread currently appears too low relative to this relationship. Therefore, such a trade offers an attractive way to gain exposure to Fronts/Reds Eurodollar curve steepening, and we recommend this trade (see Trade recommendations).

Exhibit 7: Recent dislocations have left swap spreads considerably narrow to fair value in virtually every sector of the curve

Fair value model forecasts for 2Y*, 3Y, 5Y****, 10Y**, and 30Y*** maturity matched SOFR swap spreads vs. actual levels (lhs) and residuals (rhs); bp



* Fair value for 2Y SOFR swap spreads denoted by 1.8 * 3Mx3M forward OIS (%) plus 1.0 * 3Mx3M forward OIS (%), squared plus 0.7*10Y swap spread (bp) plus 9.2 * 2s/10s Treasury curve (%) plus 0.3 * IOER / SOFR (bp) minus 0.6
** Fair value for 10-year swap spreads denoted by -34.03 plus 2.65 × 1M forward 1M OIS (%), plus 0.13 × Monthly Fed UST purchases ($bn 10Y equivalents), minus 0.063 × High Grade Issuance ($bn), plus 0.024 × Bank Demand ($bn 10Y equivalents), plus 1.17 × 7-20Y sector RMSE (bp)
*** Fair value for 30Y swap spreads denoted by -3.5 minus 18.4 * 10s/30s OTR curve (%) minus 0.08 * VA Duration ($bns 20s) plus 0.02 * pension surplus ($bn) plus 0.06 * Fed UST Purchases ($bn 10s) minus 4.5 * 20Y-30Y RMSE (bp) plus 1*10Y spreads (bp)
**** Fair value for 3Y and 5Y swap spreads is based on a 6M regression versus 2Y and 10Y spreads, and fair value projections for those swap spreads
Source: JPMorgan

Exhibit 8: Recent Fed-speak points to further tightening, albeit at a possibly moderating pace

Selected recent Fed-speak events; 9/26/22 – 9/30/22

Date	Fed Speakers	Comments
9/30/2022	Barkin	Favors rate moves being "a little aggressive" to tame inflation; global rate hikes could threaten financial stability; "promising signs" on inflation
9/30/2022	Brainard	Should consider spillovers as rates tighten globally; fed committed to avoid pulling back prematurely
9/30/2022	Barkin	Some inflation elements risk becoming more systemic
9/30/2022	Daly	Starting to see the benefits of those rate increases; expect Fed will deliver additional rate hikes; still a lot of uncertainty on what inflation will do
9/29/2022	Daly	Markets responding to globalized synchronized tightening; deep recession unnecessary; hearing about early signs labor market is easing;
9/29/2022	Mester	Risks are changing as we get the funds rate up; fed has a little more work to do on getting rates up
9/29/2022	Bullard	Fed pays attention to global economy but focused on the US; other central banks have responded to Fed's intentions
9/29/2022	Mester	Strong dollar will help on inflation side; not seen market disfunction so far in US; still not at point to think about stopping rate hikes
9/28/2022	Evans	Economic fundamentals good, worry they can deteriorate; market volatility reflects uncertainty in global economy; beginning to move into restrictive territory
9/28/2022	Bostic	Have to mindful of 'geopolitical uncertainty'; baseline 75bps in Nov, 50bps in Dec
9/27/2022	Kashkari	Rate pace Fed is undertaking now is appropriate; policy acts with lag
9/27/2022	Bullard	US has arguably moved into restrictive territory; recession risk in the US
9/27/2022	Evans	Optimistic in the forecast peak in Fed rates will be enough; appropriate to slow rate hikes at some point; timing of rate path less important than goal
9/26/2022	Bostic	Fed getting to what may be seen as more restrictive; long term inflation expectations near target

Source: Bloomberg, JPMorgan

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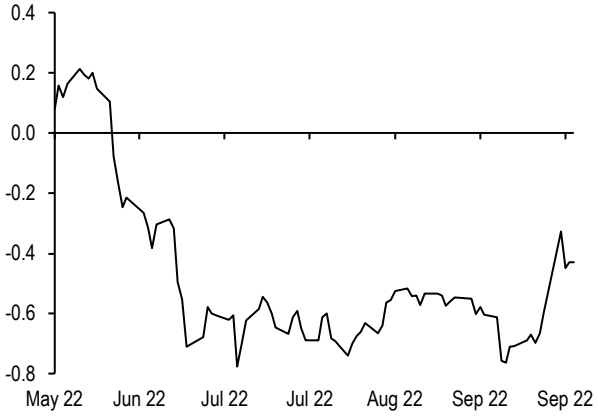
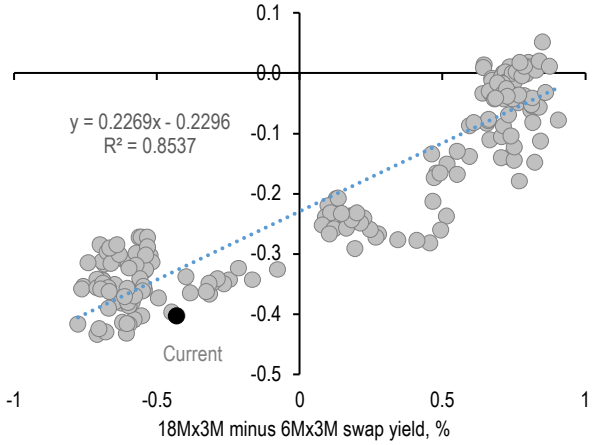
Exhibit 9: The 2nd/6th Eurodollar curve has been dis-inverting, but there is likely more to go
18Mx3M minus 6Mx3M SOFR swap yield curve, %; 05/2022 - 09/2022



Source: JPMorgan

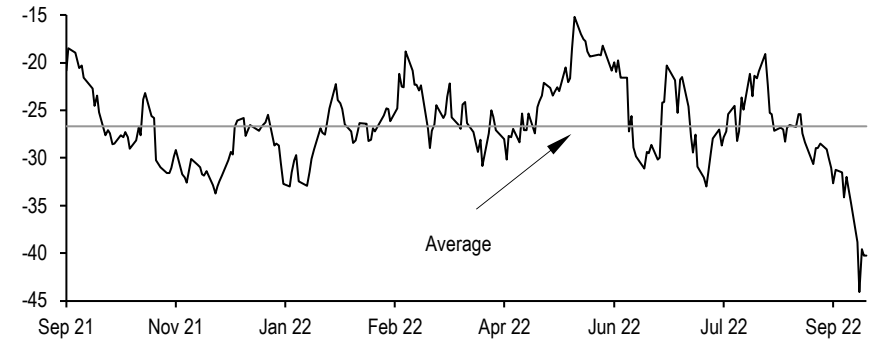
Exhibit 10: Initiating 3M forward 7s/30s swap curve steepeners paired with 2Y forward 2s/15s swap curve flatteners is an attractive way to gain exposure to a steeper Fronts/Reds Eurodollar curve
(3Mx30Y - 3Mx7Y) minus (2Yx15Y - 2Yx2Y) swap yield spread, versus the 6Mx3M/18Mx3M forward swap yield curve; %, 01/2022 - 09/2022



Source: JPMorgan

On the relative value front, **we also recommend selling the belly of the H3/U3/H4 3-month SOFR futures butterfly (32:82.5 weighted)**. The equal-weighted butterfly has been well correlated to the level of yields in the belly and the curve between the wings over the past year, but has recently richened considerably. We recommend selling the belly of the level-and-curve-neutral butterfly and buying the wings (32:82.5 risk weighted versus 100 in the belly). As seen in **Exhibit 10**, this weighted yield spread has been fairly mean reverting and is currently sharply lower than its recent average. We therefore recommend this trade (see Trade recommendations).

Exhibit 11: The belly of the weighted H3/U3/H4 3-month SOFR futures butterfly now appears rich relative to the wings
12Mx3M minus 0.32*6Mx3M minus 0.825*18Mx3M SOFR yield spread over the past year; bp



Source: JPMorgan

Options

Implied volatility remains higher over the week, but that doesn't tell the whole story. Volatility rose sharply into mid-week on the back of the global developments we have discussed earlier in this piece, but declined in the latter half of the week as the BoE announced its market stabilization program. For instance, 6Mx10Y swaption

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implied volatility rose intra-week by as much as 0.7bp/day to a peak of nearly 9bp/day, before declining 0.5bp/day to end the week only modestly higher (**Exhibit 12**).

Exhibit 12: Implieds are mostly higher across the surface, with the shorter expiries leading the way

Statistics for selected swaption structures, bp/day, 9/23/2022 - 9/30/2022

	Start	Chg	End	Min	Max
3Mx2Y	10.00	0.58	10.58	10.00	10.94
3Mx5Y	9.31	0.54	9.84	9.31	10.28
3Mx10Y	8.57	0.34	8.91	8.57	9.38
3Mx30Y	7.17	0.07	7.23	7.17	7.80
6Mx2Y	9.86	0.64	10.50	9.86	10.81
6Mx5Y	9.07	0.51	9.58	9.07	9.99
6Mx10Y	8.26	0.20	8.46	8.26	8.96
6Mx30Y	6.89	-0.02	6.87	6.87	7.44
3Yx2Y	8.56	0.60	9.16	8.56	9.35
3Yx5Y	7.77	0.30	8.06	7.77	8.25
3Yx10Y	6.89	0.15	7.04	6.89	7.24
3Yx30Y	5.69	0.06	5.75	5.69	5.97

Source: JPMorgan

Looking ahead, **we remain neutral on volatility for now, given powerful but offsetting pressures**. On the one hand, markets are in an unsettled state right now. In part thanks to recent global developments, **jump risk remains considerable**. As seen in Exhibit O2, the frequency with which we are observing large moves in rates (defined here as a larger than 10bp move) remains much higher than the frequency one might expect under a traditional Normal distribution for yields (based on implied volatility). Markets are (loosely speaking) characterized by very eventful "jump" days and more quiet ones, and options markets appear reasonably priced to the weighted combination of the two. But should challenging circumstances persist in the UK or elsewhere, an even higher frequency of jump days is possible, and would be attractive for long gamma positions.

At the same time, we may be on the verge of a slowdown in the pace of hikes from the Fed. Our own economists are expecting a 50bp hike in November, and markets are priced to roughly 40% odds of a slowdown in pace to 50bp. Some further evidence in support of this can be seen in this week's Fed-speak. As seen in **Exhibit 8**, Fed speakers appear to be moderating their tone even as they remain committed to hawkish policy. This is seen, for instance, in references to the "risk of global spillovers" and/or "early signs of labor market easing". If realized, it would put markets into a late-stage-tightening-cycle phase, which should prove bearish for volatility. Indeed we have often noted that although the timing is not yet ripe, the maturing hiking cycle will eventually catalyze big down-moves in implied volatility led by the upper-left (see Term - yes, structure - maybe not? and Interest Rate Derivatives 2022 Mid-Year Outlook).

Therefore, **given this delicate balance between significant bearish and bullish factors, we remain neutral on volatility for now, especially in shorter expiries**.

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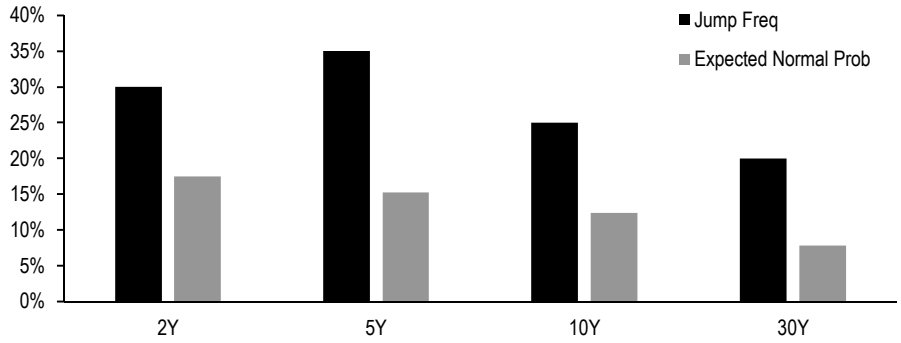
Exhibit 13: Jump risk remains elevated, as seen from the fact that large moves have been occurring more often than might be expected under a Normal distribution

Frequency of jumps* in September, versus the expected frequency under a Normal distribution**



* Jump defined as a move larger than 10bp in either direction.

** Based on 6M expiry swaption ATMF implied volatility on each tail

Source: JPMorgan

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Trading recommendations

- **Position for a steeper 3M forward 7s/30s curve, paired with 2Y forward 2s/15s swap curve flatteners, as an efficient way to position for a steepening Eurodollar curve**
  We continue to think that the dis-inversion of the Eurodollar curve between fronts and Reds has more room to continue, and favor trades such as this that offer attractive ways to gain exposure to this.
  - Receive-fixed in $100.0mn notional of a 12/30/22x7Y SOFR swap at a yield of 3.673% (PVBP: $605.3/bp per mn notional) while paying-fixed in $32.2mn notional of a 12/30/22x30Y SOFR swap at a yield of 3.059% (PVBP: $1880.2/bp per mn notional). Pay-fixed in $331.6mn notional of a 09/30/24x2Y SOFR swap at a yield of 3.566% (PVBP: $182.5/bp per mn notional) while receiving-fixed in $57.0mn notional of a 09/30/24x15Y SOFR swap at a yield of 3.33% (PVBP: $1062.5/bp per mn notional). This trade uses risk weights of 1.0/-1.0/-1.0/1.0 on the 3Mx7Y/3Mx30Y/2Yx2Y/2Yx15Y swaps respectively. This trade is being initiated at a yield spread of -37.8bp.

- **Sell the belly of the H3/U3/H4 3M SOFR futures butterfly (32:82.5 weighted risk)**
  This weighted yield spread has been fairly mean reverting and is currently sharply lower than its recent average
  - Buy 320 contracts of SFRH3 and buy 825 contracts of SFRH4, versus selling 1000 SFRU3 a weighted yield differential (defined as yield on belly minus weighted sum of wings) of -44bp.

- **Unwind $1b 6M expiry one-look straddles on the 2s/10s curve and 6Mx2Y swaption straddles**
  This trade was positioned for an increase in correlation between 2s and 10s to pre-Covid averages. However, with the risk of decorrelation within the US curve because of the small but nontrivial chance of forced balance sheet intervention, we unwind this trade at a loss
  - Unwind short $1bn notional 6M expiry one-look straddles on the 2s/10s curve (CMS adjusted ATMF and strike -52.4bp, 6M forward 2s/10s swap curve at inception -54.7bp, forward premium 44.5bp, implied curve vol at inception 5bp/day). Unwind long $330mn 6Mx2Y swaption straddles (ATMF and strike 3.364%, forward premium 151.75bp, implied bp vol at inception 8.9bp/day). P/L on this trade since inception: -16.5abp (for original trade write up, see Fixed Income Markets Weekly 2022-08-26).

- **Maintain 3Y swap spread wideners**
  - Continue paying-fixed in 0.25% Oct 31 2025 maturity matched SOFR swap spreads. Stay long $100mn notional of the 0.25% Oct 31 2025, versus paying fixed in $89.4mn notional of a maturity matched SOFR swap originally initiated at a swap spread of -15.7bp. P/L on this trade since inception: -6.9bp (for original trade write up, see Fixed Income Markets Weekly 2022-09-23).

- **Maintain 10Y swap spread wideners**
  - Continue paying-fixed in 1.375% Nov 15 2031 maturity matched SOFR swap spreads. Stay long $100mn notional of the 1.375% Nov 15 2031, versus paying fixed in $89.0mn notional of a maturity matched SOFR swap originally initiated at a swap spread of -24.3bp. P/L on this trade since inception: -0.4bp (for original trade write up, see Fixed Income Markets Weekly 2022-09-23).

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- **Maintain 2Y forward 2s/7s curve flatteners paired with 3M forward 5s/15s swap curve steepeners (80% risk weighted)**
  - Continue paying-fixed in $306.7mn notional of a 09/23/24x2Y SOFR swap while receiving-fixed in $100.0mn notional of a 09/23/24x7Y SOFR swap. Continue receiving-fixed in $103.0mn notional of a 12/23/22x5Y SOFR swap while paying-fixed in $38.8mn notional of a 12/23/22x15Y SOFR swap. This trade uses risk weights of -1.0/1.0/0.8/-0.8 on the 2Yx2Y/2Yx7Y/3Mx5Y/3Mx15Y swaps respectively. This trade was initiated on 2022-09-23 at a yield spread of -7.3bp. The current P/L on this trade is -2.1bp (for original trade write up, see Fixed Income Markets Weekly 2022-09-23).
- **Continue to overweight volatility in 5-year tails versus 3-year tails in 3M expiries**
  - Maintain shorts in $161mn notional 3Mx3Y ATMF swaption straddles (strike at inception: 4.0832%, implied vol at inception: 10.01bp/day). Maintain longs in $100mn notional 3Mx5Y ATMF swaption straddles (strike at inception: 3.7541%, implied vol at inception: 9.37bp/day). This trade assumes active delta hedging every business day. P/L on this trade since inception: 1.2 (for original trade write up, see Fixed Income Markets Weekly 2022-09-23).
- **Maintain belly cheapening of the M3/Z3/M4 3M SOFR futures butterfly (-0.55:1:-0.55 risk weighted)**
  - Maintain long 550 contracts of SFRM3 at 96.31. Maintain short 1000 contracts of SFRZ3 at 96.625. Maintain long 550 contracts of SFRM4 at 96.94. P/L on this trade since inception: -3.1bp (for original trade write up, see Fixed Income Markets Weekly 2022-08-26).
- **Maintain longs in 3M/6M expiry swaption calendar spread on 10 year tails**
  - Maintain longs in $100mn notional 3Mx10Y swaption straddles (strike at inception: 2.61%, implied vol at inception: 7.4bp/day). Maintain shorts in $85mn notional 6Mx10Y swaption straddles (strike at inception: 2.59%, implied vol at inception: 7.0bp/day). This trade assumes active delta hedging every business day. P/L on this trade since inception: -13.1abp, as of 2022-08-18 (for original trade write up, see Fixed Income Markets Weekly 2022-08-05).
- **Maintain spread wideners in the 30Y sector, hedged with a weighted short in S&P500 E-mini futures**
  - Continue paying-fixed in 2.875% May 15 2052 maturity matched SOFR swap spreads. Stay long $50mn notional of the 2.875% May 15 2052, versus paying fixed in $46.1mn notional of a maturity matched SOFR swap originally initiated at a swap spread of -54.7bp. Stay short 30 E-mini SP futures (ESU2) at 4133.25. The current P/L on this trade is -7.8bp (for original trade write up, see Fixed Income Markets Weekly 2022-07-29).
- **Maintain bearish vega exposure in the 3Yx10Y sector**
  - Maintain shorts in $100mn notional 3Yx10Y swaption straddles (strike at inception: 2.8141%, implied vol at inception: 5.56bp/day). This trade assumes active delta hedging every business day. P/L on this trade since inception: -28.5abp (for original trade write up, see Fixed Income Markets Weekly 2022-06-03).

Closed trades over the past 12 months

P/L reported in bp of yield for swap spread, yield curve and misc. trades, and in annualized bp of volatility for option trades, unless otherwise specified

Note: trades reflect Thursday COB levels, and unwinds reflect Friday COB levels

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Trade	Entry	Exit	P/L
Spreads and basis			
Receive 7-year matched maturity SOFR spreads	8/20/2021	10/15/2021	2.6
Long 2Yx3Y 6s/FF-OIS	10/23/2020	10/22/2021	(6.0)
Position for wider swap spreads in the 7-year sector	10/29/2021	11/5/2021	3.9
Position for a flattening of the TY / US invoice spread curve	10/29/2021	11/5/2021	1.6
Buy Dec Ultralong bond contracts versus paying fixed in a forward starting swap	9/17/2021	11/12/2021	4.0
Position for wider swap spreads in a selloff via TYZ puts and matched expiry payer swaptions	10/15/2021	12/10/2021	2.3
Short Dec Ultra-long bond contract CTD basis positions ahead of contract expiry	9/17/2021	12/10/2021	(3.5)
Sell USZ1 versus a forward starting swap as an efficient way of positioning for long end yield curve steepening	10/1/2021	12/17/2021	(5.0)
Stay positioned for narrower swap spreads in the intermediate sector	11/5/2021	12/17/2021	2.0
Position for narrower front-end maturity SOFR swap spreads	12/17/2021	1/7/2022	3.0
Front end SOFR swap spread narrowers	1/8/2022	1/28/2022	0.5
Intermediate SOFR swap spread narrowers	12/10/2021	1/28/2022	1.0
Long 1Yx2Y 1s/3s basis	8/20/2021	2/25/2022	1.5
Tactical exposure to wider long end swap spreads	2/11/2022	3/4/2022	(7.2)
Short 30s versus 20s on ASW	1/8/2021	9/10/2021	(5.4)
Front end SOFR swap spread wideners	3/25/2022	4/8/2022	3.5
Tactical exposure to SOFR swap spread narrowers in the belly	3/25/2022	4/22/2022	3.4
SOFR swap spread wideners in the long end	4/22/2022	5/20/2022	(7.0)
2s/5s sofr swap spread steepener	5/20/2022	6/3/2022	(16.6)
2Y spread wideners, hedged with 10% risk weighted long duration	7/8/2022	7/29/2022	0.2
2Y spread wideners outright	7/29/2022	8/11/2022	7.8
Conditional bull 5Y spread wideners	7/8/2022	8/26/2022	0.0
Swap spread wideners in the 10Y sector	7/15/2022	8/26/2022	1.0
Conditional bull spread wideners via TYU2 calls	7/15/2022	8/26/2022	0.0
3Y spread wideners	6/10/2022	9/1/2022	7.7
3Y spread wideners using 2.625% Apr 2025	8/19/2022	9/9/2022	3.1
TUZ2 invoice spread narrowers	8/19/2022	9/16/2022	(5.0)
3Y spread wideners, via old 5-year notes in the Jul 2025 sector	9/9/2022	9/16/2022	7.2
Duration and curve	**Entry**	**Exit**	**P/L**
Position for a steeper 10s/30s maturity matched swap spread curve	09/10/21	10/01/21	0.2
Sell FFG2	08/06/21	10/15/21	0.0
Sell EDZ1	06/18/21	10/29/21	1.5
Initiate 35Yx5Y vs 25Yx5Y swap curve steepeners	01/08/21	01/07/22	(12.1)
Position for a cheapening of the belly of a 2s/7s/15s weighted swap butterfly in a selloff via payer swaptions	10/22/21	01/28/22	(4.5)
Position for a steeper 5s/30s curve in a rally	11/15/21	02/25/22	0.0
1Y forward 5s/20s steepener hedged with 1Yx2Y pay-fixed swaps	02/04/22	03/04/22	4.0
Position for a steeper 10s/30s maturity matched swap spread curve	01/21/22	03/04/22	(13.2)

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Forward 2s/10s SOFR swap curve steepeners versus paying fixed in 25% of the risk in 1Yx1Y SOFR rates, as an asymmetric way to position for further upside in front end forward yields	01/28/22	03/04/22	8.5
Position for a steeper 5s/10s curve paired with a short in Reds	02/25/22	03/04/22	(0.8)
1Y forward 3s/5s steepener hedged with 2Yx1Y pay-fixed swaps	03/04/22	03/11/22	7.1
Outright 30M forward 2s5s steepeners	03/18/22	03/25/22	(11.0)
18M forward 2s/10s SOFR swap curve steepener, paired with 25% risk in pay fixed 18Mx1Y forward swap	03/18/22	03/25/22	(4.6)
2Y forward 10s/30s steepener paired with 10% risk in 2Yx1Y pay-fixed swaps	03/11/22	03/25/22	(2.5)
1Y forward 3s/10s curve steepeners versus 25% risk in 2Yx1Y	03/04/22	03/25/22	(3.4)
6M forward 2s/5s SOFR swap curve steepener	04/08/22	05/06/22	16.2
6M forward 3s/7s SOFR swap curve steepener	04/22/22	05/06/22	15.0
3M forward 3s/5s SOFR swap curve steepener	04/29/22	05/06/22	8.2
6M forward 1s/5s SOFR swap curve steepener	05/13/22	05/20/22	(15.3)
9M fwd 2s/3s steepeners	05/06/22	07/15/22	(8.6)
Receive in the belly of a 1Yx1Y / 3Mx3Y / 3Yx1Y 70:25 weighted swap yield butterfly	04/29/22	07/29/22	(14.1)
Belly cheapening 2s/5s/10s	06/03/22	07/29/22	(9.8)
3M forward 5s/10s swap curve flatteners, coupled with 3Y forward 5s/10s swap curve steepeners on a 0.5:1 risk weighted basis	07/15/22	08/05/22	4.3
3Y fwd 5s/10s steepener hedged with 0.25 risk in 3M fwd 5s/30s flatteners	07/29/22	08/05/22	3.2
6M expiry 5s/30s conditional bull steepeners, coupled with selling 6Mx2Y receiver swaptions	02/11/22	08/11/22	0.0
Conditional 2s/7s bear steepener	05/20/22	08/26/22	(36.1)
conditional bear belly cheapening 5s/10s/30s	08/05/22	09/09/22	6.1
2Y forward 2s/15s flatteners, paired with a 100% risk weighted 3M forward 2s/30s swap curve steepener and a 20% risk-weighted short in the 6Mx3M sector	08/26/22	09/09/22	3.5
2Y forward 7s/15s steepener vs 3M forward 7s/30s flattener	08/05/22	09/23/22	0.9
2Y forward 10s/15s steepener vs 3M fwd 10s/30s flattener	08/05/22	09/23/22	(1.4)
2Y forward 3s/10s flatteners paired with 3M forward 7s/15s steepeners (80% risk weighted)	09/09/22	09/23/22	8.2

Options	**Entry**	**Exit**	**P/L**
Long gamma position in the 6Mx10Y sector	09/17/21	10/01/21	2.5
Overweight gamma on 5-year tails versus 2-year tails	10/29/21	11/05/21	5.2
Position for a rise in longer expiry implied volatility versus shorter expiry implieds	10/01/21	01/07/22	(10.8)
Outright short gamma exposure via selling 6Mx5Y swaption straddles	12/10/21	01/28/22	(4.5)
Underweight gamma on 2-year tails versus longer tails	12/17/21	02/04/22	(15.1)
Long gamma exposure via buying 6Mx5Y swaption straddles	02/04/22	02/11/22	8.5
Re-enter long vega positions to position for a rise in longer expiry swaption volatility as markets reprice to revised Fed hiking expectations	01/28/22	03/04/22	8.4
Overweight gamma in 30-year tails versus 2-year tails	02/25/22	03/04/22	(19.7)
Overweight gamma on 10-year tails versus 2-year tails	11/12/21	03/04/22	2.2
Long gamma, short vega exposure in the upper left	02/11/22	03/04/22	2.5
Enter into long gamma positions in the 6Mx10Y sector	04/01/22	04/22/22	8.3
Overweight 5Yx5Y swaption volatility versus 2Yx2Y	03/11/22	07/08/22	(2.7)

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Sell 1yx3y straddles versus 3yx10y straddles	04/08/22	07/08/22	(19.3)
Sell 1Yx1Y straddles versus buy 5Yx10Y straddles vega risk weighted 80:100	05/06/22	07/08/22	(22.6)
sell 6Mx2Y swaption straddles	05/06/22	07/08/22	(39.2)
Buy 3mx2y swaption straddles, delta hedged every 10 days	07/29/22	08/05/22	31.0
Long gamma in 10Y tails	07/15/22	08/26/22	6.8
Buy 6Mx2Y A+25 payer swaptions hedged with a receive fixed swap	08/19/22	09/01/22	(18.8)
Long 3Mx10Y straddles vs 3Mx30Y straddles	08/19/22	09/09/22	3.4
Short $1b 6M expiry one-look straddles on the 2s/10s curve vs long 6Mx2Y swaption straddles	08/26/22	09/30/22	(16.5)
Others	**Entry**	**Exit**	**P/L**
Short 959 UXY calendar spreads and unwind short 41 UXYZ1 contracts	11/12/2021	11/29/2021	2.5
Short ultra-long bond contract calendar spread	11/12/2021	11/29/2021	3.0
WN calendar spreads narrowers	5/13/2022	5/25/2022	(7.5)
UXY calendar spread narrowers	5/13/2022	5/25/2022	3.0
FV calendar spread narrowers	5/13/2022	5/25/2022	0.0
WN calendar spreads narrowers	8/19/2022	8/26/2022	(0.5)
TN calendar spreads narrowers	8/19/2022	8/26/2022	(0.3)
TU calendar spread wideners	8/19/2022	8/26/2022	(2.3)
Total number of trades			**87**
Number of winners			**51**
Hit rate			**59%**

Recent Weeklies	
23-Sep-22	Central banks and the frumious inflation bandersnatch
16-Sep-22	Zugzwang
09-Sep-22	Perpetual Deuce
01-Sep-22	US Treasury Market Daily: De-risking
26-Aug-22	Seeking Rational Inattention
19-Aug-22	Hiking in Yellowstone
5-Aug-22	Schrodinger's recession
29-Jul-22	Can two negatives make a positive?
15-Jul-22	Obscured by clouds
9-Jul-22	Term - yes, structure - maybe not?
24-Jun-22	Interest Rate Derivatives 2022 Mid-Year Outlook
15-Jun-22	US Treasury Market Daily: Everyone's got a plan until...
10-Jun-22	Inflation permeates the cosmic background
3-Jun-22	Weekly: QTer than a June bug
25-May-22	US Treasury Market Daily: 7-year auction preview; Treasury Futures Calendar Spreads Update
20-May-22	Weekly: Interest Rate Derivatives: The TLDR - Technicals, Liquidity & economic Downturn Risk
13-May-22	Weekly: Stable Algorithms, Unstable Coins
6-May-22	Weekly: Expeditiarmus
29-Apr-22	Weekly: May the Fourth not catch you by surprise
22-Apr-22	Weekly: April showers, Flowers bloom, Hikes loom
7-Apr-22	Weekly: Keep your eyes on me
1-Apr-22	Weekly: March Madness comes to a close?
25-Mar-22	Weekly: What I tell you three times is true

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18-Mar-22	Weekly: Higher rates, wider tails
11-Mar-22	Weekly: Vollelujah
04-Mar-22	Weekly: Vol-halla
02-Mar-22	US Treasury Market Daily: Staying the course, at least pro tempore
25-Feb-22	Weekly: War and peace talks
18-Feb-22	Weekly: Wot's… uh the deal?
4-Feb-22	Weekly: Measured Theory
28-Jan-22	Weekly: Steady – yes; slow – no
21-Jan-22	Weekly: Frozen
8-Jan-22	Weekly: Wingardium Leviosa
17-Dec-21	Weekly: Touching the corona
10-Dec-21	Weekly: FOMiCron
29-Nov-21	US Treasury Market Daily: Omicron omnishambles
12-Nov-21	Weekly: Bond auction tail wags the dog
5-Nov-21	Weekly: November rain
29-Oct-21	Weekly: Illiquidity – Trick no Treat
22-Oct-21	Weekly: Pumpkin Spice
15-Oct-21	Weekly: Action Replay
1-Oct-21	Weekly: Waiting for a raise
24-Sep-21	Weekly: Taper - yes, tantrum - no
17-Sep-21	Weekly: The (dot) plot thickens
Annual Outlooks	
23-Nov-21	Interest Rate Derivatives 2022 Outlook: Skating away on the thin ice of a new year
Recent Special Topic Pieces	
15-Aug-22	US bond futures rollover outlook: September 2022 / December 2022
21-Jun-22	WN-dow Dressing
2-Jun-22	The Fed's New Undoing Project
1-Jun-22	Cross currency basis 3Q22 Outlook: Relative monetary policy and Fed's QT support wider FX OIS basis
25-May-22	Cross Asset Strategy: What if the mean reverts?
12-May-22	US bond futures rollover outlook
27-Apr-22	Curve, Volatility and Curve Volatility
16-Feb-22	US bond futures rollover outlook: March 2022/June 2022
3-Feb-22	The Front-End Edition: The nexus between the Fed and funding markets
14-Jan-22	Cross currency basis 1Q22 Outlook
10-Nov-21	US Treasury Futures Rollover Outlook: December 2021/March 2022

Source: J.P. Morgan

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Short-Term Fixed Income

- **Money markets continue to be a place to park cash and hide out from the market volatility, especially heading into quarter-end. Indeed, ON RRP usage hit another record high on Friday, increasing by $107bn to nearly $2.43tn**
- **MMF AUMs have been on the rise and are about $100bn above where balances were this time last year. Prime MMFs have been the primary contributor behind the growth in AUMs YTD**
- **In particular, the growth in AUMs has been driven by prime retail funds and internal institutional prime funds, underscoring the notion that cash is still one of the best-performing asset classes in the current volatile market environment**
- **MMF AUMs could continue to rise, particularly heading into year-end, which could further boost usage at RRP. Historically, MMFs tend to see seasonal inflows in 4Q**
- **Fed funds volumes have increased by $44bn to about $110bn YTD, a level not seen since early 2018 outside of March 2020**
- **Given the relative yield advantage fed funds has over repo, it's no surprise then that FHLBs, the predominant lender of funds, increased their allocation towards fed funds by about $20-$25bn YTD**
- **Small banks remain a net seller of funds, though their balances have gradually shifted to be less negative, indicating an increased need for liquidity in the funds market. However, FBOs still remain the predominant borrowers**

A quarter-end to remember

This week felt like a never-ending story of continued market volatility, sparked by UK's announcement of larger-than-anticipated tax cuts as part of a fiscal easing package. To calm the markets and control further sell-off of long-dated UK government bonds (gilts), the BoE issued a statement on Wednesday saying it would postpone gilt sales until October 31st (previously set to begin next week) and engage in temporary long-dated gilt purchases over the next two weeks on "whatever scale is necessary." While BOE's announcement did slightly calm the markets, the US equity market still saw one of its worst weeks since 2020 as investors sought flight-to-safety. Earlier this week, 2-year Treasury yields peaked at nearly 4.31%, their highest level since late-summer 2007, while the 2-year Treasury auction was the smallest since mid-2020 (see *5-year auction preview*, J. Barry, 9/26/22). Adding to this week's market volatility, jobless claims fell from 209k to 193k during the week ending September 24th, the lowest reported since April, continuing to indicate a strong US labor market (see. *US: Initial claims beat expectations*, D. Silver, 9/29/22). Meanwhile, headline and core PCE rose 0.3% and 0.6% respectively month-over-month, both higher than expectations. Comments from numerous Fed officials reiterated their stance on the need for further interest rate hikes to combat inflation. All told, OIS forwards declined week-over-week and are now pricing in a peak terminal fed funds rate of around 4.53%, down from 4.73% a week ago, as markets

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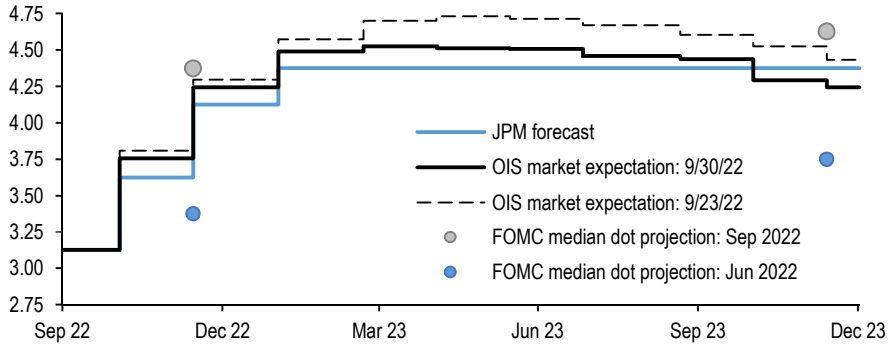
are unsure whether the Fed can continue to tighten as aggressively given the global macro backdrop (**Exhibit 1**).

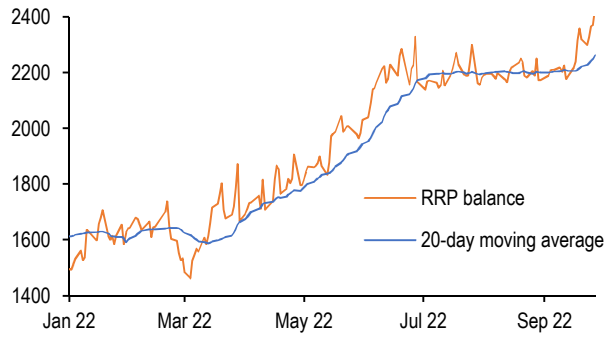
Exhibit 1: OIS forwards declined week-over-week and are now pricing in a peak terminal fed funds rate of around 4.53%, down from 4.73% a week ago
Fed policy outlook according to J.P. Morgan forecast, OIS market expectations, and FOMC dots (%)



Source: J.P. Morgan

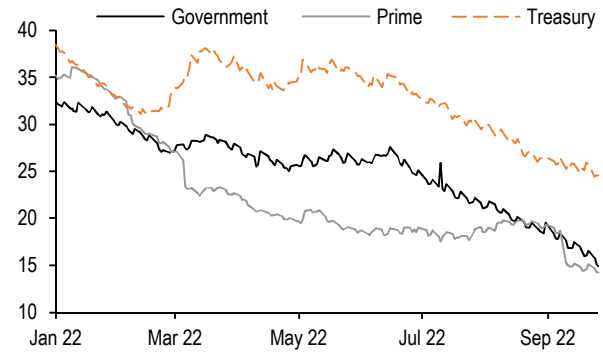
To that end, the money markets have been a place to park cash and hide out from the market volatility, especially heading into quarter-end. This is most evident looking at balances at the Fed ON RRP facility, which hit another record high on Friday, increasing by $107bn to nearly $2.43tn week over week (**Exhibit 2**). The record rise in usage is not surprising given the level of macro and monetary policy uncertainties, which continue to push investors into shorter durations. Indeed, government, Treasury, and prime MMF WAMs fell 1.3 days, 1.1 days, and 0.3 days, respectively week over week, and are at record lows this year (**Exhibit 3**). Furthermore, RRP remains an attractive asset class relative to other money market products, with T-bills and SOFR continuing to trade significantly below RRP (**Exhibit 4**). Not to mention, supply tends to be light heading into quarter-end, leaving investors with limited supply alternatives.

Exhibit 2: RRP usage hit another record high on Friday, increasing by $107bn to nearly $2.43tn week over week
RRP balance vs. 20-day moving average ($bn)



Source: Federal Reserve, J.P. Morgan

Exhibit 3: Government, Treasury, and prime MMF WAMs are at record lows this year
Government, Treasury, and prime MMF WAMs (days)



Source: Crane Data, J.P. Morgan

Also notable, MMF AUMs have been on the rise. Week over week, taxable MMF AUMs increased by $21.2bn to about $4.95tn and are now about $100bn above where balances were this time last year (**Exhibit 5**). While most of this week's increase was driven by government MMFs, it's worth noting that prime MMF AUMs have increased sharply year over year and are the primary contributor of the growth

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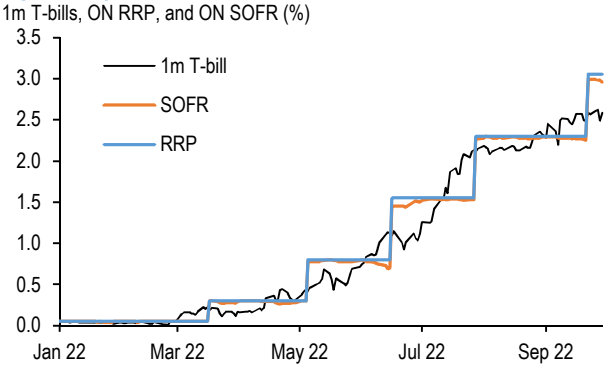
in AUMs YTD. A closer look at prime funds reveals that the growth has been driven by prime retail funds as well as internal institutional prime funds, underscoring the notion that cash is still one of the best-performing asset classes in the current volatile market environment, particularly given they are yielding around 2.50% with minimal duration risks.

Exhibit 4: RRP remains an attractive asset class relative to other money market products, with T-bills and SOFR continuing to trade significantly below RRP

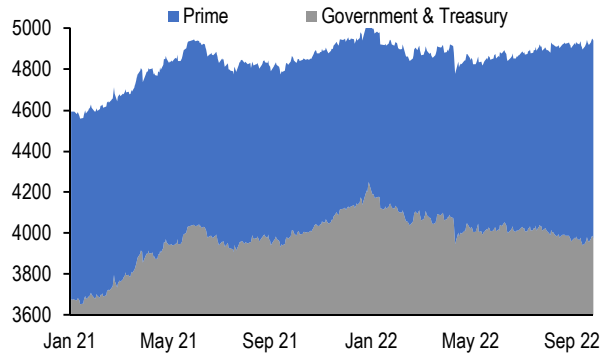
1m T-bills, ON RRP, and ON SOFR (%)



Source: J.P. Morgan

Exhibit 5: Week over week, taxable MMF AUMs increased by $21.2bn to about $4.95tn and are now about $100bn above where balances were this time last year

Government & Treasury and prime MMF AUMs ($bn)

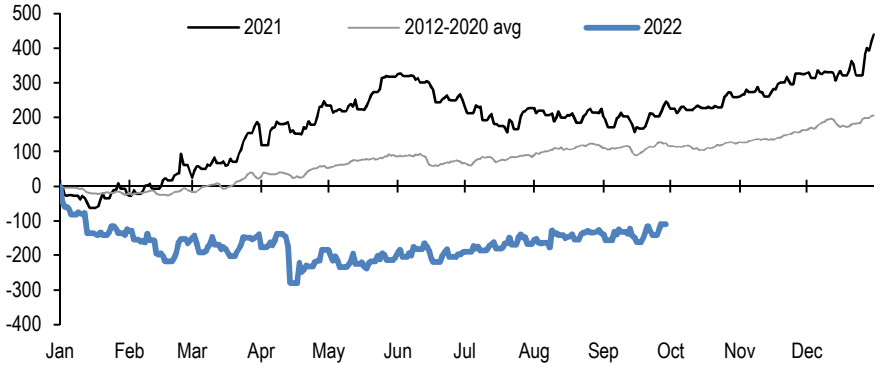


Source: Crane Data, J.P. Morgan

Where do we go from here? Given central banks' goal to tame inflation, the persistent imbalance within the labor markets, and the continued geopolitical concerns, markets are likely to remain choppy for some time. We would not be surprised if MMF AUMs continue to rise, particularly heading into year-end. Historically, MMFs tend to see seasonal inflows in 4Q, with last year seeing outsized inflows right around year-end (**Exhibit 6**). Higher highs at the Fed's ON RRP facility seem likely. Overall, liquidity remains abundant in the money markets, as evidenced by the ~$2.43tn presently sitting at the RRP facility. However, to the degree that investors continue to stay short and are investing only into the next Fed meeting, funding over year-end turn could be less smooth than in prior years.

Exhibit 6: Historically, MMFs tend to see seasonal inflows in 4Q, with last year seeing outsized inflows right around year-end

Cumulative YTD change in MMF AUMs ($bn)



Source: Crane Data, J.P. Morgan

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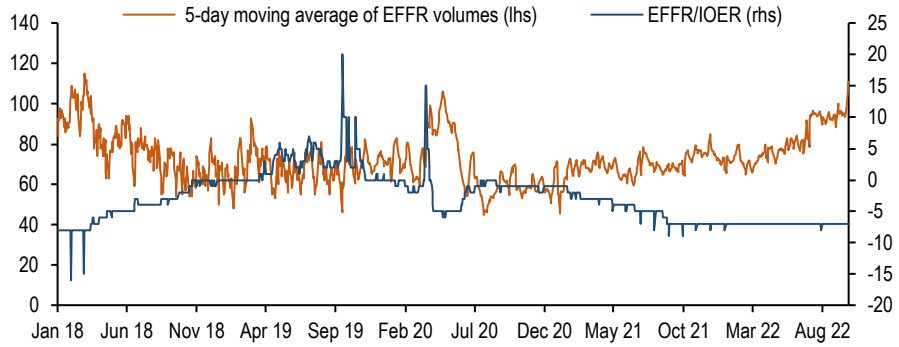
An update on the fed funds market

Money market watchers may have noticed that fed funds volumes have increased by $44bn to about $110bn year-to-date, a level not seen since early 2018 outside of March 2020 (**Exhibit 7**). While this could be the initial signs of reserve scarcity, as banks are more actively borrowing in the wholesale funding markets, we think there is still some runway to go before we meaningfully start to see a narrowing in the EFFR/IORB spread. Indeed, even as volumes picked up this year, EFFR has stayed steady throughout, suggesting that there is still enough liquidity in the banking system. Normally, in a reserve-scarcity scenario, there should be a positive correlation between volumes and rates (see *Implementing Monetary Policy: Perspective from the Open Market Trading Desk*, Lorie Logan, 5/18/2017).

Exhibit 7: Fed funds volumes have increased by $44bn to about $110bn YTD
5-day moving average of EFFR volumes (lhs, $bn) vs. EFFR/IOER spread (rhs, bp)



Source: Federal Reserve Bank of New York, J.P. Morgan

A closer look at the liquidity portfolios of FHLBs—the predominant lender of funds—further supports the above notion regarding liquidity. FHLBs' liquidity balances have increased by $62bn to about $225bn year-to-date, coinciding with an increase in advances, which rose by $167bn during the same time period (**Exhibit 8**). FHFA requires FHLBs to hold enough liquidity to cover cash flows, assuming no access to capital markets and assuming renewal of all maturing advances for a period of between 10 and 30 calendar days. Given the relative yield advantage fed funds has over repo, it's no surprise then that FHLBs increased their allocation towards fed funds by about $20-$25bn year-to-date (**Exhibit 9**). Though interestingly, on a notional basis, FHLBs' allocation towards repo surpassed that of fed funds, which we suspect is a function of supply availability.

Turning to the borrowers of fed funds, based on quarter-end call reports, while the amount of net fed funds purchased rose this year from a pandemic low in 4Q21, the amount nonetheless remains below pre-pandemic levels (**Exhibit 10**). Small banks remain a net seller of funds, though their balances have gradually shifted to be less negative, indicating an increased need for liquidity in the funds market. Still, foreign-related institutions remain the predominant borrower of funds, borrowing $21bn as of 2Q22. This makes sense, as many foreign banks in the US do not have access to retail deposits, and thus have to rely on wholesale funding (e.g., fed funds, repo, CP/CDs, FX swaps) for USD funding. Specifically, Taiwanese banks remain the largest borrowers of funds among FBOs in the funds market. To our knowledge, Taiwanese banks do not have access to the US CP/CD market.

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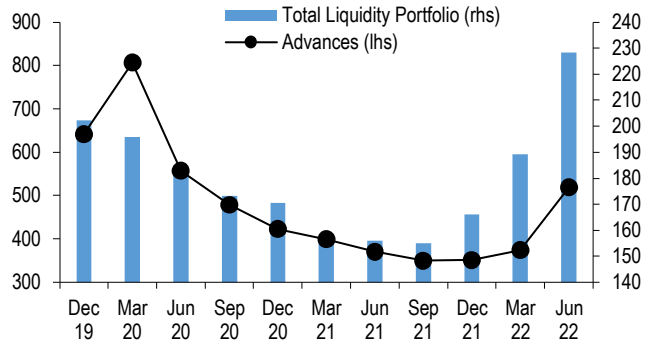
Exhibit 8: FHLBs' liquidity balances have increased by $62bn to about $225bn YTD, coinciding with an increase in advances, which rose by $167bn during the same time period

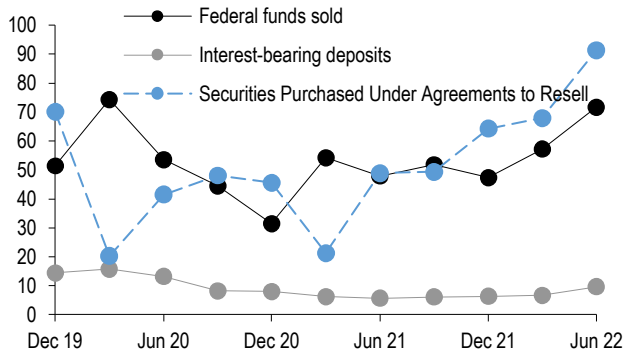
FHLBs' total liquidity portfolio (rhs, $bn) vs. advances (lhs, $bn)



Source: S&P Capital IQ, J.P. Morgan

Exhibit 9: Given the relative yield advantage fed funds has over repo, it's no surprise then that FHLBs increased their allocation towards fed funds by about $20-$25bn YTD

FHLBs' fed funds sold, interest-bearing deposits, and securities purchased under agreements to resell ($bn)



Source: S&P Capital IQ, J.P. Morgan

Exhibit 10: Based on quarter-end call reports, while the amount of net fed funds purchased rose this year from a pandemic low in 4Q21, the amount nonetheless remains below pre-pandemic levels

Borrower breakdown of total net fed funds purchased ($bn)

	2016Q4	2017Q4	2018Q4	2019Q4	2020Q4	2021Q4	2022Q1	2022Q2
Total Net Fed funds Purchased	***39.2***	***43.7***	***33.6***	***30.8***	***4.7***	***0.1***	***16.1***	***26.8***
US Banks	***6.0***	***16.6***	***16.7***	***11.9***	***-7.2***	***-11.3***	***-9.7***	***5.6***
US G-SIBs	1.8	8.0	7.4	2.5	2.7	1.9	0.8	1.5
Category 2 (assets ≥ $700bn)	0.0	2.0	2.3	0.4	0.3	0.0	0.0	0.0
Category 3 (assets btw $250bn and $700bn)	0.0	-0.2	0.6	5.6	0.8	0.6	0.6	0.4
Category 4 (assets btw $100bn and $250bn)	3.2	2.1	2.7	0.7	0.4	0.3	-0.1	6.7
Other banks (assets btw $50bn and $100bn)	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Small banks (assets ≤ $50bn)	0.9	4.3	3.8	2.8	-11.3	-14.0	-11.0	-3.0
FBOs	***33.2***	***27.1***	***16.8***	***18.9***	***12.0***	***11.3***	***25.8***	***21.2***
Taiwan	7.9	7.9	6.7	6.3	7.8	6.0	10.9	8.5
Germany	2.9	0.6	1.8	0.9	0.3	1.5	4.5	2.9
Norway	3.7	5.6	1.7	2.5	0.0	0.0	0.6	0.8
China	2.7	3.4	-0.1	0.5	2.5	1.0	2.4	1.8
France	3.5	3.3	4.2	3.4	0.0	1.4	1.4	2.2
Sweden	1.4	0.3	0.3	0.0	0.3	0.2	2.8	2.4
Other FBOs	10.9	6.0	2.0	5.4	1.1	1.1	3.2	2.6

Source: S&P Capital IQ, J.P. Morgan. Any long-form nomenclature for references to China and Taiwan within this research material is Mainland China and Taiwan (China)

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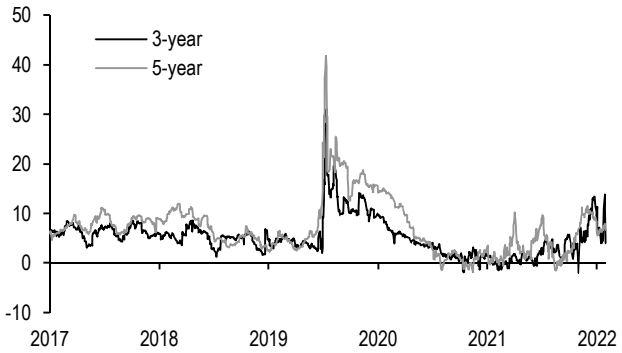
J.P.Morgan

US Agencies and SSAs

- **Spreads have tightened since the summer wides, as Agencies outperformed other spread product, closing the valuation gap we identified last month. Credit spreads could tighten further into year-end, which would be a tailwind for the product, but spreads represent a very small share of all-in yields in a 4% world. Remain neutral Agencies versus Treasuries**
- **Issuance from the FHLBs has remained elevated, particularly in the form of discos, and more recently floaters**
- **$-SSAs have modestly underperformed, with European and Washington spreads unchanged and 2bp wider, respectively, since our last publication on August 3. The recent underperformance of $-SSAs is partially explained by the seasonal pick-up in issuance. We believe our issuance forecasts through year-end remain appropriate**
- **We remain neutral $-SSAs. Valuations appear fair to fundamentals, and we see the main drivers of this relationship remaining range-bound through year-end**

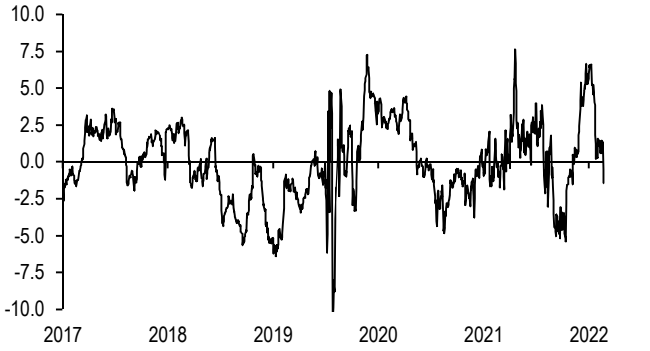
Market views

Exhibit 1: Agency spreads tightened from their summer wides, but are still 2-3bp wider YTD
3- and 5-year Agency z-spreads to the off-the-run Treasury curve; bp



Source: J.P. Morgan

Exhibit 2: After the recent outperformance relative to other spread product, agency spreads no longer appear too wide
Residual from J.P. Morgan 5-year agency spread fair-value model*; bp



*Regression of 5-year Agency z-spreads to off-the-run Treasury curve on JULI (J.P. Morgan HG credit index) spread to Treasuries (bp), long-term Agency bullet debt outstanding ($bn), 5-year Treasury yields (%), and dealer positions share of long-term debt (%), regression over the last 5 years; bp R-squared = 75.6%, SE = 2.7bp
Source: J.P. Morgan, FNMA, FHLMC, FRBNY

Agencies have outperformed Treasuries since we last published on August 3, with 3- and 5-year z-spreads to off-the-run Treasuries tightening by 4bp and 3bp, respectively (**Exhibit 1**). At face value, this narrowing appears to be at odds with widening in other spread product during this period. However, as we noted in our last publication, Agency spreads appeared too wide after accounting for HG credit spreads, outstanding long-term Agency debt, Treasury yields, and dealer positions in Agency debt (see *US Agencies and SSAs*, 8/3/22). Hence, as **Exhibit 2** shows, the recent outperformance represents a mean-reversion in valuation to fair value and agencies now appear fairly valued relative to fundamental drivers. Looking ahead, our US HG colleagues expect spreads to tighten modestly to 150bp by year-end,

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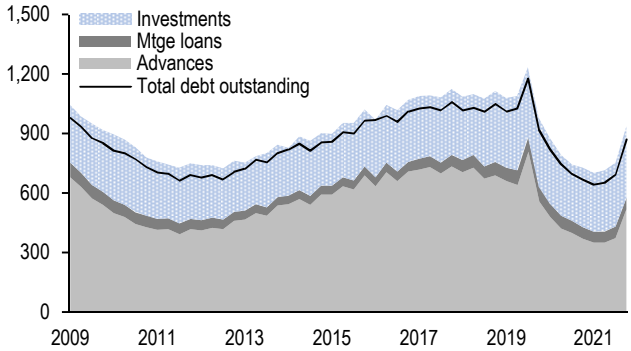
roughly 35bp tighter from current levels and 5-year Treasury yields are already at our year-end targets. Against this backdrop, Agency spreads could tighten modestly. However, we note that the current levels of spreads are very tight and offer little compensation for the reduced liquidity of the asset class relative to Treasuries. Further, in an environment where the 3- to 5-year sector of the Treasury curve is yielding more than 4%, these spreads continue to represent a trivial share of all-in yields. **Thus, while our framework would indicate there is room for Agency spreads to tighten modestly over the balance of the year, we remain neutral given that spreads are a very small share of all-in yields that offers little compensation for the reduced liquidity in weak liquidity market environment.**

Turning to supply, the 2Q22 combined financial reports for the FHLBs showed that demand for advances increased last quarter (see *Midyear outlook*, 6/24/22). This increase in advances explained 78% of the $184bn increase in total assets during the second quarter (**Exhibit 3**). Interestingly, this increase in advances was largely concentrated in the shorter maturity buckets as advances shorter than 1-year rose by $124bn in the second quarter to $289bn, which suggests that these financing needs are generally short-term in nature. Given this strength in demand for advances, net issuance for the GSEs continues to track somewhat above our expectations, totaling $242bn through the first eight months of 2022. Similar to the trend we discussed in our midyear outlook, disco issuance from the FHLBs was the main driver behind the strong issuance during the first half of the year. In the combined Q2 financial report, the FHLBs explained the increase in the issuance of discount notes with the combination of short-term advance activity and investor preference. Since then, disco issuance has slowed, totaling $5bn in August, down from the $49bn monthly average of the prior four months (**Exhibit 4**). Issuance appears to be shifting towards floaters even more materially over the last few weeks as issuers appear to take advantage of investors' preference for floating rate securities over fixed DNs: after last week's Fed meeting, FRN issuance totaled $3.8bn, roughly 18% of total YTD FRN issuance.

Exhibit 3: The FHLBs' assets rose 24.2% in 2Q22, but remain below pre-COVID levels

FHLB's debt outstanding versus the composition of FHLB's assets by investments, advances, and mortgage loans*; $bn



* Mortgage loans held for portfolio, net of allowances
Source: FHLB

Exhibit 4: Issuance from the FHLBs remains elevated and concentrated in discos…

YTD net debt issuance from FNMA*, FHLMC, and FHLB as of 8/31/2022; $bn

	Discos	Bullets	Callables	Long-term	Total
FNMA	0	-54	0	-54	-54
FHLMC	4	-41	26	-14	-10
FHLB	231	-22	97	75	306
Total	235	-116	123	7	242

*FNMA data as of 7/29/2022
Source: FNMA, FHLMC, FHLB

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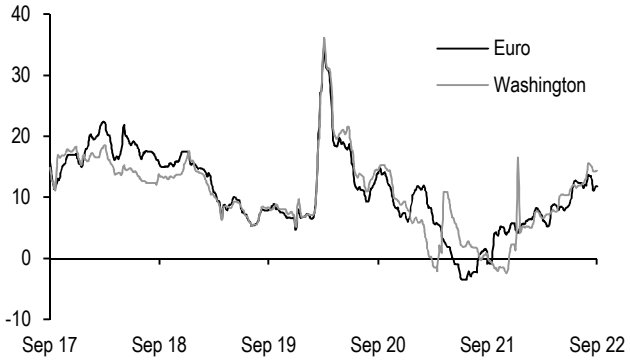
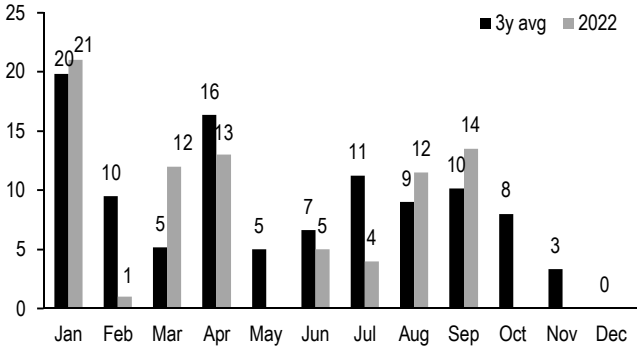
$-SSAs

Exhibit 5: Spreads on European and Washington $-SSA debt are now 12bp and 14bp wider YTD…
Average 5-year EIB/KfW and IBRD/IADB spreads to Treasuries; bp



Source: J.P. Morgan

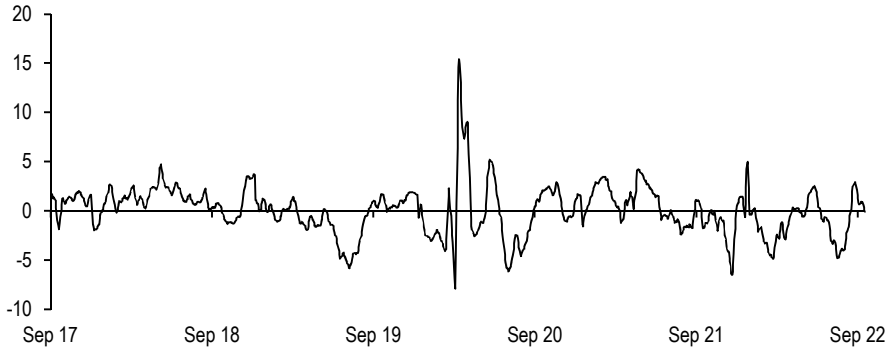
Exhibit 6: …as supply picked up notably in the last couple of months
Aggregate monthly bellwether issuance from the six* largest USD SSA issuers; previous 3-year average versus YTD**; $bn



*Includes EIB, KfW, ADB, IBRD, IFC, and IADB
** September data is through September 22
Source: KfW, EIB, ADB, IBRD, IFC, IADB, J.P. Morgan

Over this period, $-SSAs have underperformed Agencies, with spreads unchanged and 2bp wider for European and Washington securities, respectively (**Exhibit 5**). After these moves, spreads are now 12-14bp wider YTD. The recent underperformance of $-SSAs is partially explained by the pick-up in issuance. As **Exhibit 6** shows, bellwether issuance picked up over the last two months and is on track to reach our targets. Importantly, the ongoing strength of the US dollar poses some downside risks to issuance from KfW and EIB as less dollar issuance will be needed to achieve the funding targets. Conversely, in July KfW announced an increase in issuance plans for EUR 90bn (from EUR 80-85bn previously) in order to mitigate economic and social consequences of the war in Ukraine. Net of these cross winds, our $94bn gross supply estimate continues to seem appropriate and would imply $13bn in additional issuance through year-end, near typical volumes for the last quarter of the year.

Exhibit 7: $-SSA spreads to Treasuries appear fairly valued
Residual from J.P. Morgan 5-year SSA spread fair-value model*; bp



*Regression of average of 5-year EIB, KfW, IBRD, and IADB spreads to Treasuries on 5-year Treasury yields (%), 5-year Agency z-spread to Treasuries (bp), 5y EUR/USD cross-currency basis (bp), 5y Bobl/UST spread (bp), seasonal factor (unitless), regression over the last 5 years; bp
Source: J.P. Morgan
R-squared = 83.4%, SE = 2.5bp

Looking ahead, $-SSA spreads appear fairly valued after adjusting for Treasury yields, Agency spreads, the EUR/USD cross-currency basis, and German Bobl/US

Treasury spreads and the seasonality of SSA issuance. (**Exhibit 7**). Our outlook for the factors in our model imply limited room for $-SSA spreads to widen further: we project Treasury yields will decline over the coming months, Agency spreads should remain range-bound, and we look for wider EUR/USD cross market spreads, primarily at the front-end. Lastly, we expect some widening of the cross-currency basis. Net of these factors, we expect $-SSA spreads to remain range-bound through year-end and remain neutral on $-SSAs versus Treasuries.

Trading themes

- **Remain neutral on 5-year US Agencies vs. Treasuries**
  US Agency spreads appear fairly valued to their fundamental drivers and we think they should remain range-bound over the balance of the year. Credit spreads should be biased somewhat tighter through year-end which is supportive of Agencies, but spreads continue to represent a very small share of all-in yields that offer a very small compensation for reduced liquidity vis-à-vis Treasuries.

- **Remain neutral on $-SSAs vs. Treasuries**
  Valuations appear fair to fundamental drivers and we see the main drivers of this relationship remaining range-bound through year-end. Remain neutral $-SSAs.

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Agency MBS

- **It was a wild week in fixed income markets, as the turmoil from last week's hawkish central bank developments and UK fiscal shift saw vol edge up to levels not seen since 2009**
- **The price action provided a sharp lesson in the new technical dynamics in the mortgage market; higher yields raise outflow concerns for money managers, potentially linking sharp selloffs and spread moves going forward**
- **The surge in mortgage rates has again moved origination to higher coupons, though it has been somewhat sticky in 5.5s relative to what a normal primary/secondary spread would imply**
- **We project issuance by coupon over the next few months and review the current float in UMBS 30yr 4s and above**
- **Hurricane Ian will likely cause a smaller boost to FL speeds than the 2017/2018 experience thanks to longer forbearance periods and the expanded use of payment deferrals; still, lower coupons could benefit from buyouts stemming from mods and payoffs from insurance claims**
- **With 17 days' worth of September paydowns available, the Black Knight sample implies that conventional 30yrs will be down -14% to -17%, conventional 15yrs will be down -14% to -17%, and Ginnie 30yrs will be down -14% to -19%**

Views

- **Remain overweight FN 5.5s**
- **Lower coupons have cheapened, but still look relatively rich and are highly illiquid**
- **Specs still offer a decent OAS pick across most coupons, despite a lack of roll specialness**

It was a wild week in the fixed income markets, as the turmoil from last week's hawkish central bank developments and UK fiscal shift saw vol edge up to levels not seen since 2009. Mortgages sharply widened to start the week before recouping much of their losses. Week over week changes in yields and spreads as of Friday morning partially masked the 15-20bp swings in OASs across the coupon stack and the 30bp roundtrip on the 10yr (**Exhibit 1**), though mortgages leaked wider as the day progressed. Measured liquidity has been as bad as it's been since COVID, both in Treasuries and mortgages.

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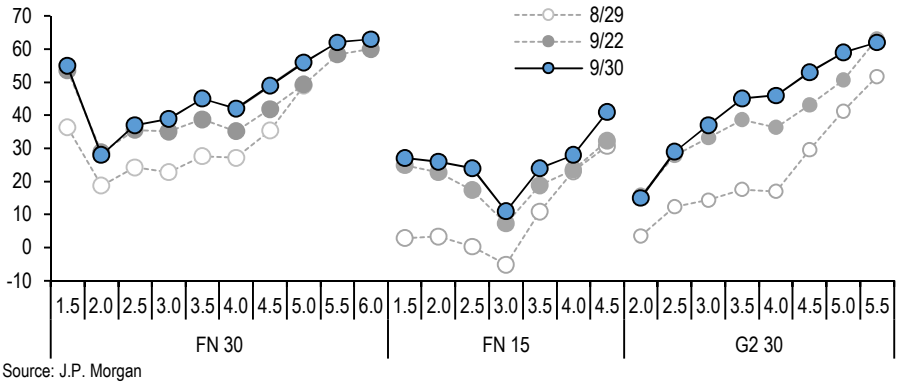
Exhibit 1: Mortgage OASs continued to widen this week, though spreads at the end of the week masked aggressive intraweek swings
Treasury OAS across different mortgage TBAs, bp



Source: J.P. Morgan

The price action provided a sharp lesson in the new technical dynamics in the mortgage market. At least for the time being, there's no one to serve as a firm backstop and police mortgage spreads. The Fed finished tapering its reinvestments a few weeks ago and its only contribution to the market will come in the form of passive runoff that the private market must absorb as gross issuance. It's possible that a severe breakdown in market functioning could force them to consider temporary action to bolster liquidity (see BoE intervention), but today's environment does not resemble the March 2020 liquidity crunch, as our Treasury strategists discussed recently. The market shouldn't expect QE just because mortgage rates are high—that's a goal of the Fed's monetary policy, not an unintended side effect.

Banks are still siphoning away net supply via loan demand, but even as current coupon spreads hit 70 OAS earlier in the week, they showed no interest in serving as the marginal buyer. The leverage and risk capital constraints facing many of the largest institutions have made adding MBS (and duration broadly) sub-optimal, and that will continue to be the case for some time. With the Fed draining reserves and the banks actively rebuilding their capital cushions, there will likely come a point next year where banks can return to the MBS market—but not yet.

Prior to the GFC, the GSEs played the role of market stabilizer, but their shrunken portfolios and tighter mandate preclude them from that sort of buying now. Foreign demand rarely serves as a relative value shock absorber, and recent monetary policy development have brought even the direction of that flow into question.

That's left money managers and lifers to face off against origination mostly on their own. When there are sharp moves to higher yields, the prospect of outflows can make it tougher for money managers to absorb more bonds, potentially linking sharp selloffs and spread widening in the current environment. Spread moves can cause mREIT deleveraging, which can in turn create these air pockets without significant demand. Dealers, meanwhile, continue to be hampered by SLR constraints, making it challenging for them to provide enough balance sheet to be a stabilizing force into big moves.

All this points to a somewhat higher resting level for the mortgage/Treasury basis—and potentially for other related assets like IG corporates, which finally caught up with some of the mortgage widening over the past few days (**Exhibit 2**).

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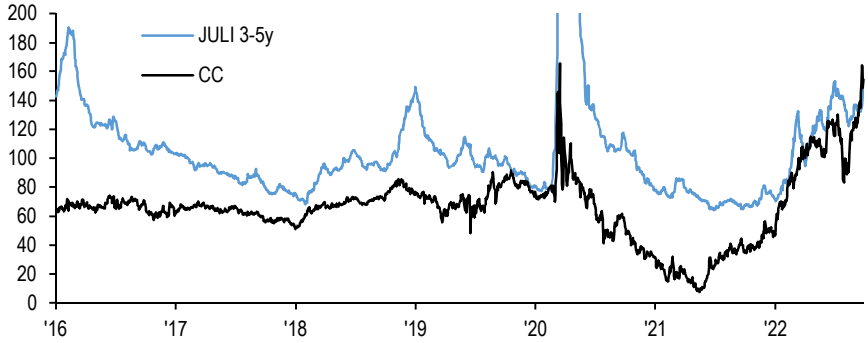
Exhibit 2: IG corporate spreads caught up with mortgage widening over the past few days
Zero volatility CC spread to Treasuries vs JULI 3-5y portfolio spread to Treasuries, bp



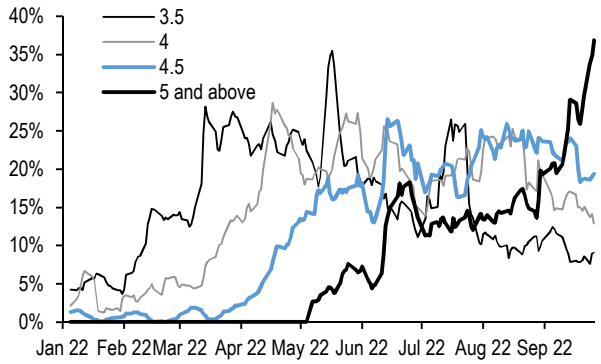
Source: J.P. Morgan

This week, we take a look at how floats across the ever broadening coupon stack should evolve in the current environment. We also review the 2017 hurricane experience with respect to MBS prepayments; while there are some lessons to be had, the broader use of payment deferrals in the GSE space and the deeply discounted Ginnie universe may reduce near term buyout activity vs. the prior event. Black Knight data indicates that we're tracking close to -15% m/m.

Floating higher in coupon

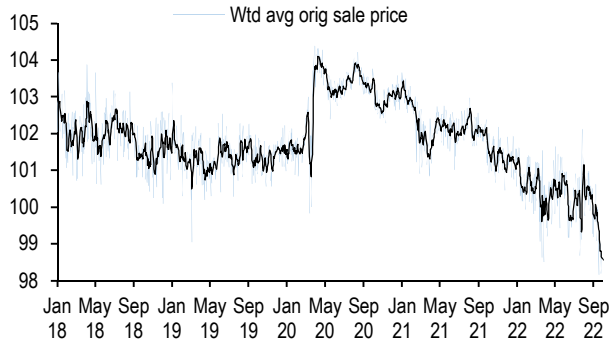
The recent surge in mortgage rates has again shifted the focus of trading to a higher point on the coupon stack. **Exhibit 3** shows how this process started with 3.5s at the beginning of 2022 and has continued upward through 5s and above. The most recent jump corresponded to headline rates hitting as high as 7% this week at some originators. Still, the lag between a new rate level and actual pool issuance means that 5s could remain the most issued coupon until November. We've also noticed a remarkable compression in the primary/secondary spread and the actual dollar price of originator forward sales; this could lead to even more stickiness in issuance moving to higher coupons (**Exhibits 4-6**).

Exhibit 3: TBA trades have moved to steadily higher coupons throughout 2022...
5 day average share of TBA trading volume by coupon



Source: J.P. Morgan, TRACE

Exhibit 4: ...Although originator sales have lagged substantially relative to their typical price point on the stack
Weighted Average originator TBA forward sale price



Source: J.P. Morgan

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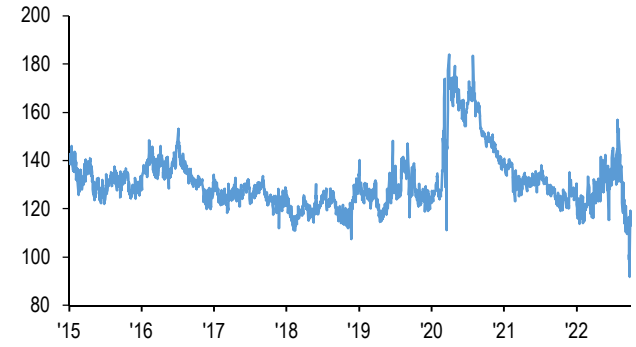
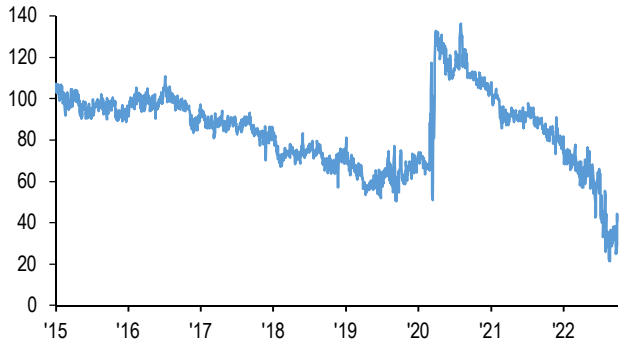
Exhibit 5: The cc100 P/SS sharply compressed into the selloff…
Primary/secondary spread implied by the 30yr conforming Optimal Blue rate and the cc100 par coupon, bp



Source: J.P. Morgan, Optimal Blue

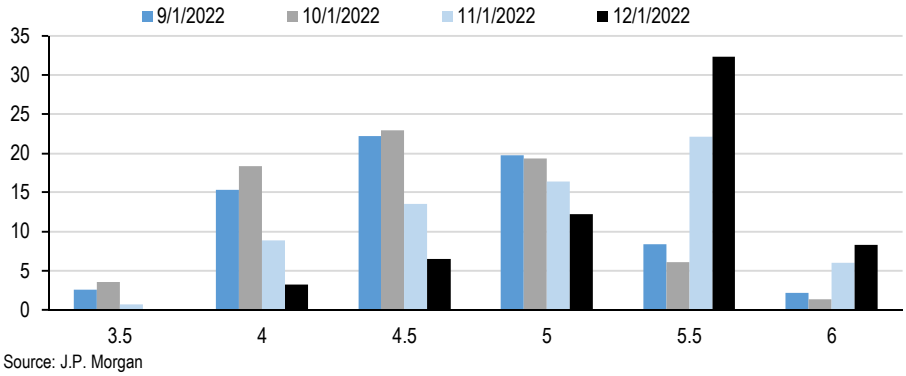
Exhibit 6: …as did the cc102 P/SS
Primary/secondary spread implied by the 30yr conforming Optimal Blue rate and the cc102 par coupon, bp



Source: J.P. Morgan, Optimal Blue

We can use our observations of originator forward sales data at the coupon level to come up with an estimate of issuance over the next few months (**Exhibit 7**). In conventional 30yrs, 4.5s were the most issued coupon in September and could still top 5s even in October, which feels remarkable as they trade in the mid $90s. The shift to 5s and 5.5s will be more evident in November, and at current rate levels and sales activity, we expect 5.5s to be the majority of issuance by December. The share of 6s expected in later months could likely expand if rates stay here and the primary/secondary spread increases to a more typical level.

Exhibit 7: Issuance projections over the next few months, guided by originator sales and our overall view on gross supply
Projected conventional 30yr issuance by coupon for the next four months based on our gross issuance forecast and originator sales



Source: J.P. Morgan

For the belly coupon 4s and 4.5s, this issuance dynamic along with the diminished presence of the Fed in recent months means that a sizable float exists of August and later pools, and that new production (without the benefit of slightly higher prepays) should define the deliverable for a few more months (**Exhibits 8 and 9**).

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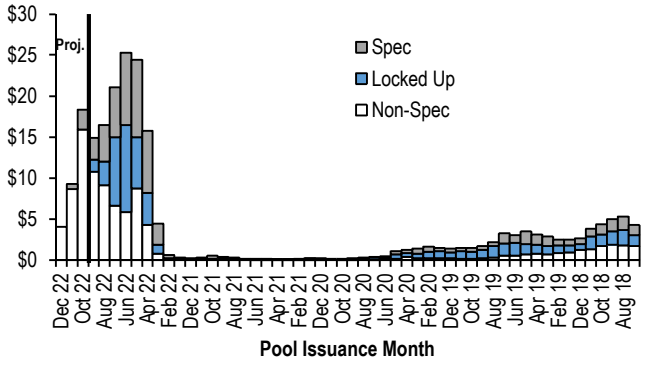
Exhibit 8: New production should nearly disappear in 4s by December…

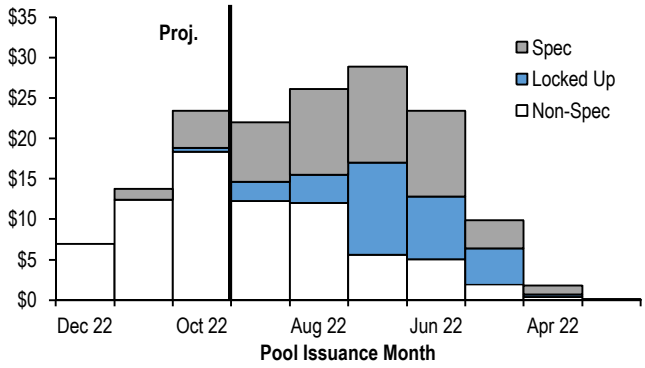
For UMBS 4s, the amount 1) locked up by Fed/CMO, 2) in spec, 3) the free float of non-spec, and finally 4) projected new supply over the next four months, $bn



Source: J.P. Morgan

Exhibit 9: …while 4.5s will see slightly higher issuance over the next few months

For UMBS 4.5s, the amount 1) locked up by Fed/CMO, 2) in spec, 3) the free float of non-spec, and finally 4) projected new supply over the next four months, $bn

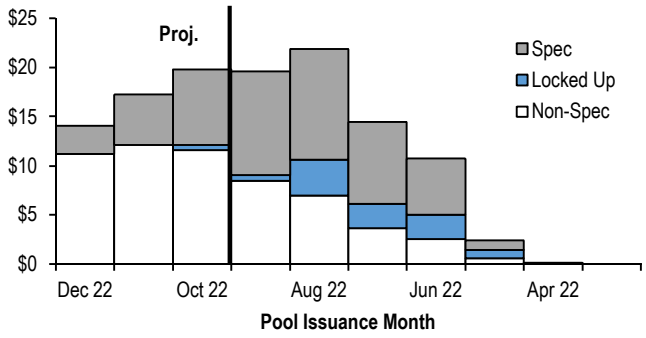


Source: J.P. Morgan

The float situation in 5s is similar to 4.5s, with the exception that December could see slightly more issuance (though anything beyond that is unlikely at today's rates, **Exhibit 10**). In 5.5s, the creation of pools should take off in November after September's rate moves (**Exhibit 11**). Roughly $20bn has been issued through September (mostly spec) and the current roll is pricing just under 50bp special as a reflection of pools being somewhat scarce. Finally, 6s have only just entered the range of significant issuance this past week, and so far production has been minimal and dominated by higher SATO spec types (**Exhibit 12**).

Exhibit 10: The float in 5s will follow a pattern similar to 4.5s…

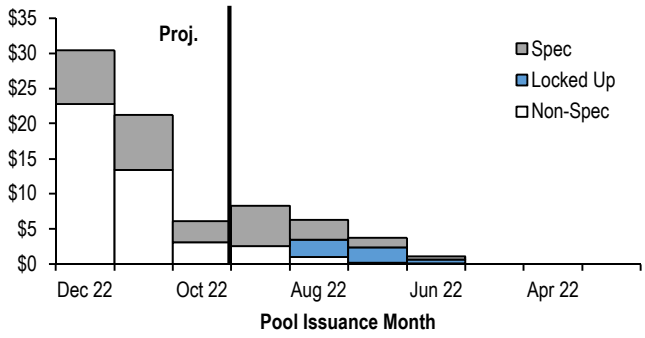
For UMBS 5s, the amount 1) locked up by Fed/CMO, 2) in spec, 3) the free float of non-spec, and finally 4) projected new supply over the next four months, $bn



Source: J.P. Morgan

Exhibit 11: …while 5.5s will first show up in size in November

For UMBS 5.5s, the amount 1) locked up by Fed/CMO, 2) in spec, 3) the free float of non-spec, and finally 4) projected new supply over the next four months, $bn



Source: J.P. Morgan

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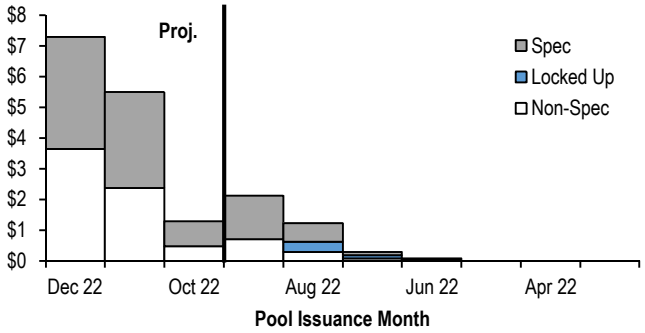
Exhibit 12: Issuance in 6s will pick up slightly in a few months
For UMBS 6s, the amount 1) locked up by Fed/CMO, 2) in spec, 3) the free float of non-spec, and finally 4) projected new supply over the next four months, $bn



Source: J.P. Morgan

Hurricane Ian will likely cause a smaller boost to FL speeds than the 2017/2018 experience

Though we don't yet have a clear tabulation of the damage wrought by Hurricane Ian, the experiences of the 2017 hurricane season point to a modest short term increase in prepayments following a combination of employment disruption and property destruction. Unfortunately the MBS disclosure data from that period makes it hard to define that split, but we do think that the expanded use of the forbearance period and the payment deferral, as well as the deep discounts on most Ginnie securities, should on the margin reduce buyout related removals from the trusts. Total loss insurance payouts can still flow through as voluntary prepayments, but loans tied to homes with reparable damage can stay in the pools. All in all, given these dynamics and the potentially smaller area of damage, we think the total speed impact will likely be smaller than in 2018.

2017/2018 is an imperfect guide: Back in the wake of the 2017 hurricane season, we saw a spike in prepayments on FL loans. In conventionals, these prints were reported as primarily voluntary (see **Exhibits 13 and 14**). In Ginnies, we saw a few different spikes of buyouts, but little on the voluntary front (see **Exhibits 15 and 16**).

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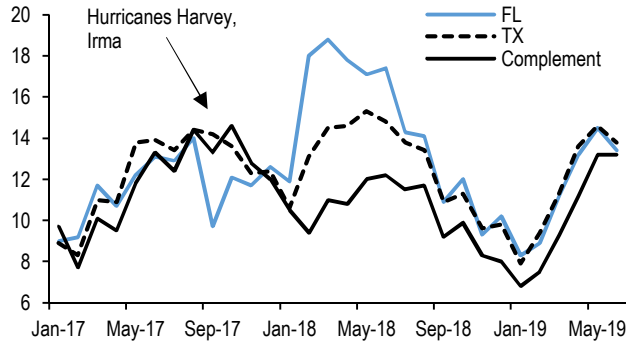
Exhibit 13: Florida and Texas speeds jumped with respect to cohort in the Feb – Aug 2018 period following hurricane season …

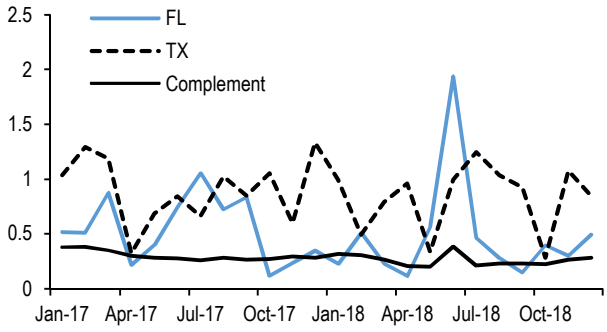
FN 30 2015 vintage 1 mo. CPRs by state



Source: J.P. Morgan, Fannie Mae

Exhibit 14: … but buyouts didn't clearly jump, despite CRT indicating that mods picked up sharply

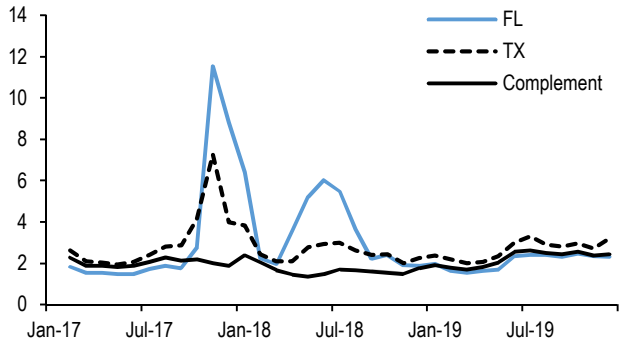
Freddie 30yr 1 mo. CBRs by 100% state pool



Source: J.P. Morgan, Freddie Mac

Exhibit 15: Ginnie hurricane related buyouts peaked immediately after the disaster event …

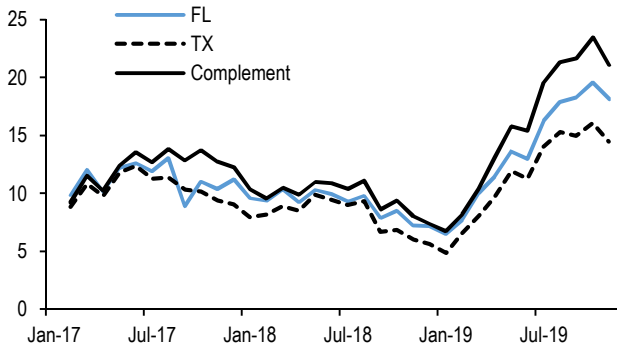
Ginnie 30yr buyout CPR by state



Source: J.P. Morgan, Ginnie Mae

Exhibit 16: … .whereas voluntary speeds were not affected

Ginnie 30yr voluntary CPR by state



Source: J.P. Morgan, Ginnie Mae

At the time, the GSEs offered a limited forbearance period followed by a modification process that would necessitate a buyout. Looking at the CRT data, we think most of total prepayment probably came from borrowers rolling into mods, so it's puzzling that we didn't see that in the CBRs. To be fair, there could be other voluntary prepayments from total loss insurance claims that result in complete loan payoffs. But again, from the CRT data, those don't appear to explain the bulk of the speed increase.

Since 2018, the GSE workout process has evolved to include longer forbearance periods of up to 12 months plus a payment deferral to wrap missed payments into a 0% 2nd lien due at the end of the original loan's life. These offerings were stress tested during COVID and clearly helped to reduce buyouts associated with a temporary loss of job or income, and most likely will help to reduce buyout needs resulting from job losses stemming from Hurricane Ian. Insurance payouts will still generate some uptick in voluntary prints, but in aggregate we will probably see fewer buyouts as a result.

On the Ginnie side, while the share of delinquent borrowers is quite likely to go up in Florida, servicers are by and large currently less incentivized to buy loans out of Ginnie MBS. With modification programs hampered by much higher par rates, the

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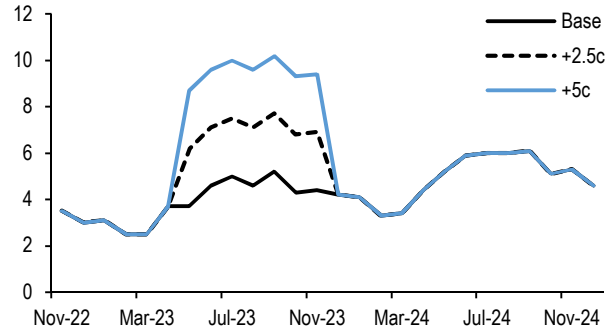
buyout/repooling math looks less attractive, and so trying to cure loans in pool may be optimal for many servicers, particularly on lower coupon securities. With forbearance and a partial claim option on the FHA side, that may ultimately reduce the prepayment impact of the disaster.

On the margin, however, more completed modifications would certainly be beneficial for 100% FL pool holders. We ran some simple vector shocks across the stack to show what a temporary surge similar to 2018 might provide in ZV spread terms (**Exhibits 17 and 18**). If the 2018 experience was worth something like a 5c boost over six months starting six months after the disaster, we expect that today's speed impact will be smaller and start farther in the future (thanks to the longer forbearance periods). Lower coupons, of course, would benefit the most, but the impact seems modest. Derivs will see a larger (negative) impact, though the FL sector isn't huge.

Exhibit 17: Boosting model speeds to mirror the impact of the 2017 hurricane season ...

UM 30 FL 2 projected 1 mo. CPRs, boosted by +2.5c and +5c between May-Nov. 2023



Source: J.P. Morgan

Exhibit 18: ... widens ZVs across the stack, with impacts being felt most strongly down in coupon

UM 30 ZV spread impacts from boosting May-Nov. 2023 speeds by +2.5 and +5c, bp

		+2.5c	+5c
UMBS 30	2	4	8
	2.5	3	7
	3	3	5
	3.5	2	4
	4	1	3
	4.5	1	1
	5	1	1
	5.5	0	0

Source: J.P. Morgan

Black Knight through September 26th

With 17 days' worth of September paydowns available, the Black Knight sample implies that conventional 30yrs will be down -14 to -17%, according to our Ratio and Day Pattern methods, respectively **(Exhibit 19)**. Though still on the fast end of our initial projection of -17%, our Day Pattern method has started to converge around this original estimate. That being said, we will see how paydowns continue to evolve in the remaining 4 business days of the month.

Conventional 15yrs are also implied to be down -14% to -17% according to our Ratio and Day Pattern methods respectively; Ginnie 30yrs are implied to be down -14% to -19%.

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Exhibit 19: Coupon m/m speed changes through September 26th

M/m speed changes implied by the Black Knight Conv. 30yr and 15yr, and Ginnie 30yr sample, across coupon

	Conv 30yrs		Conv 15yrs		Ginnie 30yrs	
	Ratio Method	Day Pattern Method	Ratio Method	Day Pattern Method	Ratio Method	Day Pattern Method
<2.0%	-10.3%	-11.9%	-14.8%	-16.4%		
2.0%	-11.3%	-13.6%	-14.0%	-16.7%	-11.6%	-13.8%
2.5%	-13.6%	-15.3%	-16.4%	-20.5%	-11.0%	-15.6%
3.0%	-13.8%	-16.8%	-11.5%	-15.6%	-13.6%	-18.1%
3.5%	-14.9%	-18.4%	-13.2%	-18.0%	-14.0%	-18.4%
4.0%	-18.2%	-21.4%	-11.2%	-14.8%	-15.8%	-22.5%
4.5%	-17.0%	-20.6%			-22.0%	-29.7%
5.0%	-17.5%	-23.6%			-14.5%	-25.4%
5.5%	-15.0%	-28.9%			-34.3%	-42.5%
6.0%	-16.6%	-27.1%			-25.7%	-38.5%
All Coupon	**-13.7%**	**-16.9%**	**-14.1%**	**-17.2%**	**-14.1%**	**-19.2%**

Source: J.P. Morgan, Black Knight
Note: Conv 15yr balances filtered by $1bn

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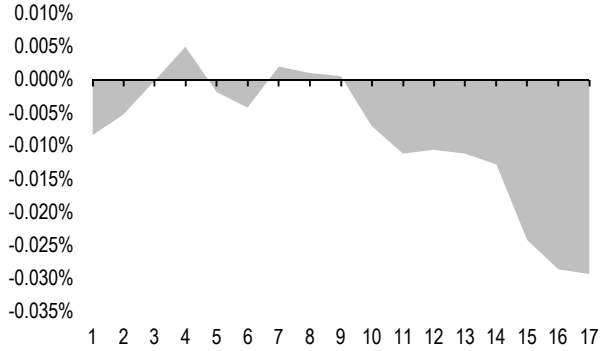
Exhibit 20: Conv. 30yr September paydowns are cumulatively tracking lower m/m …

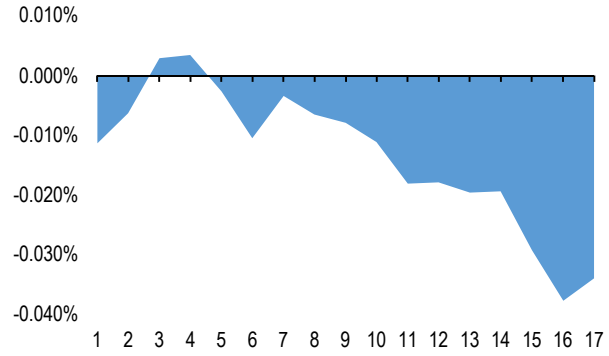
September cumulative Conv. 30yr speeds differences vs. August from Black Knight by business day, prepaid % (September – August)



Source: J.P. Morgan, Black Knight

Exhibit 21: … as are conv. 15yr paydowns

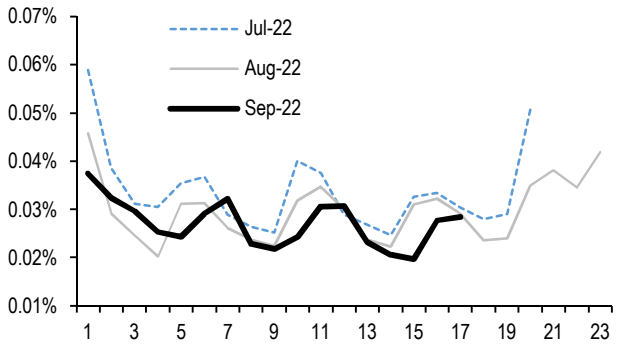
August cumulative Conv. 15yr speeds differences vs. August from Black Knight by business day, prepaid % (September – August)



Source: J.P. Morgan, Black Knight

Exhibit 22: 30yr daily payoff comparison

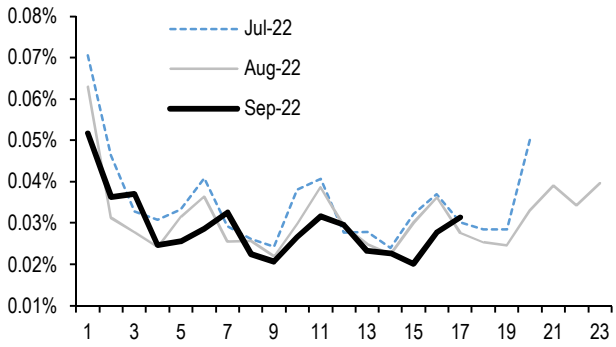
Daily Conv. 30yr speeds from Black Knight vs. business day, prepaid %



Source: J.P. Morgan, Black Knight

Exhibit 23: 15yr daily payoff comparison

Daily Conv. 15yr speeds from Black Knight vs. business day, prepaid %



Source: J.P. Morgan, Black Knight

Exhibit 24: Coupon/vintage m/m speed changes through September 26th

M/m speed changes implied by the Black Knight Conv. 30yr and 15yr, and Ginnie 30yr sample, across coupon and vintage

		Conv 30yrs		Conv 15yrs		Ginnie 30yrs	
		Ratio Method	Day Pattern Method	Ratio Method	Day Pattern Method	Ratio Method	Day Pattern Method
<2.0%	All	-10.3%	-11.9%	-14.8%	-16.4%	35.0%	16.0%
2.0%	2021	-12.1%	-14.1%	-11.2%	-13.6%	-10.9%	-11.9%
	2020	-10.5%	-13.6%	-11.3%	-14.3%	-15.2%	-19.9%
	All	-11.3%	-13.6%	-14.0%	-16.7%	-11.6%	-13.8%
2.5%	2021	-12.4%	-14.0%	-1.9%	-16.9%	-7.6%	-9.6%
	2020	-12.9%	-14.9%	-17.4%	-19.2%	-13.3%	-17.7%
	2019	-17.0%	-19.3%	-10.4%	-16.6%	-24.4%	-34.5%
	All	-13.6%	-15.3%	-16.4%	-20.5%	-11.0%	-15.6%
3.0%	2021	-5.4%	-9.3%			-5.2%	-12.7%
	2020	-14.5%	-17.9%	-29.6%	-27.2%	-13.0%	-17.3%

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	2019	-13.4%	-17.6%	-4.3%	-9.9%	-13.0%	-18.0%
	2016	-11.4%	-14.7%	-1.2%	-6.9%	-20.4%	-22.4%
	2015	-17.4%	-20.2%	-7.5%	-4.6%	-16.2%	-25.2%
	2013	-17.1%	-19.2%	-11.2%	-16.9%	-22.9%	-23.3%
	2012	-12.3%	-12.8%	-11.4%	-14.1%	-18.1%	-20.7%
	All	-13.8%	-16.8%	-11.5%	-15.6%	-13.6%	-18.1%
3.5%	2021	-4.2%	-5.2%			2.7%	-12.6%
	2020	-11.8%	-20.9%			-9.3%	-12.9%
	2019	-18.2%	-20.5%	-11.6%	-14.3%	-22.2%	-26.5%
	2018	-9.3%	-18.8%	-20.5%	-23.4%	-16.6%	-17.1%
	2017	-13.7%	-16.9%	10.9%	-1.1%	-14.2%	-18.0%
	2016	-16.8%	-20.3%			-19.4%	-22.8%
	2015	-13.7%	-15.0%			-7.3%	-13.3%
	2014	-15.6%	-18.6%	-21.7%	-31.8%	-11.4%	-16.9%
	2013	-17.2%	-20.4%			-13.3%	-14.4%
	2012	-6.9%	-10.1%			-12.5%	-17.1%
	All	-14.9%	-18.4%	-13.2%	-18.0%	-14.0%	-18.4%
4.0%	2020	1.9%	1.5%			-16.0%	-20.0%
	2019	-18.6%	-20.2%			-16.9%	-20.5%
	2018	-13.9%	-19.3%	-1.8%	-9.1%	-12.0%	-16.1%
	2017	-15.5%	-17.7%			-17.9%	-22.6%
	2016	-12.5%	-16.3%			-25.1%	-30.9%
	2015	-17.5%	-19.9%			-19.4%	-25.5%
	2014	-17.3%	-20.8%			-10.5%	-23.6%
	2013	-19.0%	-20.1%			-5.8%	-17.4%
	2012	-3.9%	-11.8%			-23.0%	-27.4%
	2011	-24.7%	-26.7%			-11.2%	-19.7%
	2010	-16.4%	-18.6%			-11.3%	-20.9%
	All	-18.2%	-21.4%	-11.2%	-14.8%	-15.8%	-22.5%
4.5%	2019	-15.8%	-17.1%			-26.0%	-37.7%
	2018	-6.1%	-11.8%			-13.2%	-21.1%
	2017	-14.6%	-12.0%			-30.6%	-36.4%
	2014	-18.5%	-23.7%			-2.7%	-6.3%
	2013	-8.1%	-12.5%			-16.7%	-24.9%
	2011	-20.0%	-21.0%			-15.4%	-27.9%
	2010	-13.7%	-18.3%			-14.2%	-22.0%
	2009	-17.1%	-22.4%			-18.6%	-23.6%
	All	-17.0%	-20.6%			-22.0%	-29.7%
5.0%	2019	-17.7%	-24.7%			-17.3%	-38.6%
	2018	-10.0%	-13.1%			1.6%	-13.1%
	2010	-11.5%	-19.6%			-11.4%	-24.4%
	2009	-18.2%	-32.0%			-16.1%	-23.4%
	2008	-21.6%	-26.2%				
	2005	-15.2%	-28.3%				
	All	-17.5%	-23.6%			-14.5%	-25.4%
5.5%	2008	-15.9%	-23.3%			-19.9%	-28.1%
	2007	-21.2%	-36.0%				
	2006	-6.9%	-14.5%				

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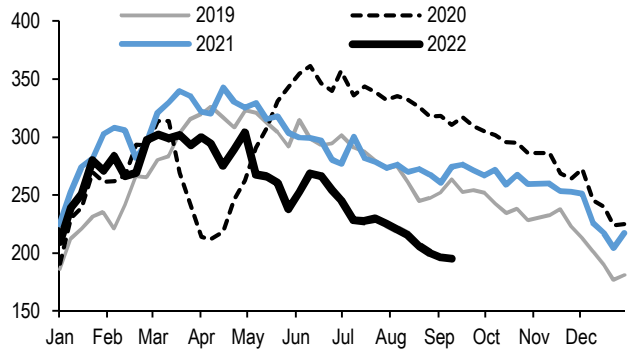
	2005	-18.8%	-29.5%				
	All	-15.0%	-28.9%			-34.3%	-42.5%
6.0%	2008						
	2007	-12.8%	-23.7%				
	2006	-22.3%	-29.9%				
	All	-16.6%	-27.1%			-25.7%	-38.5%
		-13.7%	**-16.9%**	**-14.1%**	**-17.2%**	**-14.1%**	**-19.2%**

Source: J.P. Morgan, Black Knight
Note: Conv 15yr balances filtered by $1bn

Week in review

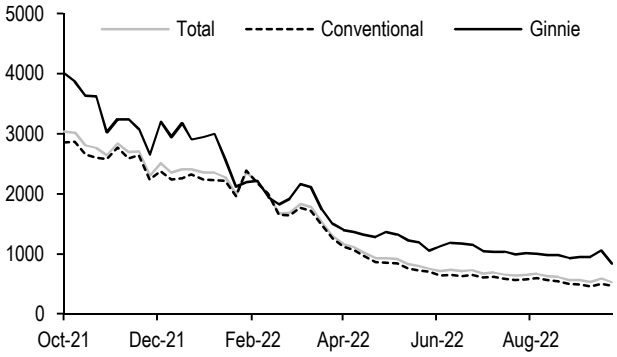
- **MBA Weekly Survey**: For the week ending September 23, the purchase application index fell 0.4% to 199.3 and the refinance index fell 10.9% to 524.1 (seasonally adjusted) **(Exhibits 25 and 26)**.
- **Freddie Primary Survey:** For the Monday-Wednesday period prior to September 29, 2022, 30-year conventional conforming fixed-rate mortgages averaged 6.70%, up 41bp from the previous week **(Exhibit 27)**.
- **Primary dealer specified pool positions** fell to $236.7bn (-$0.7bn w/w) as-of close trading September 21**. Including TBA positions** of -$210.4bn, dealers were long $26.3bn (-$0.7bn w/w) pass-throughs. Other agency MBS holdings were $0.1bn lower at $19.5bn.
- **Fixed-rate agency gross and net issuances were $124.4bn and $40.4bn, respectively, in August.** September gross supply currently stands at $116.1bn **(Exhibit 28).**

Exhibit 25: MBA Purchase Index, calendar year overlay with daycount adjustments



Source: J.P. Morgan, MBA

Exhibit 26: MBA Refi Indices, seasonally adjusted



Source: J.P. Morgan, MBA

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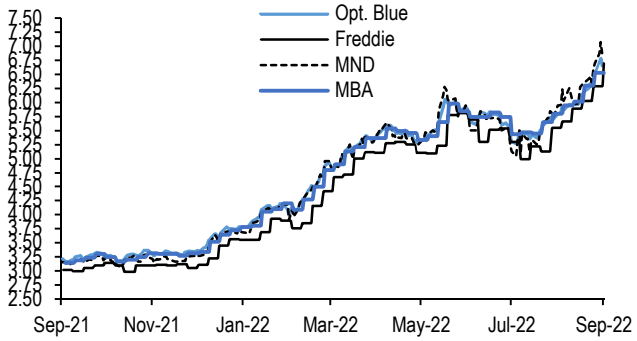
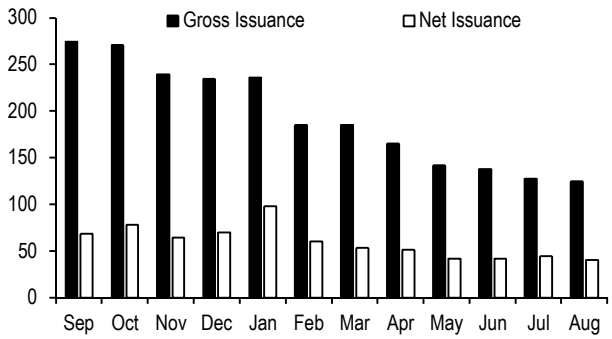
Exhibit 27: Primary mortgage rates, %



Source: J.P. Morgan, Optimal Blue, Freddie Mac, Mortgage News Daily, MBA

Exhibit 28: Gross and net fixed-rate MBS monthly issuance, $bn



Source: J.P. Morgan

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RMBS Credit Commentary

- **The market was hit hard on Monday with a meaningful liquidity event as agency MBS spreads widened 15bp**
- **It has become very clear that with money managers and insurance companies as the marginal buyers of securitized products, these air pockets of liquidity will continue. Banks need to return as the marginal buyer**
- **As the GSEs continue to retain the bottom classes in the CRT deals, we have gotten questions on how the retention changes the likelihood of the five year call being exercised in these deals**
- **We find that in our base HPA forecast, the GSEs should still be incentivized to call the transactions as the capital relief provided by CRT quickly drops…**
- **…but the probability of the call is significantly levered to the HPA assumptions**
- **Hurricane Ian made landfall in Florida on Wednesday as a Category 4 hurricane, with the worse of the damage concentrated in five MSAs, affecting ~1.5mn single-family homes**
- **Non-QM has a particularly high concentration of loans in Florida at 15.5%, while all products have smaller concentrations in Georgia and the Carolinas**
- **The affected Florida MSAs make up 1-2.5% of most CAS and STACR deals**
- **Impacted borrowers will receive largely the same delinquency workout options as during the pandemic**

Exhibit 1: RMBS credit issuance to date…

Issuance $mn	2020 FY	2021 YTD	2022 YTD
Jumbo 2.0		15,693	39,182
Agency Investor		2,267	14,225
CRT		19,349	13,563
Rental		9,943	12,238
RPL		26,885	25,308
NPL		9,853	15,858
Non-QM		21,293	20,582
Seasoned CRT		5,176	1,001
Other		10,727	24,293
Total		121,187	166,250

Source: J.P. Morgan, Bloomberg Finance L.P.

Exhibit 2: …and spreads

Spreads (bp)	Current	Δ 1 wk	Δ 1 mth	Δ YTD
Jumbo PT	100	1	9	65
Jumbo FCF	72	2	6	38
Jumbo LCF	77	(4)	(5)	52
CRT M1	246	(3)	25	156
CRT M2(M1B)	449	77	88	249
CRT B1	681	53	63	339
CRT B2	1,145	11	48	441
Non-QM A1	220	50	30	120
Non-QM A2	270	35	(15)	130
Non-QM A3	310	30	(40)	140
Non-QM M1	525	65	(15)	315
Non-QM B1	670	15	(105)	370
SFR A	140	-	(15)	50
SFR B	212	-	(13)	77
SFR C	250	-	-	100
SFR D	305	-	10	135
HY Domestic	585	53	40	197
HG Domestic	170	21	20	79

Note: Includes our on-the-run indices. Jumbo is TOAS, non-QM is spread to treasuries and SFR is spread to treasuries. The 8/4/2022 Jumbo OTR data points reflect a coupon change from JPMMT 22-6 3s to JPMMT 22-8 4.5s. Source: J.P. Morgan

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Market Commentary: Searching for liquidity; where's the ~~boof~~ banks?

The market was hit hard on Monday with a meaningful liquidity event as agency MBS spreads widened 15bp (based on closing prices, they were wider intra-day). Interestingly, spreads have retraced all the way back to even. Regardless, the event left the market even more cautious. It's become very clear that with money managers and insurance companies as the marginal buyers of securitized products that these air pockets of liquidity will continue. **Simply put, absent the FED, we need the banks back as the marginal buyer.** However, as we've discussed in several of our past publications, banks are forced to manage their Tier 1 capital ratios higher. This can be achieved by adding more tier 1 assets or lowering risk weighted assets. In fact, banks are both capital and duration constrained given how rapidly mortgage rates rose and the resulting hit to AFS portfolios (mortgage rates rose another 125bp since August). It's unlikely that banks drift out of this until mid-2023, unless rates rally significantly from here.

How did we get to this place in the market? Ironically, fiscal stimulus generated massive deposits for banks. These deposits needed to be offset with duration. Banks did not have enough loan growth to offset the negative duration of deposits, so they were forced to buy MBS at the same time that the FED was buying. This was basically the tightest point in the market. As the FED stepped away from buying MBS (QT), they rose target interest rates to point where mortgage rates are now nearly 7%. This furious shift in mortgage rates from less than 3% pushed MBS prices significantly below par, which directly hit bank AFS portfolios. So while they have not taken on any additional risky assets, their capital ratios declined and largely prohibited them from taking on any additional risk in the market at precisely the same time as the FED is no longer buying MBS. Moreover, if deposits flee to capture better short-term rates, then banks might actually have to be a seller into this market. In summary, banks are potentially being forced to stop buying MBS as the FED is stepping away from the market, or even worse, be a seller of MBS.

To put into context how potentially offside banks are, we dust off an analysis from last year's outlook (**Exhibit 3**). We compute bank ROE based on CET1 (capital) or T1L (leverage) and find that returns are extremely attractive for securitized products and corporates/CLOs. However, banks are unlikely to be able to take advantage of any of these returns given their need to focus on lower risk weighted assets.

Exhibit 3: Bank ROE potential looks amazing, however, they may not be able to buy most of it
Capital (CET1) and Leverage T1L ROE% for banks across asset classes

		Bank Terms				
Asset Class	Spread (bp)	Risk Wgt	CET1 Capital	T1L Capital	CET1 ROE	T1L ROE
MBS	65	20%	2.0%	7.5%	**23%**	**9%**
K A2	81	20%	2.0%	7.5%	**29%**	**10%**
DUS 10/9.5	91	20%	2.0%	7.5%	**34%**	**11%**
AAA 3y Cards	50	35%	3.5%	7.5%	**9%**	**6%**
BBB Subprime Auto	255	35%	3.5%	7.5%	**54%**	**27%**
CMBS LCF AAA	142	35%	3.5%	7.5%	**22%**	**12%**
PL MBS*	120	20%	2.0%	7.5%	**39%**	**13%**
High Grade Corps	200	50%	5.0%	7.5%	**34%**	**24%**
CLO AAA	215	35%	3.5%	7.5%	**51%**	**26%**
CLO AA	298	65%	6.5%	7.5%	**37%**	**33%**

Note: CLO spreads to SOFR, the rest to tsy. *TOAS for PL MBS and MBS. PLS MBS is 2.5 coupon jumbo 2.0 PT.
Source: J.P. Morgan

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Consequently, as funding levels rise and duration (potentially) extends if we see selling caused by REITs or money manager outflows, it's entirely feasible to think that spreads will come under pressure. Spread volatility is likely to remain high until the FED is done raising rates and the banks consistently return.

That's the demand-side, but what about supply? Origination should come to a near standstill as, anecdotally, we hear loan volumes are almost non-existent. So supply will be very limited, with non-QM working through their pipeline and 2.0 shelves most likely on hold. CRT supply is likely constrained to M1/M2 bonds as the last B1 sale from CAS did not go off well, with initial price talk of spreads for the B1 at 600, widening to 675bp to get the class done with only $48 million in bonds. The latest non-QM AAA priced at 220bp, which is about 40-50bp wider than where AAAs traded a month ago. There has not been a lot of trading in jumbo 2.0 to shade exactly where price spreads are for 4.5s, but suffice it to say spreads are wider. Clearly we are at levels that are extremely attractive across SPG, for those who are fortunate enough to be able to weather spread volatility.

As we traveled across the Midwest this past week seeing clients, the message was clear. Money managers have to manage to liquidity too and while they see attractive opportunities, they have to pay attention to potential outflows. This leaves them with less capital to put to work than they would like. Moreover, as home prices start to decline, many are getting more bearish. A month ago, we were potentially the only research shop suggesting home prices would decline next year. Now we are being asked if our -5% forecast for 2023 should be lower. We actually have a peak-to-trough decline of 8% starting from July 2022 and ending Dec 2023, so -3% July 2022 to Dec 2022 and -5% in 2023. How quickly things change in a month. To be fair, we set that forecast when mortgage rates were under 6%. Now we are approaching 7%. There is certainly risk to the downside, but we'll leave the forecast alone for now. Keep in mind that a national decline of 8%, means we could see CA and NY down -20%.

The good news? Private-label underwriting has been very strong, LTVs are low and most have locked in a low fixed-rate loan (with less than a 4% mortgage rate). Defaults and losses are likely to be very low, even in a -15% home price correction (nearly double our forecast). Jumbo 2.0, non-QM AAA and CRT M1/M2 are all attractive depending on your risk profile. If you can manage spread volatility CRT M2s are ideal with spreads ranging from 480dm M1B/IG to Split-rated M2s at 675 and b-IG M2s at 700. All 150 to 200bp wider than mid-August tights. Year-to-date, LLTV M2s are 300-450bp wider (**Exhibit 4**).

Exhibit 4: CRT spreads are back to the widest levels of the year
Approximate spreads (DM) for LLTV CRT

Tranche	Current spread	Mid-Aug	June wides	Chg since June	Jan spreads	YTD change
M1/M1A	250	200	295	-45	100	150
M1B/IG M2	480	300	460	20	185	295
Split M2	675	400	625	50	250	425
b-IG M2	700	500	675	25	270	430
CAS B1	700	500	680	20	315	385
STACR B1	750	575	750	0	340	410
CAS B2	1200	885	1200	0	600	600
STACR B2	1350	960	1300	50	710	640

Note: Rough estimates from SPG trading.
Source: J.P. Morgan

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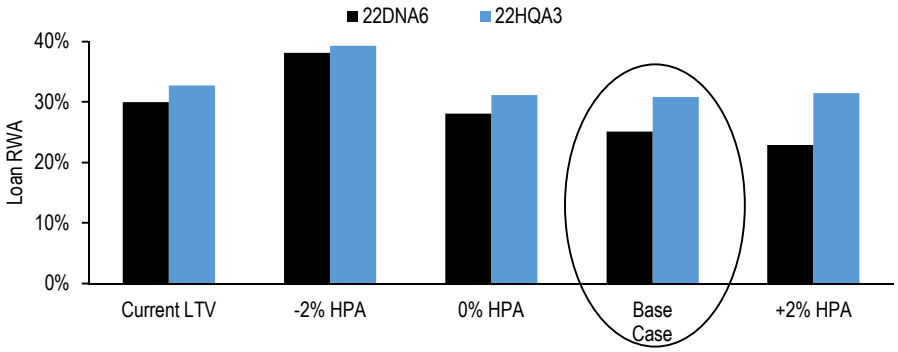
Revisiting the economics of the CRT calls

As the GSEs continue to retain the bottom classes in the CRT deals, we have gotten questions on how the retention changes the likelihood of the five year call being exercised in these deals. In this section, we dust off our analysis from earlier in the year[2] to look at the ROEs in the new issue CRT deals. We find that in our base HPA forecast, the GSEs should still be incentivized to call the transactions as the capital relief provided by CRT quickly drops, but the probability of the call is significantly levered to the HPA assumptions.

Capital relief provided by CRT is the biggest driver of call economics. **Exhibit 5** shows loan level capital for the most recently issued high and low LTV STACR deals. The LTVs drive GSE loan level capital. At current LTVs, the loan RWA is 30% and 33% for low and high LTV deals, respectively. Using our base case HPA forecast, which sees home prices up only 2.3% cumulatively over the next five years, the loan RWA decreases to 25% and 31%, respectively, at the five year point. However, in a scenario where home prices drop by 2% each year over the next five years, or 8% cumulatively, the loan level capital increases to almost 40%. In our base case scenario, as loan level capital decreases, the relief provided by CRT also declines. The post-CRT capital increases from 21% to 27%, implying negative relief as compared to the loan RWA of about 25%. In this case, the GSEs have the option not to recognize CRT, but instead hold capital against the underlying loans in which scenario the GSEs are likely to call the transaction.

Exhibit 5: Loan level capital decreases under our base case home price scenario
STACR 22-DNA6 and 22-HQA3 current loan level capital vs. at a five year point in our base HPA forecast, in 0% and +/- 2% scenarios.+/- 2% HPA scenario assumes 2% each year over the next 5 years. The current LTV uses the CoreLogic Case-Shiller indices at the MSA level.



Source: J.P. Morgan, Freddie Mac, FHFA, CoreLogic

The second driver of the call is the CRT cost of funds. In **Exhibit 6**, we show the implied g-fee of the most recent low LTV transaction versus a scenario where Freddie had sold the B1 and B2 classes at 700 and 1200 DM, respectively. In the actual deal, the implied g-fee is 11bp at issuance, increasing slightly to 13bp at the five year call. Meanwhile, if Freddie had sold the bottom tranches, the implied g-fee would have increased from 21bp to 26bp, a larger increase over time.

[2] https://www.jpmm.com/research/content/GPS-4016437-0

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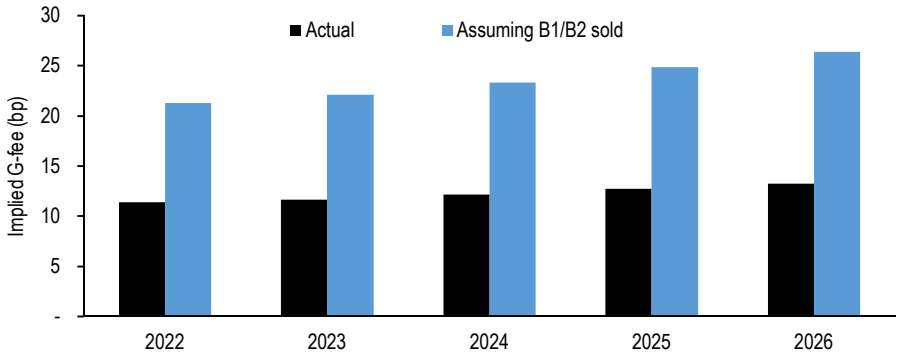
Exhibit 6: While the GSEs do not get a high level of capital relief in new issue deals, the cost of funds in these deals is relatively flat over time

STACR 22-DNA6 cost of funds in the actual deal vs assuming Freddie had sold B1 and B2 classes at 700 and 1200 DM, respectively. The calculation assumes 25bp of losses at issuance, and is run to the five year call assumption.



Source: J.P. Morgan, Freddie Mac, FHFA, CoreLogic

Exhibit 7 ties out the capital relief and the cost of funds into ROEs. While we focus on the low LTV transaction, the same holds true for the high LTV deals. At deal issuance, the CRT provided 9% of capital relief at the cost of 11bp, resulting in 5.2% ROE. At the five year point and assuming our base HPA forecast, the loan level capital is lower than the CRT RWA. On the other hand, if Freddie had sold the B1 and B2 classes, CRT would still have provided meaningful capital relief at the five year point, but the cost of funds would also have increased to 26bp, resulting in the ROEs dropping from 4.1% at deal issuance to 2.4%. While the ROEs decline to a smaller extent over the five years in new issue deals as compared to transactions where the GSEs had sold the bottom two classes, in our view, the GSEs should still be incentivized to call these new issue transactions as the CRT no longer provides any capital relief at that point.

Exhibit 7: In our base case HPA scenario, GSEs should still be incentivized to call the transactions

Capital calculated using the final FHFA capital rule. The framework incorporates a 20% tax rate and 1.8% capital buffer.

	22-DNA6			
	Actual deal		Assuming B1 / B2 sold	
	At deal issuance	At 5yrs Base HPA	At deal issuance	At 5yrs Base HPA
Loan RWA (A)	30%	25%	30%	25%
CRT Capital Relief (B)	9.0%	-1.6%	21.5%	16.5%
CRT-Adjusted RWA (C = A-B)	21%	27%	8%	9%
Loan G-fee (D)	54	54	54	54
CRT Credit Costs (E)	11	13	21	26
Treasury All. & Other Costs (F)	20	20	20	20
Net G-fee (G = D-E-F)	23	21	13	8
Capital Ratio (H)	8%	8%	8%	8%
CRT-Adjusted Capital (I = C*H)	1.7%	2.0%	0.7%	0.7%
Capital Buffer @ 1.8% of Total Assets (J)	1.8%	1.8%	1.8%	1.8%
Total Capital (K = I + J)	3.5%	3.8%	2.5%	2.5%
Final ROE ((80% * G)/K)	**5.2%**	**4.4%**	**4.1%**	**2.4%**

Source: J.P. Morgan, FHFA

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RMBS exposure to Hurricane Ian

Hurricane Ian made landfall on Wednesday afternoon as a Category 4 hurricane on Florida's western coast. The storm was downgraded to a Category 1 hurricane on Wednesday night, but many areas remain at risk of serious storm surge damage from the heavy wind and rain coming from the slow moving storm. The storm made landfall again on Friday afternoon near Georgetown, South Carolina as a Category 1 hurricane.

The worst of the damage is estimated to be on Florida's western coast, as well as central and northeast Florida, for now. CoreLogic's preliminary press release indicated that the highest storm surge risk is concentrated in five MSAs (**Exhibit 8**),[3] where Hurricane Ian's impact falls under CoreLogic's "extreme risk" category, affecting close to 1.5 million single-family homes.

Exhibit 8: The highest storm surge risk is concentrated in five MSAs
Single-family homes at risk of storm surge damage from Hurricane Ian by FL metropolitan area

		Very high risk		Extreme risk	
Metropolitan Area	Total # of single-family homes	# single-family homes at risk	% of total single-family homes	# single-family homes at risk	% of total single-family homes
Tampa-St. Petersburg-Clearwater, FL	555,939	388,302	70%	555,474	100%
Cape Coral-Fort Myers, FL	330,479	217,858	66%	330,465	100%
North Port-Sarasota-Bradenton, FL	293,544	231,033	79%	293,538	100%
Naples-Marco Island, FL	200,279	124,171	62%	200,276	100%
Punta Gorda, FL	107,257	61,440	57%	107,197	100%

Source: J.P. Morgan, CoreLogic

We show product concentration by state in **Exhibit 9**. Non-QM has a particularly high concentration of loans in Florida at 15.5%. All the products have relatively smaller concentrations in Georgia and the Carolinas. As the MSAs are not disclosed for many of the loans in 2.0, non-QM and RPL securitizations, we cannot identify the exact exposure to the affected MSAs.

Exhibit 9: Non-QM has a particularly high concentration of loans in Florida
Product concentration by state (%), including top 5 states with highest concentrations, and GA, NC and SC

State	2.0	Non-QM	RPL	STACR	CAS
CA	40.45%	43.30%	24.05%	14.67%	16.68%
FL	**5.87%**	**15.54%**	**11.47%**	**6.48%**	**6.53%**
NY	4.27%	9.75%	8.90%	4.38%	4.89%
TX	5.65%	4.92%	2.22%	6.95%	7.12%
NJ	2.72%	3.30%	5.58%	3.55%	3.45%
GA	2.14%	2.32%	2.88%	2.86%	2.91%
NC	1.90%	1.05%	1.77%	2.85%	2.96%
SC	0.76%	0.58%	1.07%	1.37%	1.40%

Source: J.P. Morgan, CoreLogic, Fannie Mae, Freddie Mac

Exhibit 10 shows combined CRT exposure by MSA for the MSAs closest to the path of the hurricane. The affected Florida MSAs make up close to 30% of all CRT exposure in Florida, and 2% all loans nationally. We also include CRT exposure by deal for the affected Florida MSAs in the **Appendix**. The affected Florida MSAs

[3] https://www.corelogic.com/press-releases/corelogic-slow-moving-hurricane-ian-threatens-more-than-1-million-homes-along-florida-gulf-with-forecasted-storm-surge-heights-up-to-10-feet/

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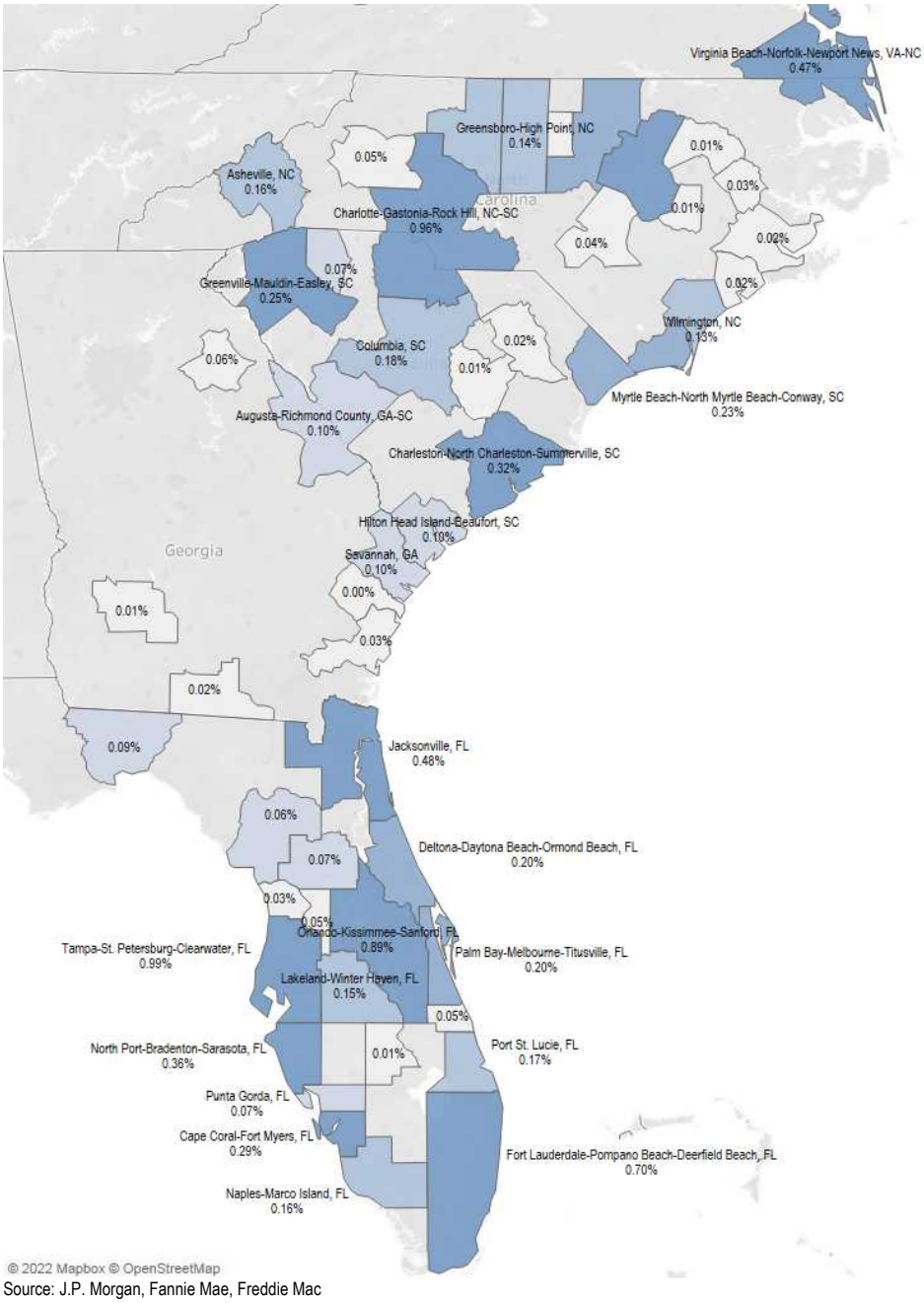
make up 1-2.5% of most CAS and STACR deals. Including Orlando, FL (less severely affected) increases CRT exposure by about 0.5-1% per deal.

Exhibit 10: CRT exposure in MSAs closest to Hurricane Ian's path
Includes both CAS and STACR



Source: J.P. Morgan, Fannie Mae, Freddie Mac

As a reminder, impacted borrowers will receive largely the same delinquency workout waterfall as during the pandemic.[4] Borrowers impacted by Hurricane Ian can receive up to 12 months of forbearance, where the initial 3 month forbearance

[4] https://capitalmarkets.fanniemae.com/media/3061/display

period can be granted regardless of whether the servicer is able to get in touch with the borrower. Post-forbearance, borrowers may be offered a payment deferral or flex mod, depending on eligibility.[5] STACR treats payment deferral interest shortfalls as a lost to the trust, while CAS does not.

Flood insurance can help mitigate some losses. Standard homeowner insurance does not generally cover flood damage, but borrowers in high-risk flood zones (FEMA designations beginning with A or V) are required to have flood insurance. Virtually all of Florida's immediate coastline falls within this high-risk category. However, less coastal areas like Orlando and parts of Tampa are not necessarily designated high-risk, meaning that homeowners are less likely to have flood insurance. A number of FEMA's maps are also out of date, and slow to account for intensifying weather due to climate change, which may increase losses. According to First Street Foundation, almost 350,000 properties in Florida are at risk of flooding but are not in FEMA's high-risk flood zones. Regardless, we will be monitoring delinquencies and forbearance take-up in the affected areas going forward.

[5] https://servicing-guide.fanniemae.com/THE-SERVICING-GUIDE/Part-D-Providing-Solutions-to-a-Borrower/Subpart-D1-Assisting-the-Borrower-with-Property-Related/Chapter-D1-3-Providing-Assistance-to-a-Borrower-Impacted/D1-3-01-Evaluating-the-Impact-of-a-Disaster-Event-and/1041315841/D1-3-01-Evaluating-the-Impact-of-a-Disaster-Event-and-Assisting-a-Borrower-09-09-2020.htm#Workout.20Hierarchy.20for.20When.20a.20Borrower.20Is.20Affected.20by.20a.20Disaster.20Event

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Appendix

Appendix 1: The affected FL MSAs make up 1-2.5% of most CAS and STACR deals

Concentration of Ian-affected FL MSAs by deal in CAS and STACR (%)

Deal name	% in Ian-affected MSAs	Deal name	% in Ian-affected MSAs
CAS 2013-C01	0.94%	STACR 2013-DN1	0.97%
CAS 2014-C01	0.73%	STACR 2013-DN2	1.00%
CAS 2014-C02 Group 1	0.87%	STACR 2014-DN1	1.27%
CAS 2014-C02 Group 2	0.83%	STACR 2014-DN2	1.48%
CAS 2014-C03 Group 1	1.26%	STACR 2014-DN3	1.54%
CAS 2014-C03 Group 2	1.01%	STACR 2014-DN4	1.66%
CAS 2014-C04 Group 1	1.28%	STACR 2014-HQ2	0.90%
CAS 2014-C04 Group 2	1.02%	STACR 2015-DN1	2.19%
CAS 2015-C01 Group 1	1.40%	STACR 2015-DNA1	0.87%
CAS 2015-C02 Group 1	1.71%	STACR 2015-DNA2	1.86%
CAS 2015-C03 Group 1	1.79%	STACR 2015-DNA3	1.75%
CAS 2015-C04 Group 1	1.64%	STACR 2015-HQ1	1.70%
CAS 2015-C04 Group 2	1.45%	STACR 2015-HQ2	0.88%
CAS 2016-C01 Group 1	1.66%	STACR 2015-HQA1	1.61%
CAS 2016-C01 Group 2	2.11%	STACR 2015-HQA2	1.86%
CAS 2016-C02 Group 1	1.75%	STACR 2016-DNA1	1.92%
CAS 2016-C03 Group 1	1.97%	STACR 2016-DNA2	1.83%
CAS 2016-C03 Group 2	1.82%	STACR 2016-DNA3	2.03%
CAS 2016-C04 Group 1	1.83%	STACR 2016-DNA4	2.15%
CAS 2016-C05 Group 2	1.81%	STACR 2016-HQA1	1.80%
CAS 2016-C06 Group 1	1.98%	STACR 2016-HQA2	1.42%
CAS 2016-C07 Group 2	1.98%	STACR 2016-HQA3	1.79%
CAS 2017-C01 Group 1	1.95%	STACR 2016-HQA4	1.86%
CAS 2017-C02 Group 2	1.86%	STACR 2017-DNA1	2.08%
CAS 2017-C03 Group 1	1.76%	STACR 2017-DNA2	1.70%
CAS 2017-C04 Group 2	1.74%	STACR 2017-DNA3	0.00%
CAS 2017-C05 Group 1	1.72%	STACR 2017-HQA1	1.91%
CAS 2017-C06 Group 1	1.92%	STACR 2017-HQA2	1.66%
CAS 2017-C06 Group 2	2.13%	STACR 2017-HQA3	0.00%
CAS 2017-C07 Group 1	1.37%	STACR 2017-HRP1	0.00%
CAS 2017-C07 Group 2	1.43%	STACR 2018-DNA1	2.30%
CAS 2018-C01 Group 1	2.29%	STACR 2018-DNA2	4.00%
CAS 2018-C02 Group 2	1.68%	STACR 2018-DNA3	2.21%
CAS 2018-C03 Group 1	1.88%	STACR 2018-HQA1	1.92%
CAS 2018-C04 Group 2	1.82%	STACR 2018-HQA2	2.82%
CAS 2018-C05 Group 1	1.94%	STACR 2018-HRP1	3.53%
CAS 2018-C06 Group 1	2.41%	STACR 2018-HRP2	2.68%
CAS 2018-C06 Group 2	2.01%	STACR 2019-DNA1	2.73%
CAS 2018-R07 Group 1	2.51%	STACR 2019-DNA2	2.47%
CAS-2019-HRP1	1.51%	STACR 2019-DNA3	2.51%
CAS 2019-R01 Group 2	2.39%	STACR 2019-DNA4	2.30%
CAS 2019-R02 Group 1	2.30%	STACR 2019-FTR1	4.04%
CAS 2019-R03 Group 1	2.13%	STACR 2019-FTR2	2.12%
CAS 2019-R04 Group 2	2.19%	STACR 2019-FTR3	1.31%
CAS 2019-R05 Group 1	2.28%	STACR 2019-FTR4	1.49%
CAS 2019-R06 Group 2	2.60%	STACR 2019-HQA1	2.71%
CAS 2019-R07 Group 1	2.63%	STACR 2019-HQA2	2.51%
CAS 2020-R01 Group 1	2.17%	STACR 2019-HQA3	1.91%
CAS 2020-R02 Group 2	2.18%	STACR 2019-HQA4	2.37%
CAS 2021-R01 Group 1	1.50%	STACR 2019-HRP1	3.88%
CAS 2021-R02 Group 2	1.87%	STACR 2020-DNA1	2.85%
CAS 2021-R03 Group 1	1.54%	STACR 2020-DNA2	2.22%
CAS 2022-R01 Group 1	1.74%	STACR 2020-DNA3	2.08%

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CAS 2022-R02 Group 2	2.14%	STACR 2020-DNA4	2.31%
CAS 2022-R03 Group 1	2.07%	STACR 2020-DNA5	1.64%
CAS 2022-R04 Group 1	1.83%	STACR 2020-DNA6	2.19%
CAS 2022-R05 Group 2	2.10%	STACR 2020-HQA1	2.29%
CAS 2022-R06 Group 1	2.05%	STACR 2020-HQA2	1.75%
CAS 2022-R07 Group 1	1.85%	STACR 2020-HQA3	1.81%
CAS 2022-R08 Group 1	1.98%	STACR 2020-HQA4	2.10%
		STACR 2020-HQA5	1.89%
		STACR 2021-DNA1	1.40%
		STACR 2021-DNA2	1.74%
		STACR 2021-DNA3	1.71%
		STACR 2021-DNA5	1.49%
		STACR 2021-DNA6	1.63%
		STACR 2021-DNA7	2.02%
		STACR 2021-HQA1	1.53%
		STACR 2021-HQA2	1.60%
		STACR 2021-HQA3	1.64%
		STACR 2021-HQA4	1.89%
		STACR 2022-DNA1	2.06%
		STACR 2022-DNA2	2.26%
		STACR 2022-DNA3	2.53%
		STACR 2022-DNA4	2.26%
		STACR 2022-DNA5	2.29%
		STACR 2022-DNA6	2.78%
		STACR 2022-HQA1	1.79%
		STACR 2022-HQA2	2.04%

Source: J.P. Morgan, Fannie Mae, Freddie Mac

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CMBS

- **With rate volatility jumping again this past week, spread products broadly saw widening with current coupon ZVs widening by 10bp and the JULI index (high grade corporates) widening by 21bp week-over-week as of Thursday's close. With far larger (and more liquid) markets like these moving wider, CMBS sold off in sympathy, hitting fresh year-to-date wides across the stack in conduit and Agency CMBS**
- **We spent the bulk of this past week on a Midwest client roadshow and unsurprisingly, the tone was cautious given the events of this past week. A running theme throughout our meetings was that securitized products broadly looked fundamentally cheap to corporate credit but given that money managers and insurance companies bear the burden of being the marginal buyer currently, there simply wasn't enough risk appetite to go around**
- **We still think hiding out in SASB AAA floaters makes sense. The market is trading to full extension (worst) and generically offer 200bp DM at discounted dollar prices. The upside scenario is one in which rate volatility subsides next year and assuming we are not a in deep recession and capital markets are functional, many of these bonds can trade to scheduled maturities or even 100 CPY as CRE turnover picks up**
- **Since our February 2022 remits update, conduit CMBS 60d+delinquency rates (including FC/REO and NP matured) have continued its downward trend reaching 3.35% for the month of September. Delinquency curing has been more concentrated in retail and lodging loans over the last few months**

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Exhibit 1: CMBS spread summary

	This Week	Change 1w	Change 1m	Change YTD
New Issue CMBS (UST)				
5yr Super-Senior AAA	132	7	8	72
10yr Super-Senior AAA	147	8	10	75
AS	220	20	28	124
AA	265	25	35	149
A	360	35	65	199
Pre-COVID BBB-	630	45	65	274
On-the-run BBB-	645	45	70	279
XA	300	10	45	187
Agency CMBS (SOFR)				
Freddie K A1 (10yr)	93	10	10	50
Freddie K A2 (10yr)	110	11	25	57
Freddie K Floater (10yr)	75	9	18	51
Freddie K X1 (UST)	205	5	35	100
Freddie K X3 (UST)	510	10	50	235
FRESB A5H	97	8	21	65
FRESB A10F	115	10	23	61
FNA DUS 10/9.5 TBA	120	13	23	63
FNA DUS SARM	80	8	17	55
GNR Project Loan (3.5yr)	165	5	10	83

Source: J.P. Morgan

Exhibit 2: Summary of CMBS issuance and dealer holdings

YTD Issuance ($bn)	2022	2021	% Diff.
Conduit	19.3	21.9	-12%
SASB	42.1	43.1	-2%
CRE CLO	27.4	32.1	-15%
Other	1.7	0.4	275%
Total Private Label	**90.5**	**97.5**	**-7%**
Freddie K	39.6	47.1	-16%
FRESB	3.8	3.8	-1%
Fannie MBS	44.3	34.1	30%
GNR PL	20.5	34.1	-40%
Freddie Other	0.8	3.7	-78%
Agency CMBS	**109.0**	**122.8**	**-11%**
Total CMBS	**199.5**	**220.3**	**-9%**
YTD Issuance ($bn)	**2022**	**2021**	**% Diff.**
Private Label Fixed	24.2	28.3	-15%
Private Label Floating	66.4	69.2	-4%
Agency Fixed	85.3	81.7	4%
Agency Floating	23.7	30.0	-21%
Dealer Holdings ($bn)	**9/21/22**	**9/14/22**	**8/24/22**
Private Label	5.88	5.92	6.00
Agency CMBS	10.65	10.91	10.44

Source: J.P. Morgan, Commercial Mortgage Alert, Federal Reserve Bank of New York, Fannie DUS Disclose
Note: Dealer holdings reported with a 1-week lag.

Weekly market snapshot

Market commentary – setting up for volatile Q4

With rate volatility jumping again this past week, spread products broadly saw widening with current coupon ZVs widening by 10bp and the JULI index (high grade corporates) widening by 21bp week-over-week as of Thursday's close. With far larger (and more liquid) markets like these moving wider, CMBS sold off in sympathy, hitting fresh year-to-date wides across the stack in conduit and Agency CMBS. Conduit 10yr LCF AAAs saw spreads move 5bp wider to T+147, levels that we had not seen since the tail end of the 2015/16 selloff but held in comparatively well to similar duration single-A and AA corporates that widened 23bp and 16bp, respectively (**Exhibit 3**). Conduit BBB-s fared worse, widening by 35bp week-over-week to T+645 versus single-B and BB corporates that saw spreads widen by 43bp and 31bp, respectively (**Exhibit 4**). In Agency CMBS, 10yr Freddie K A2s and Fannie DUS 10/9.5 TBAs saw spreads move 11bp and 13bp wider to P+110 (T+86) and P+120 (T+96) week-over-week as mortgage spreads whipsawed around (**Exhibit 5**). As has been the case for most of this year, spreads appear to be more positively correlated with rate volatility rather than exhibit negative correlation to the level of rates. When there is spike in rate volatility, spreads leg out wider.

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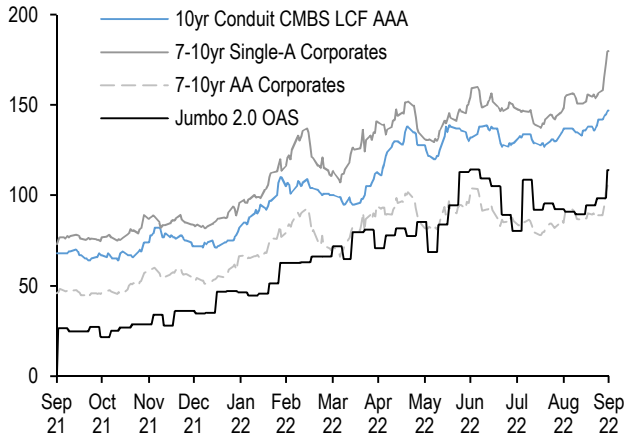
Exhibit 3: Conduit 10yr LCF AAAs hit fresh year-to-date wides this past week but held in better than similar duration corporates...

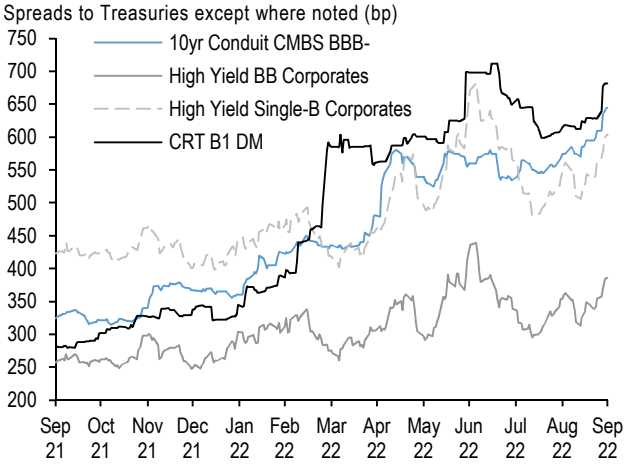
Spreads to Treasuries (bp)



Source: J.P. Morgan

Exhibit 4: ...BBB-s also at year-to-date wides

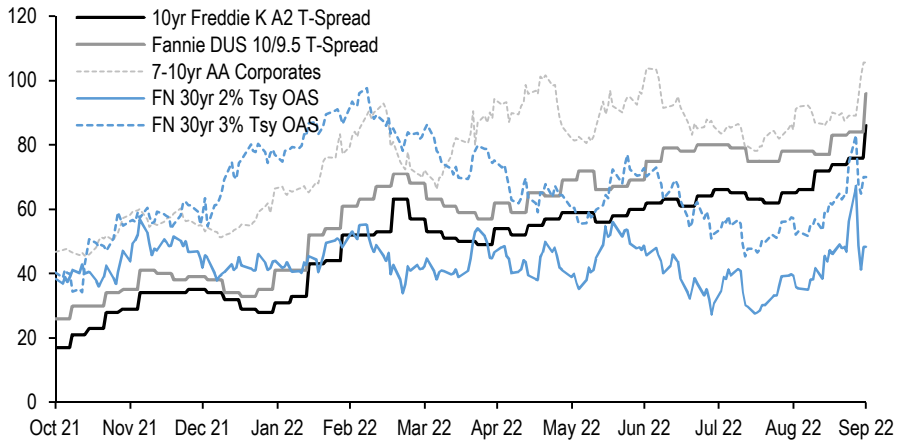
Spreads to Treasuries except where noted (bp)



Source: J.P. Morgan

Exhibit 5: Agency CMBS widened in sympathy with mortgages and corporates

Spreads to Treasuries (bp)



Source: J.P. Morgan

We spent the bulk of this past week on a Midwest client roadshow and unsurprisingly, the tone was cautious given the events of this past week. A running theme throughout our meetings was that securitized products broadly looked fundamentally cheap to corporate credit but given that money managers and insurance companies bear the burden of being the marginal buyer currently, there simply wasn't enough risk appetite to go around. Money managers are managing liquidity for outflows or potential outflows like they have been most of this year and as our High Grade research colleagues note, outflows are intensifying. Insurance companies also appear to be managing only paydowns rather than putting fresh capital to work. Given this setup, it's likely that the path of least resistance is wider until there is stronger evidence that inflation is coming under control.

The silver lining for CMBS is that issuance is expected to be light for the remainder of the year. This should help on the margin but CMBS is likely to toss around into year-end. We still think hiding out in SASB AAA floaters makes sense. Unfortunately, given their relative outperformance to longer duration conduit, CMBS

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investors have been managing liquidity by selling these bonds. The market is trading to full extension (worst) and generically offer 200bp DM at discounted dollar prices. The upside scenario is one in which rate volatility subsides next year and assuming we are not a in deep recession and capital markets are functional, many of these bonds can trade to scheduled maturities or even 100 CPY as CRE turnover picks up. Depending on vintage and property, the positive convexity could be substantial (**Exhibit 6**). This point is especially poignant if you consider that the first half of 2023 can be plagued with low supply and the ramp up in supply will lag the stabilization of the rates complex.

Exhibit 6: We still like hiding out in SASB AAA floaters

Outstanding SASB floater deal level and AAA statistics by vintage and property type

Property Type	Tranche Count	Average Tranche Size ($mn)	Price	Full Extension DM	Scheduled Maturity DM	Full Extension WAL	Scheduled Maturity WAL	U/W Deal DY	Most Recent Deal DY	U/W C/E	Current C/E
2019											
Office	10	209	97.58	237	1,338	2.0	0.4	9.5%	8.7%	54.3%	54.7%
Lodging	17	132	97.39	233	3,057	2.3	0.5	12.0%	5.3%	65.7%	65.8%
Multifamily	3	107	98.40	182	4,203	2.0	0.1	6.6%	4.5%	59.9%	68.0%
Industrial	2	1,510	98.57	174	3,817	1.8	0.3	9.0%	9.2%	54.1%	55.6%
Retail	2	85	98.23	252	404	1.7	0.7	13.1%	13.2%	49.0%	62.6%
2020											
Office	6	192	97.81	224	5,003	2.9	0.1	9.8%	8.7%	54.3%	54.3%
Lodging	5	45	97.32	258	1,081	1.4	0.2	11.6%	4.3%	65.0%	67.0%
Multifamily	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Industrial	4	210	98.20	154	4,622	1.5	0.3	9.7%	10.5%	50.8%	50.5%
Retail	2	236	98.54	404	1,310	1.2	0.2	17.0%	15.7%	18.8%	18.8%
2021											
Office	26	179	96.12	222	626	4.0	0.8	8.7%	11.2%	57.5%	58.2%
Lodging	10	376	96.54	210	406	3.6	1.2	11.5%	97.3%	67.5%	67.0%
Multifamily	18	246	96.36	184	557	3.8	1.0	6.0%	5.4%	64.6%	64.7%
Industrial	15	373	95.93	184	733	4.1	0.8	6.4%	6.5%	61.5%	63.0%
Retail	9	165	95.69	262	725	3.7	0.9	10.8%	11.0%	52.0%	52.1%
2022											
Office	3	81	95.94	229	439	4.3	1.3	8.7%	5.8%	60.9%	60.9%
Lodging	9	368	98.80	251	304	4.6	1.6	14.2%	8.6%	54.4%	54.7%
Multifamily	4	320	97.41	203	339	4.5	1.5	6.7%	6.3%	55.2%	55.2%
Industrial	8	423	97.58	200	322	4.1	1.4	7.7%	6.5%	55.6%	55.6%
Retail	5	571	98.25	284	360	4.7	1.7	12.6%	12.6%	32.3%	32.3%

Source: J.P. Morgan, Trepp, FEMA

CMBS exposures to Florida counties that qualify for FEMA emergency assistance after Hurricane Ian total about $25bn in allocated balances by our estimation (**Exhibit 7**). 63% are to Agency CMBS and 37% are to private label CMBS. Putting this figure into context, FEMA designated major disaster areas in Texas on the back of Hurricane Harvey was about $29bn with a similar split across Agency and private label CMBS. We wrote extensively about the potential implications for CMBS exposures in the aftermath of Hurricane Harvey given that it was likely that affected properties were under-insured for flood damage.

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Exhibit 7: CMBS exposures in Florida to Hurricane Ian total about $25bn

CMBS exposures to Florida counties that are eligible to request emergency FEMA relief in the aftermath of Hurricane Ian

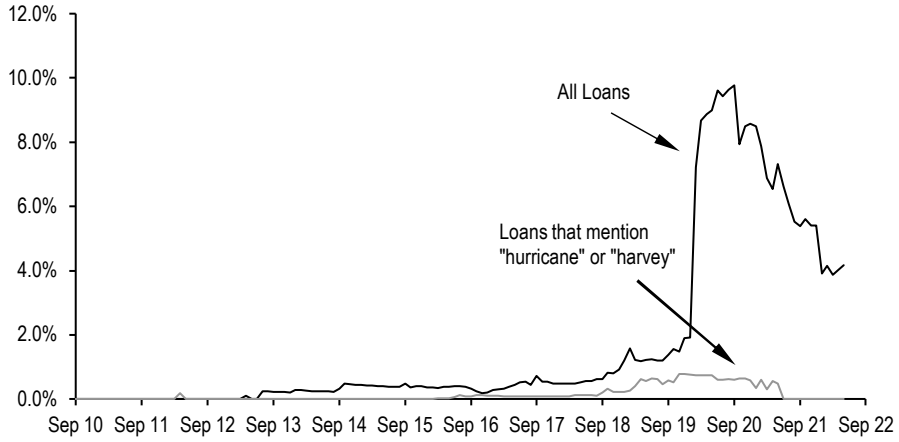
	Allocated Balance ($bn)	% of Total
Total CMBS	**24.7**	**100%**
Agency CMBS	**15.6**	**63%**
Freddie	7.9	32%
Fannie*	6.5	26%
GeMS/ACES/MCAS	*2.5*	*10%*
Ginnie	1.2	5%
Private Label	**9.1**	**37%**
Conduit	4.9	20%
SASB	2.8	11%
CRE CLO	1.4	6%
Other	0.0	0%

Source: J.P. Morgan, Trepp, Fannie Mae, Freddie Mac, FEMA

With hindsight, the damage to CMBS following Hurricane Harvey was minimal. For example, serious delinquency rates for 2.0 conduit CMBS loans backed by properties located in the 39 counties that were designated as major disaster areas only ticked up by 80bp from September 2017 to the end of 2019 (**Exhibit 8**). Even though many of these properties were likely under-insured against flood damage, it's likely that business income (BI) insurance helped keep limit delinquencies. The delinquency uptick is even smaller if we narrow down the set of loans to those that mention 'hurricane' or 'Harvey' in their servicer or watchlist commentary history. And for this set with such mentions, we find that only about 16% of resolved loans or $58mn have liquidated for losses so far.

Exhibit 8: The impact on CMBS post Hurricane Harvey was minimal

60-day+ delinquency rates (including foreclosed/REO and non-performing matured loans) for 2.0 conduit CMBS loans backed by properties located in the 39 Texas counties designated as major disaster areas by FEMA in the aftermath of Hurricane Harvey



Source: J.P. Morgan, Trepp, FEMA

The extent of the damage to CMBS exposures in the aftermath of Hurricane Ian could be more significant than that of Harvey but we also suspect (given the area), these properties are better insured against flood damage.

Using data from ApartmentList.com's *National Rent Report*, we continue to see a deceleration in monthly rent on a national level over the last five months (**Exhibit 9**). September data show that rents *fell* nationally by 0.2%, which points to typical seasonal weakness. Last year, we saw this weakness come in later in the year and it wasn't entirely clear that the September weakness, which was typical in pre-pandemic years would show. We also see that the vast majority of rental markets that

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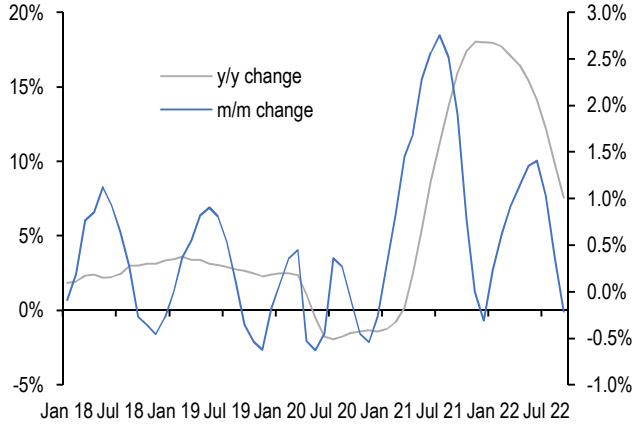
ApartmentList.com tracks have seen rent growth decelerate (161 out of 177 markets) (**Exhibit 10**).

Exhibit 9: Residential rent growth has decelerated for the last five months

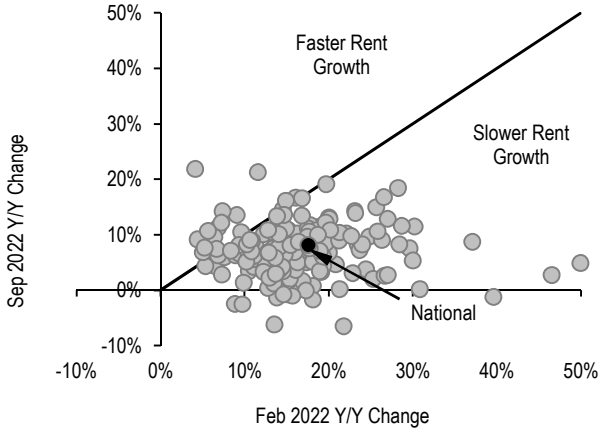
ApartmentList.com national month-over-month and year-over-year percentage changes, as of September 2022



Source:ApartmentList.com, J.P. Morgan

Exhibit 10: 90% of rental markets tracked by ApartmentList.com have seen rent growth decelerate

ApartmentList.com year-over-year rent growth as of September 2022 versus year-over-year rent growth as of February 2022 across all ApartmentList.com rental markets



Source:ApartmentList.com, J.P. Morgan

Rating tracker

45 bonds (including IOs, exchangeable classes and rake bonds) across 19 deals saw ratings action in the past week. 15 conduit CMBS bonds saw downgrades, including 7 from **UBSBB 2013-C5**, and 3 each from **MSBAM 2015-C22** and **COMM 2013-CR6.** 6 conduit CMBS bonds saw rating upgrades, including 5 from **COMM 2015-LC23**, and 1 from **COMM 2015-CR22**. 14 Agency bonds saw upgrades, including 3 each from **FREMF 2013-K28, FREMF 2015-K51,** and **FRR 2018-C1**.

Exhibit 11: Summary of deals with rating actions

Summary of CMBS deals with ratings actions (upgrades and downgrades), September 23 to September 29, 2022

Deal Name	Deal Type	CMB X	Upgrade (+) / Downgrade (-)	# of Bonds w/ Ratings Changes	Senior Most Bond w/ Ratings Changes	Notches	Rating Agency
BDS 2020-FL6	CRE CLO	N/A	+	6	AAL	2-3	DBRS Morningstar
COMM 2013-CR6	Conduit	N/A	-	3	Baa3	1	Moody's
COMM 2015-CR22	Conduit	N/A	+	1	B- *-	1	KBRA
COMM 2015-LC23	Conduit	N/A	+	5	BB- *-	1	KBRA
DBUBS 2011-LC2A	Conduit	N/A	-	1	Caa2	3	Moody's
FREMF 2013-K28	Agency	N/A	+	3	AA	2-4	DBRS Morningstar
FREMF 2013-K29	Agency	N/A	+	1	AAH	1	DBRS Morningstar
FREMF 2013-K31	Agency	N/A	+	2	AH	3-4	DBRS Morningstar
FREMF 2015-K51	Agency	N/A	+	3	AH	2-3	DBRS Morningstar
FREMF 2017-K63	Agency	N/A	+	2	BBBL	1	DBRS Morningstar
FRR 2018-C1	Re-REMIC	N/A	+	3	BBB+	1-3	KBRA
JPMCC 2016-JP4	Conduit	10	-	1	B	1	Fitch
MSBAM 2015-C22	Conduit	N/A	-	3	BB- *-	1-2	KBRA
MSC 2021-L7	Conduit	N/A	both	2	BB+	2	Fitch
UBSBB 2013-C5	Conduit	N/A	-	7	AA-	2-4	Fitch
VMC 2019-FL3	CRE CLO	N/A	+	2	AA-	1-2	KBRA

Source: J.P. Morgan, Bloomberg Finance L.P., INTEX

September remits update

Since our last remits update in February 2022, conduit CMBS 60d+ delinquency rates (including FC/REO and NP matured loans) have continued their downward trend reaching 3.35% for the month of September (**Exhibit 12**). This represents a

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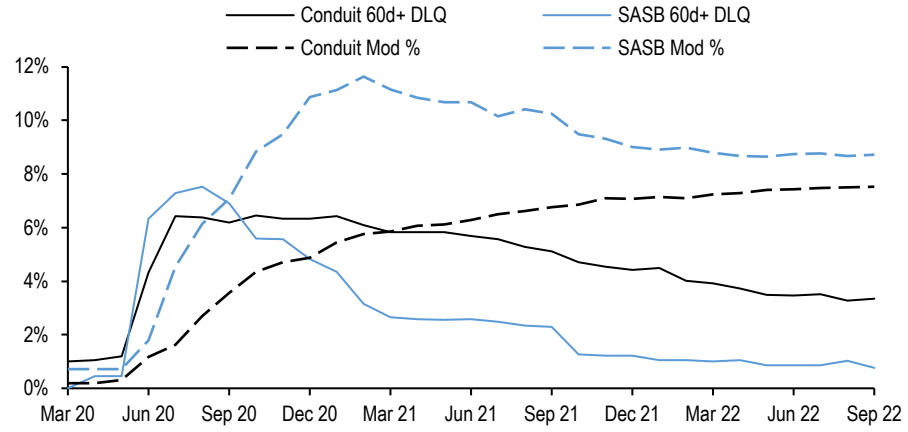
67bp drop since February. Meanwhile, modification rates for conduits have increased 43bps since February to 7.53%, reaching its high level since the beginning of the pandemic. SASB 60d+delinquency and modification rates have both decreased since February, reaching 0.77% and 8.71% respectively in September.

Exhibit 12: 60d+ delinquency rates for conduit CMBS continued to decline during the September remit period

60-day+ delinquency rates including foreclosed/REO and non-performing matured loans versus modification rates

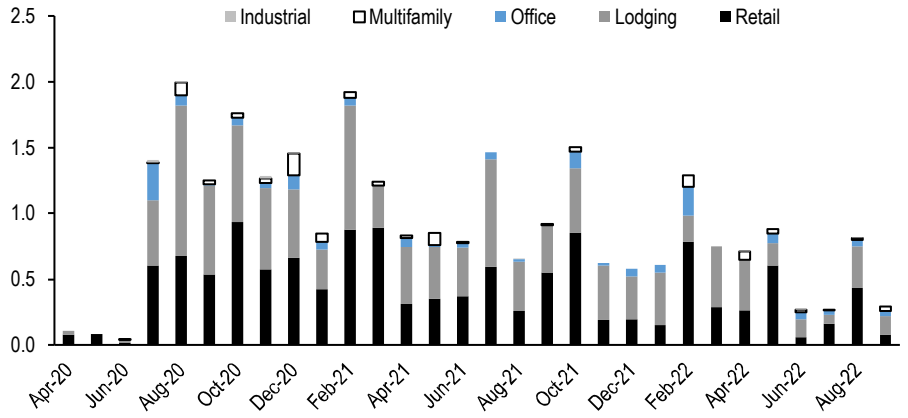


Source: J.P. Morgan, Trepp

Since February 2022, we continue to see strong delinquency curing for both retail and lodging loans (**Exhibit 13**). We saw particularly strong numbers for curing levels in May and August. For August remit period, we saw that the Empire Hotel & Retail loan ($171.1mn), securitized in **GSMS 2013-GC10** and **GC11**, received a loan modification in June. This hotel is located in the Upper West Side of New York City and close to many popular tourist destinations but became distressed due to the impact of the pandemic. As part of the loan modification, the borrower agreed to pay half of the interest owed ($3.9mn) and the loan was converted to an IO.

Exhibit 13: Delinquency curing has been driven by retail and lodging loans since February

Monthly 60d+ delinquency (incl. FC/REO and NP matured) curings by property type ($bn)



Source: J.P. Morgan, Trepp

Monthly delinquent payoff volumes have decreased from $284mn in February to $114mn in August (**Exhibit 14**). One of the main reasons for the difference in volumes between the two periods is that February experienced a spike in office loans

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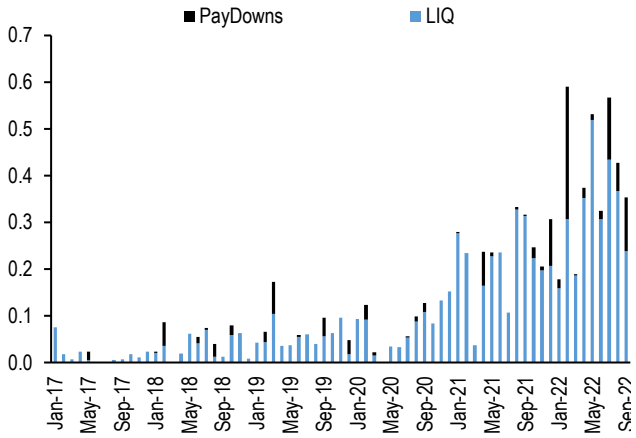
payoffs. That spike was caused mainly by one large refinancing. Without a large refinancing in September, office payoffs are more in line with recent prior months' levels. And payoffs are concentrated in both retail and hotel loans this month (**Exhibit 15**).

Exhibit 14: Delinquent loan liquidations and payoffs have decreased since February

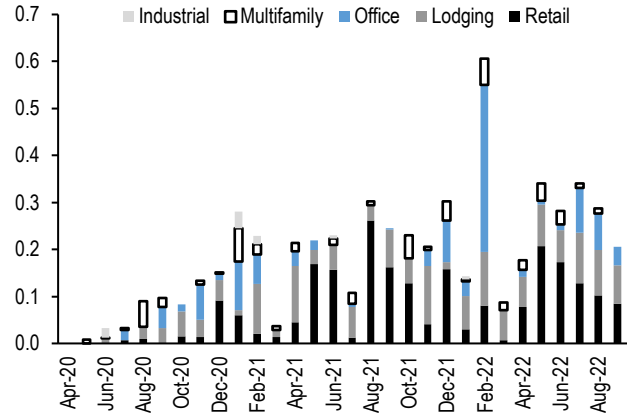
Monthly liquidations and payoffs for 60d+ delinquent (incl. FC/REO and NP matured) loans ($bn)



Source: J.P. Morgan, Trepp

Exhibit 15: Delinquent loan liquidations and payoffs are concentrated in retail an lodging loans

Monthly liquidations and payoffs for 60d+ delinquent (incl. FC/REO and NP matured) loans by property type ($bn)

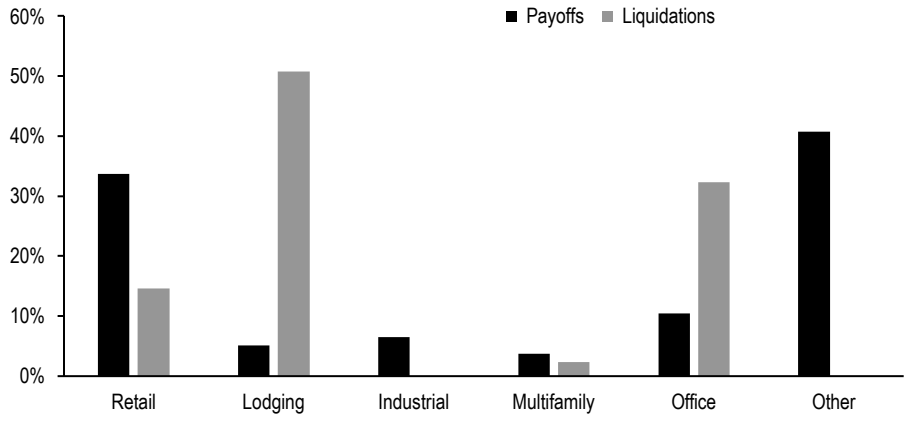


Source: J.P. Morgan, Trepp

Liquidations are biased towards lodging and office properties, which made up 51% and 32% of the liquidation volume in September, respectively (**Exhibit 16**). To the contrary, 34% of the loans paid off in September were retail loans. Lodging and office collectively made up for 15% of the volumes.

Exhibit 16: Loan liquidations are concentrated in lodging and office loans, while payoffs are concentrated in retail loans

Loan liquidations and payoffs by property type for the September remit period



Source: J.P. Morgan, Trepp

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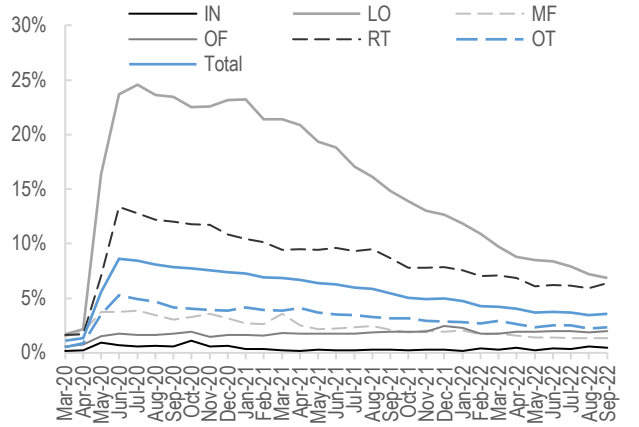
Weekly Tracker

Exhibit T1: Delinquency rate

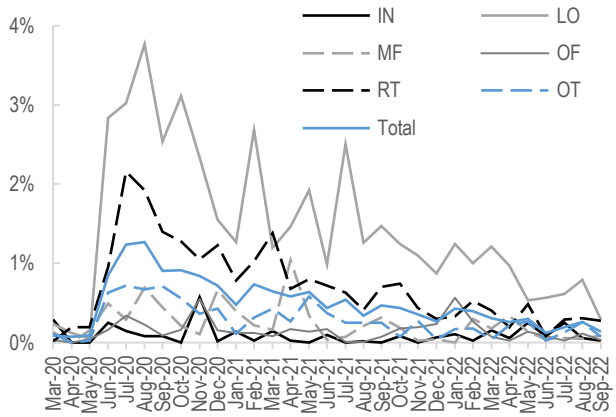
Conduit CMBS 30-day+ delinquency rate including FC/REO and NP matured (%)



Source: J.P. Morgan, Trepp

Exhibit T2: Delinquency cure rates

Conduit CMBS 30-day+ delinquency to performing transition rates (%)



Source: J.P. Morgan, Trepp

Exhibit T3: Specially serviced rate

Conduit CMBS percentage of loans in special servicing (%)

Source: J.P. Morgan, Trepp

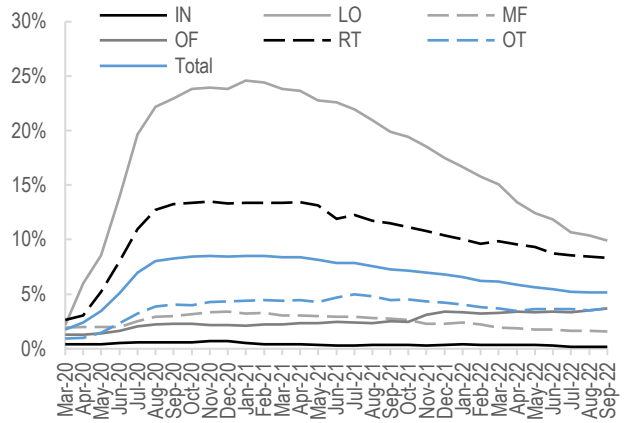
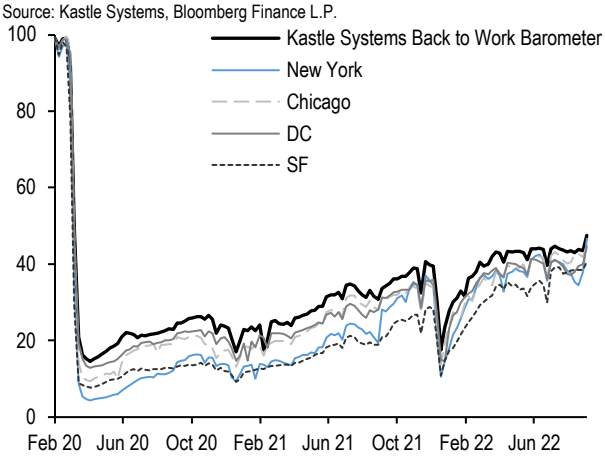


Exhibit T4: Office RTTO indexed to pre-pandemic levels

Kastle Systems Back to Work Barometer, weekly

Source: Kastle Systems, Bloomberg Finance L.P.



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Cross-sector spread

Product	Tranche / Bucket	Current 9/29/22	Changes -1w	-1m	-1y	5yr Trailing Min	Max	Percentile Rank 3yr	5yr	7yr
Conduit CMBS	3yr AAA	122	7	8	90	26	463	91.6%	95.2%	96.5%
Treasury Spread (bp)	5yr AAA	132	7	8	81	43	461	91.4%	94.9%	96.5%
	10yr LCF AAA	147	8	10	79	59	340	94.7%	96.8%	96.7%
	10yr AS	220	20	28	130	74	440	95.2%	97.1%	97.9%
	10yr AA	265	25	35	153	90	565	92.1%	95.2%	94.9%
	10yr A	360	35	65	213	123	756	90.9%	94.5%	93.2%
	10yr BBB-	645	45	70	318	263	1354	87.1%	89.5%	89.6%
	XA	300	10	45	192	75	535	89.5%	93.7%	94.2%
Freddie K	7yr A2	67	10	8	58	6	100	97.4%	98.4%	96.6%
Treasury Spread (bp)	10yr A2	86	10	20	67	10	110	98.1%	98.8%	96.4%
	10yr B	332	18	25	200	118	600	92.9%	95.7%	90.2%
	10yr C	442	23	30	280	140	700	93.5%	96.1%	83.8%
	X1	205	5	26	140	50	400	85.7%	91.4%	80.7%
	X3	510	10	41	260	220	695	90.3%	94.1%	84.0%
	SOFR Floater (DM)	75	9	9	56	19	75	100.0%	100.0%	100.0%
FRESB	A5H (5yr Hybrid ARM)	72	2	15	54	2	112	90.3%	93.6%	93.6%
Treasury Spread (bp)	A10F (10yr Fixed Rate)	88	10	15	70	16	120	96.1%	97.0%	97.0%
Fannie DUS	7/6.5 TBA	70	9	5	58	7	110	97.4%	98.4%	95.2%
Treasury Spread (bp)	10/9.5 TBA	96	12	18	68	14	135	98.1%	98.8%	96.4%
	SOFR SARM (DM)	80	8	8	56	22	80	100.0%	100.0%	100.0%
Fannie ACES	7yr A2	68	10	7	57	7	102	97.4%	98.4%	95.8%
Treasury Spread (bp)	10yr A2	86	10	16	65	12	120	98.1%	98.8%	93.8%
GNR Project Loans	3.5yr	143	-4	7	70	60	136	100.0%	100.0%	100.0%
Treasury Spread (bp)	7.5yr	173	5	2	98	69	171	100.0%	100.0%	100.0%
	12yr	202	2	-4	121	80	206	100.0%	100.0%	100.0%
Production Coupon	FN/FR 30yr PC (OAS)	46	4	8	51	-35	115	98.2%	98.2%	98.7%
	FN/FR 30yr PC (ZV)	119	6	-1	77	-2	173	98.1%	98.8%	99.2%
Agency CMO SEQ	5yr	78	-2	14	12	45	190	59.6%	58.1%	58.9%
Treasury Spread (bp)	10yr	110	0	7	33	65	200	83.0%	85.2%	87.3%
Agency CMO PAC	5yr	82	-1	16	14	45	165	79.4%	83.1%	90.0%
Treasury Spread (bp)	10yr	110	0	7	33	65	175	82.3%	89.4%	93.1%
Agency CMO Floater	Pre-HARP	65	10	15	47	12	70	98.6%	99.2%	99.4%
6.5% Cap (DM)	New Issue	55	-5	0	38	15	80	88.7%	97.9%	98.6%
ABS	3yr AAA Credit Card	49	3	5	34	10	214	85.6%	91.3%	88.9%
Treasury Spread (bp)	3yr AAA Prime Auto	69	3	10	52	14	214	91.0%	94.6%	96.1%
	3yr BBB Subprime Auto	254	8	20	176	71	569	89.2%	93.5%	91.9%
CLO	AAA	204	13	24	92	84	408	94.3%	96.6%	97.0%
Discount Margin	BBB	570	71	91	225	257	972	93.1%	95.8%	92.6%
	BB	1,062	121	173	360	510	1,756	92.3%	95.4%	94.8%
JULI (ex-EM)	3-5yr	153	20	24	93	58	407	91.9%	95.2%	94.8%
Treasury Spread (bp)	5-7yr	180	23	27	106	71	372	92.9%	95.7%	95.1%
	7-10yr	204	24	29	113	87	368	93.2%	95.9%	95.4%
	7-10yr A	180	25	31	105	68	316	95.8%	97.5%	98.2%
	7-10yr REITs	214	18	21	112	98	350	91.0%	94.6%	93.3%
High Yield	Domestic HY	585	53	50	200	355	1,139	80.8%	88.5%	83.2%
Spread to Worst (bp)	Energy	485	49	25	33	374	2,395	37.4%	40.3%	33.2%
Swap Spreads	3yr	7	-8	-7	-6	-6	29	26.5%	26.5%	26.5%
(bp)	5yr	5	-3	-3	-4	-8	16	29.3%	29.3%	29.3%
	10yr	5	0	-4	3	-15	11	65.7%	65.7%	65.7%

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Cross-sector spreads (continued)

Product	Tranche / Bucket	Current	Changes			5yr Trailing		Percentile Rank		
		9/29/22	-1w	-1m	-1y	Min	Max	3yr	5yr	7yr
CMBX (bp)	AAA15	100	13	16	N/A	60	100	100.0%	100.0%	100.0%
	AAA14	93	13	17	43	45	93	100.0%	100.0%	100.0%
	AAA13	87	13	17	40	42	167	96.6%	96.6%	96.6%
	AAA12	80	13	18	38	37	162	96.9%	97.6%	97.6%
	AAA11	74	13	17	37	32	146	96.9%	97.3%	97.3%
	AAA10	68	12	17	37	26	141	97.2%	98.2%	87.4%
	AAA9	61	11	14	35	21	127	97.2%	98.3%	75.1%
	AAA8	55	11	14	34	18	117	97.1%	98.2%	75.8%
	AAA7	48	8	10	31	15	107	97.1%	98.2%	76.1%
	AAA6	30	5	-5	10	11	103	71.9%	73.0%	52.1%
	BBB-15	667	50	72	N/A	375	667	100.0%	100.0%	100.0%
	BBB-14	683	56	88	336	320	683	100.0%	100.0%	100.0%
	BBB-13	700	61	101	326	339	1,151	92.3%	92.3%	92.3%
	BBB-12	716	73	116	338	309	1,083	92.6%	94.2%	94.2%
	BBB-11	718	74	119	335	302	1,109	92.5%	95.4%	95.4%
	BBB-10	889	62	118	391	297	1,052	95.1%	97.1%	97.5%
	BBB-9	1,105	71	158	591	301	1,162	99.3%	99.6%	99.7%
	BBB-8	1,301	105	117	517	345	1,454	97.4%	98.4%	98.9%
	BBB-7	2,511	84	213	1,205	281	2,511	100.0%	100.0%	100.0%
	BBB-6	14,736	-9,153	713	10,776	501	25,050	95.8%	97.5%	98.2%
CDX (bp)	5yr IG	111	9	19	58	44	152	97.8%	98.7%	98.3%
	5yr HY	631	77	96	332	267	882	94.7%	96.8%	97.7%

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Recent Publications

Publication Date	Publication title	
	CMBS Weekly	
23-Sep	CMBS Weekly: Comparison of popular aggregate rent measures	
16-Sep	CMBS Weekly: The mortgage payment is too high – examining metro level buy versus rent dynamics	
9-Sep	CMBS Weekly: Revising down our issuance forecast again	
26-Aug	CMBS Weekly: August 26, 2022	
19-Aug	CMBS Weekly: Office chatter - what if the workers don't come back?	
5-Aug	CMBS Weekly: Office chatter – examining the flight to newer constructions	
29-July	CMBS Weekly: Hitting the 2.0 refi wall	
15-July	CMBS Weekly: 2021 cashflow update - mind those expenses	
8-July	CMBS Weekly: July 8, 2022	
24-June	CMBS Weekly: Midyear Outlook	
10-June	CMBS Weekly: Revising our issuance forecast lower	
3-June	CMBS Weekly: Catching up on CRE CLO speeds	
20-May	CMBS Weekly: Hitting the rent affordability wall	
13-May	CMBS Weekly: CMBS safe havens	
6-May	CMBS Weekly: Tale of two malls & Q1 2022 office and multifamily fundamentals	
29-Apr	CMBS Weekly: Canary in the warehouse?	
22-Apr	CMBS Weekly: 785 Market Street & April remits	
8-Apr	CMBS Weekly: Office chatter – examining near-term maturities	
1-Apr	CMBS Weekly: Office chatter	
25-Mar	CMBS Weekly: CMBS demand update	
18-Mar	CMBS Weekly: Issuance Forecast tweak	
11-Mar	CMBS Weekly: Seasoned conduit CMBS LCF AAAs look attractive	
4-Mar	CMBS Weekly: Agency CMBS floaters look attractive versus CMO floaters	
25-Feb	CMBS Weekly: Fundamentals remain strong but can supply technicals ease?	
11-Feb	CMBS Weekly: Can cap rates absorb the rise in rates?	
4-Feb	CMBS Weekly: Stick with high quality floaters for now	
28-Jan	CMBS Weekly: Stay cautious	
21-Jan	CMBS Weekly: CMBX 15 and 2021 vintage indices launch	
7-Jan	CMBS Weekly: NAIC Ratings Review	
17-Dec	CMBS Weekly: 2021 Recap	
10-Dec	CMBS Weekly: Fade the selloff	
12-Nov	CMBS Weekly: Q3 2021 CRE fundamental update	
5-Nov	CMBS Weekly: LIBOR transition - Y2K all over again?	
29-Oct	CMBS Weekly: October remits, loss severity review	
22-Oct	CMBS Weekly: CMBS demand, Freddie K CPY	
	Other periodicals	**Frequency**
30-Sep	CMBX Daily Analytics	Daily
26-Sep	CMBS Weekly Datasheet	Weekly
28-Sep	CMBX Trade Analytics	Weekly
8-Sep	Conduit CMBS and CMBX Credit Monthly	Monthly
9-Sep	Agency CMBS Databook	Monthly
24-Aug	CRE Observer Chartbook	Quarterly
	Ad-hoc publications of note	
21-Jun	CMBS Midyear Outlook: Stay defensive	
20-Jan	CMBX Series 15: Incremental changes	
12-Jan	Thoughts from CREFC: Positive on fundamentals, neutral on spreads	
6-Jan	SOFR, So Good?: The path looks clearer for securitized products	
23-Nov	CMBS 2022 Outlook	
13-Oct	The FHFA raises multifamily loan purchase caps	
8-Sep	Introducing the Freddie Mac When-Issued (WI) K-Deal®	
15-Jan	CMBX Series 14: Thoughts on the preliminary list	
4-Jan	2020 NAIC breakpoint update	
24-Nov	CMBS 2021 Outlook: A vaccine doesn't make loan payments	
17-Sep	That's why they call BBB- the fulcrum bond	

Source: J.P. Morgan

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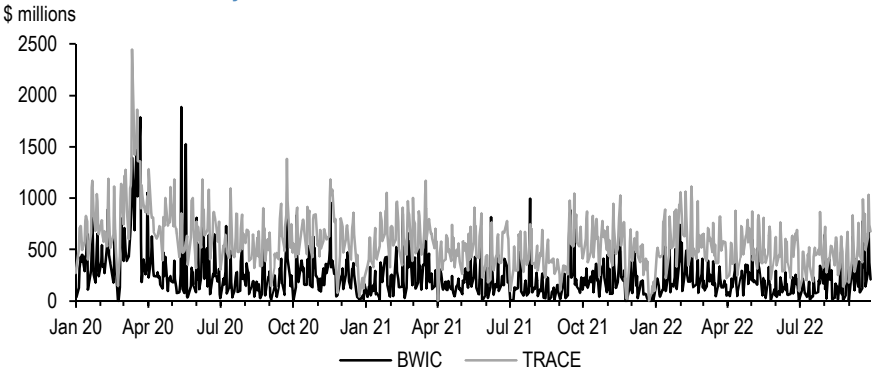
Asset-Backed Securities

- **ABS spreads widened on the week in line with the rest of credits amidst rate/market volatility**
- **The Department of Education reversed previous guidance for FFELP borrowers, no longer allowing consolidation as a way to qualify for the one-time federal loan forgiveness**
- **Prepayments on FFELP ABS pools saw increased activity in August, which should have continued in September, but the new guidance effectively shuts down the previously anticipated consolidation prepayment spike for 4Q22**
- **The private credit student loan ABS sector continues to see consistently high collateral credit quality and performance**
- **We like BBB subprime auto and AAA private credit student loan ABS for their spread pick up over comparable credits**

ABS spreads widen amidst market turmoil

ABS spreads, along with the rest of credit, widened across the board this week on interest rate/financial market volatility. In secondary, selling pressure increased as BWIC volumes surged from summer lows, though no worse than earlier this year and well off the highs around the initial COVID-19 lockdown in March 2020 (**Exhibit 1**). For example, the daily ABS BWIC volume averaged $320mn in September, up 64% from the August average, but well short of the $726mn daily average seen in March 2020. In the primary market, one ABS issuer chose to pull a transaction this week. However, ten ABS transactions remain in pre-marketing for next week and ABS issuers continue to file ABS-15G forms. 4Q22 ABS supply is expected to remain heavy over the next two months and packed into the select work weeks without major economic/FOMC releases, conferences, and/or holidays.

Exhibit 1: ABS secondary volumes



Source: J.P. Morgan, FINRA TRACE

While many ABS investors have acknowledged the well behaved consumer performance to date, strong recession buffer provided by the secured collateral, robust structures/credit support, as well as fundamentally cheap spread premiums in securitized products relative to comparable unsecured corporate credits, the supply pressure and a lack of conviction on the part of buyers into the year-end will likely

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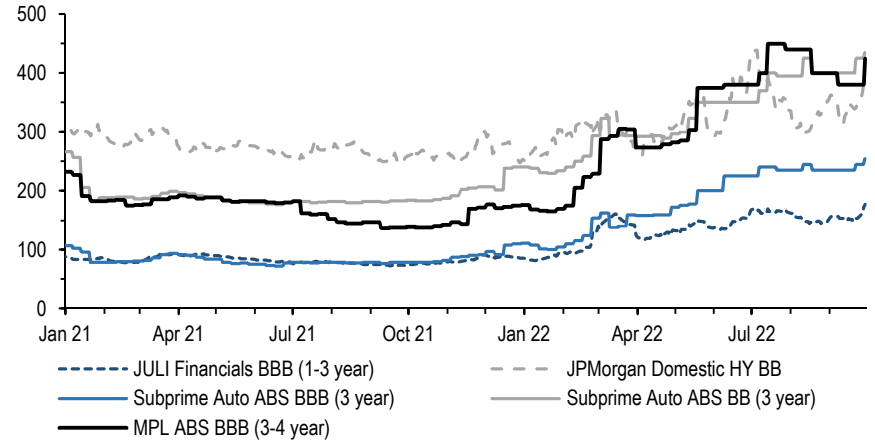
continue to weigh on the ABS market. Spread tiering and the credit curve is likely to remain pronounced, with top tier issuers continuing to see better and more reliable demand for liquidity across investment grade rated ABS versus off-the-run sponsors in off-the-run asset classes and/or BB/B rated tranches. While BB subprime auto ABS and BBB MPL ABS has widened roughly in line with high yield unsecured corporates, BBB subprime auto ABS stands out as particularly cheap, having widened significantly relative to comparable corporates (**Exhibit 2**). We think that at Treasury (I) +255bp, with 75bp of spread pickup, BBB subprime auto ABS offer substantial room for relative outperformance vs. comparable credits.

Exhibit 2: BBB subprime auto ABS cheap versus comparable corporates
Spreads to Treasury (bp)



Source: J.P. Morgan

ED changes guidance on FFELP consolidation/forgiveness

The Department of Education (ED) updated its guidance to borrowers on the Biden administration's one-time federal student loan forgiveness[6]. The ED now states that "As of Sept. 29, 2022, borrowers with federal student loans not held by ED **cannot** obtain one-time debt relief by consolidating those loans into Direct Loans. Borrowers with FFEL Program loans and Perkins Loans not held by ED who have applied to consolidate into the Direct Loan program prior to Sept. 29, 2022, are eligible for one-time debt relief through the Direct Loan program." This is a substantial change from previous guidance that "borrowers with privately held federal student loans can receive this relief by consolidating these loans into the Direct Loan program. All eligible borrowers will have until Dec. 31, 2023 to submit an application for debt relief." In the latest update, the ED also added that there will be an opt-out option on automatic debt forgiveness for those qualified borrowers concerned about possible state tax liability. For borrowers whose federal loans are owned by the ED (including defaulted FFELP loans), the forgiveness application will be available in October with a December 31, 2023 submission deadline.

With consolidation no longer a viable option towards forgiveness on FFELP loans (held by the private sector), this leaves FFELP borrowers once again out in the cold. This latest ED change also squashes previous consolidation prepayment surge expectations for FFELP ABS pools for 4Q22 (as loans consolidated after September 29th will not qualify for debt relief). The part of the guidance that did not change is

[6] https://studentaid.gov/debt-relief-announcement/one-time-cancellation

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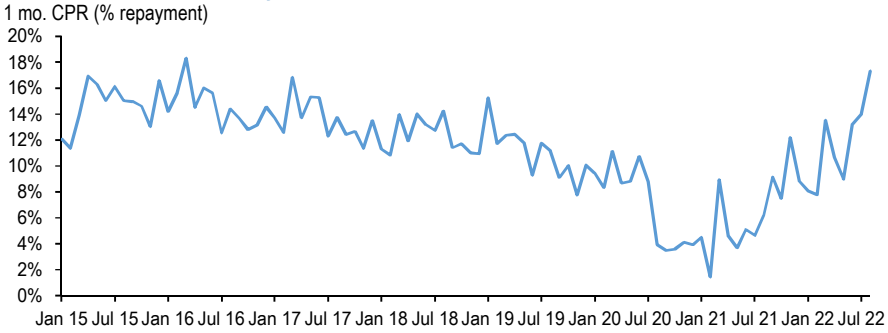
that the "ED is [still] assessing whether there are alternative pathways to provide relief to borrowers with federal student loans not held by ED, including FFEL Program loans and Perkins Loans, and is discussing this with private lenders." Six state attorney generals (from Nebraska, Missouri, Arkansas, Iowa, Kansas, and South Carolina) filed a law suit against the ED and President Biden, dated September 29th, challenging the forgiveness program as unlawful[7].

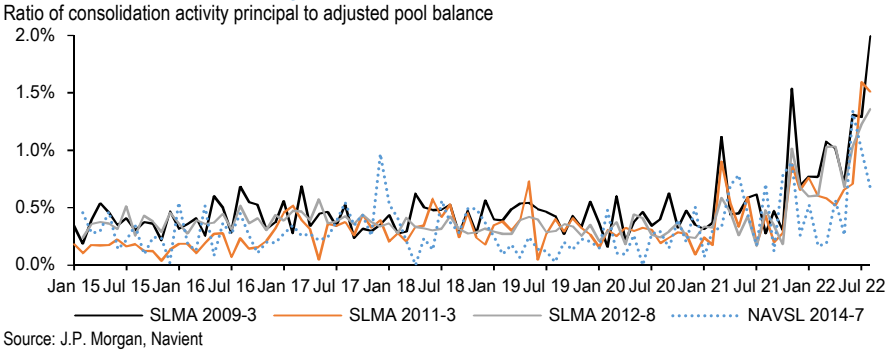
Reviewing prepayment speed on FFELP ABS pools, we noted that speeds have normalized over the pandemic, since the initial COVID-19 outbreak, and consolidation activity increased notably in August (**Exhibit 3**). On aggregate, 1 month CPR (as percent of repayment) across FFLEP ABS came in at 17.3% for August 2022, compared to 6.2% in August 2021, 3.9% in August 2020 and 11.1% in August 2019. Focusing on the most recent August performance, we examined select FFELP ABS transactions across SLM/NAVSL consolidation and non-consolidation loan pools and noted significant increases in consolidation activity (**Exhibit 4** and **Exhibit 5**). August consolidation activity, as measured by the ratio of consolidation activity principal to adjusted current pool balance, tracked 0.7%-2.0% on consolidation loan pools and 0.8%-1.3% on non-consolidation FFELP pools. SLM FFELP ABS pools issued prior to 2010 are on a quarterly pay schedule and 3Q22 consolidation activity will be reported in October. We expect September speeds will remain high due to consolidation for forgiveness that already happened, but without the one-time forgiveness option 4Q will likely see speeds back down to levels more in line with 2021.

Exhibit 3: FFELP ABS prepayment speeds



Source: J.P. Morgan, Intex

Exhibit 4: Consolidation activity across select consolidated SLMA/NAVSL FFELP pools



Source: J.P. Morgan, Navient

[7] https://storage.courtlistener.com/recap/gov.uscourts.moed.198213/gov.uscourts.moed.198213.1.0.pdf

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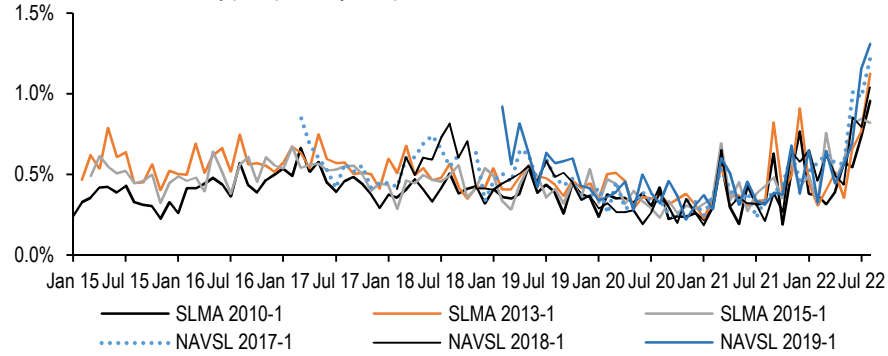
Exhibit 5: Consolidation activity across select non-consolidated SLMA/NAVSL FFELP pools
Ratio of consolidation activity principal to adjusted pool balance



Source: J.P. Morgan, Navient

Private credit student loan ABS update

Herein, we provide an update on private credit student loans. In terms of initial collateral trends, recent vintages remain consistent in their high credit quality metrics (**Exhibit 6**). Top refi issuer SoFi has not tapped the ABS market thus far in 2022. The SOFI 2021 vintage had a weighted average FICO score of 778, compared to 775 in 2018, and average borrower balance on the 2021 pool tracked ~$63,000, lower than ~$72,000 and ~$82,000 seen in 2020 and 2019. Navient refi pools have also been largely homogenous for 2020 through 2022 pools, with FICO in the range of 761-770, average borrower income of ~$133,000 to $140,000 and average borrower balance in the $69,000-$72,000 area. On the non-refi side, weighted average credit scores for the Sallie Mae Bank (SMB) pools have been in the 742-746 range in the last five vintages, while the co-signed percentages have been 92%-93%.

Next we look at collateral performance metrics across SoFi, Navient and Sallie Mae Bank. For SOFI, prepayment speeds (as measured by 1 month CPR) have ramped up higher for 2019-2020 vintages compared to prior years. The most recent 2021 vintage, ramped up faster, but soon started to decline, reflecting the overall decline/normalization in speeds back to pre-pandemic levels. Average monthly speeds, for the first nine months of deal age, tracked 11.9%, 9.1%, 14.3%, 16.4% and 18.3% across 2017, 2018, 2019, 2020 and 2021 vintages, respectively (**Exhibit 7**). Given, the high quality refi loan collateral, delinquencies and loss rates continue to track well within expectation. At deal age 12 months, 30+ delinquencies were 0.1%-0.2% across 2017-2021 vintages, with recent 2020 and 2021 vintages catching up with pre-pandemic books after initially tracking lower ramps (**Exhibit 8**). Similarly, cumulative net loss rates have also started to normalize, with the recent 2021 vintage (at deal age 15 months) trending higher than 2019 and 2020 books (**Exhibit 9**).

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Exhibit 6: Private credit student loan ABS initial pool characteristics by pool and vintage
Initial weighted average pool characteristics

Ticker	Vintage	Total Pool Balance ($mn)	WAC	Average Borrower Balance ($)	Remaining Term (months)	% Co-signed	FICO	In School	Avg. Income
CASL	2018	202	9.4%	15,528	145	93%	769	91%	
CASL	2019	300	10.1%	14,919	136	93%	759	91%	
CASL	2021	648	8.4%	15,163	151	91%	758	80%	
CBSLT	2018	865	5.1%	83,261	144	16%	767	0%	167,027
CBSLT	2019	174	4.9%	82,647	145	20%	772	0%	197,896
CBSLT	2020	416	5.5%	57,863	144	29%	771	21%	155,543
	20-AGS	*227*	*4.5%*	*77,049*	*150*	*14%*	*777*	*0%*	*173,245*
	20-1	*188*	*6.6%*	*34,706*	*137*	*47%*	*763*	*47%*	*134,177*
CBSLT	2021	427	3.7%	81,375		10%	783	0%	171,911
LRB	2018	291	5.0%	95,161	149	16%	769	0%	180,390
LRK	2019	247	4.7%	95,352	136	13%	771	12%	193,897
LRK	2020	251	4.5%	84,686	126	18%	776	0%	193,897
EDVES	2019	214	6.6%	35,409	174	74%	785	16%	125,503
EDVES	2021	262	6.0%	30,814	159	80%	782	27%	113,404
EDVES	2022	225	5.5%	30,086	157	78%	781	20%	119,676
ELFI	2018	201	4.7%	70,907	143	16%	774	0%	133,532
ELFI	2019	325	5.0%		160	22%	776	0%	146,275
ELFI	2020	300	4.7%		157	19%	773	0%	146,367
ELFI	2021	316	3.9%		147	19%	787	0%	164,320
ELFI	2022	266	4.1%		168	22%	769	0%	134,791
NAVSL	2018	3,257	6.0%	49,030	144	56%	756	0%	134,091
NAVSL	2019	4,290	6.2%	54,453	150	65%	754	0%	131,240
NAVSL Refi									
	2020	*4,683*	*4.6%*	*72,023*	*116*		*768*	0%	*140,177*
	2021	*5,798*	*4.0%*	*67,415*	*145*		*770*	0%	*138,136*
	2022	1,790	4.0%	*68,678*	*153*		*761*	0%	*133,202*
NAVSL Traditional									
	2020	*2,004*	*7.6%*	*11,575*	*158*	*77%*	*735*	0%	
	2021	*575*	*8.6%*	*15,182*	*186*	*53%*	*660*	0%	
NSLT	2021	8,986	6.9%	15,825	161	84%	769	15%	
SMB	2018	2,122	9.5%	12,517	139	92%	746	55%	
SMB	2019	1,222	10.0%	12,656	138	93%	745	53%	
SMB	2020	1,292	9.1%	12,856	139	92%	744	40%	
SMB	2021	4,120	8.7%	14,042	144	92%	742	43%	
SMB	2022	3,711	9.0%	14,474	145	92%	743	40%	
SOFI	2018	3,242	5.3%	71,610	144		775	0%	168,590
SOFI	2019	1,518	5.4%	81,928	147		778	0%	175,137
SOFI	2020	2,538	4.9%	70,243	144		779	0%	155,222
SOFI	2021	700	4.5%	62,987	141		778	0%	165,690
TPAT	2018	414	5.4%	12,436	161	1%	754	0%	

Source: J.P. Morgan

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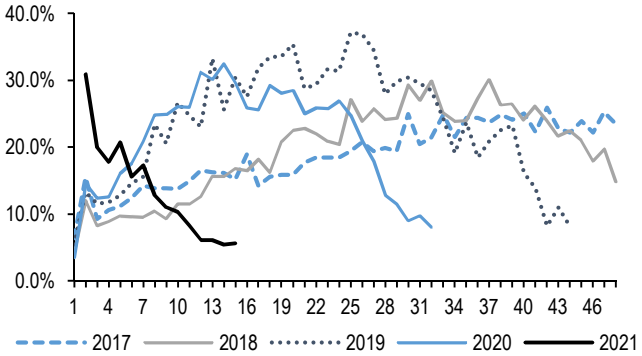
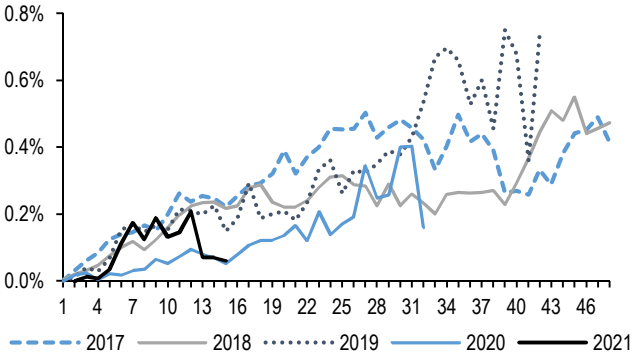
Exhibit 7: SOFI prepayment speeds by vintage and deal age
1 mo. CPR (% repayment)



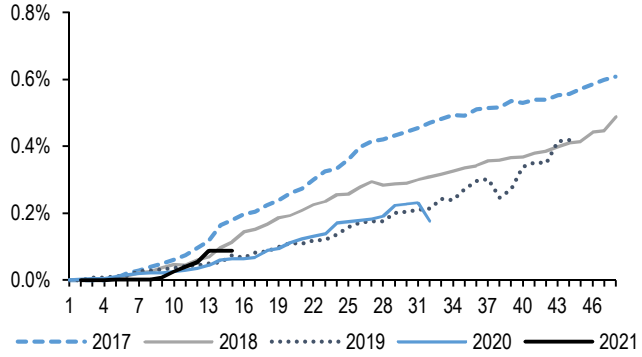
Source: J.P. Morgan, Intex

Exhibit 8: SOFI 30+ delinquencies by vintage and deal age
30+ delinquencies



Source: J.P. Morgan, Intex

Exhibit 9: SOFI cumulative net loss by vintage and deal age
Cumulative net loss (%)



Source: J.P. Morgan, Intex

Next we look at Navient's performance across refi and traditional/legacy private credit student loan ABS pools. Prepayment speeds across NAVI non-refi pools are in a close band, while for the refi segment recent 2021 and 2022 vintages are paying slower versus prior years (**Exhibit 10** and **Exhibit 11**). At deal age 17 months, NAVI non-refi pools saw prepayment speeds in the range of 12%-15% across recent vintages. On the refi front, average monthly speeds for the first nine months of deal age were 11.6%, 21.5%, 30.8%, 17.4% and 5.7% across 2018, 2019, 2020, 2021 and 2022 vintages, respectively. Delinquencies have started to tick back up across non-refi and refi sets (**Exhibit 12** and **Exhibit 13**). On the non-refi segment, 30+ rates tracked 7.5% for 2021 (at deal age 17 months), significantly higher compared to 3.5% and 1.8% on 2020 and 2019, respectively. We note that the only non-refi pool in 2021 was NAVSL 21-D, which comprised of 68% direct to consumer (DTC) loans and the rest comprised of loans originally backing NAVSL 2015-C transaction. In contrast, NAVSL 2020 transactions had 6.8%-13.2% of DTC loans. While delinquencies are more subdued on the refi side, with 30+ rates at deal age 8 months tracking a mere 0.1%-0.3%, there is clear drift seen in the most recent 2022 vintage reflective of the recent credit normalizing trends. Similar credit normalization trends can be seen in net loss ramps as well (**Exhibit 14** and **Exhibit 15**).

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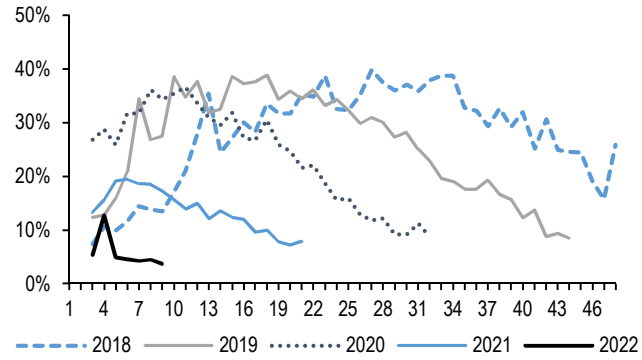
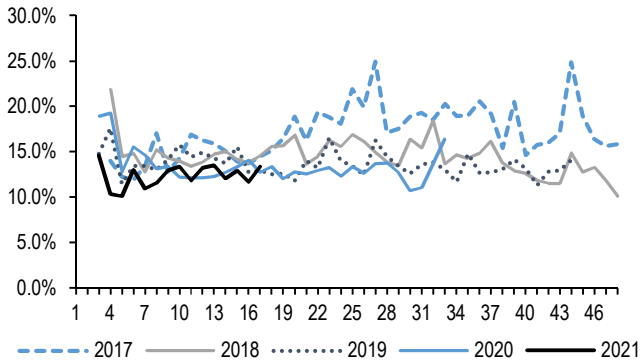
Exhibit 10: NAVSL refi prepayment speeds by vintage/deal age
1 mo. CPR (% repayment)



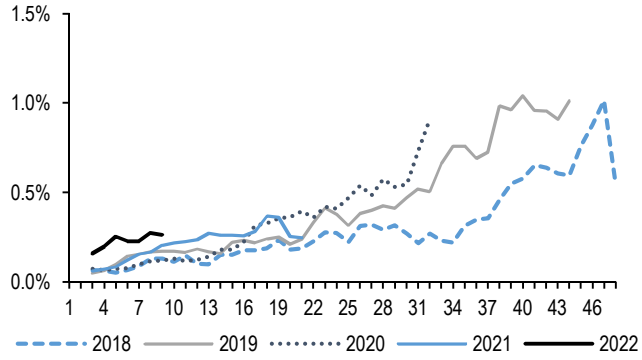
Source: J.P. Morgan, Intex

Exhibit 11: NAVSL non-refi prepayment speeds by vintage/deal age
1 mo. CPR (% repayment)



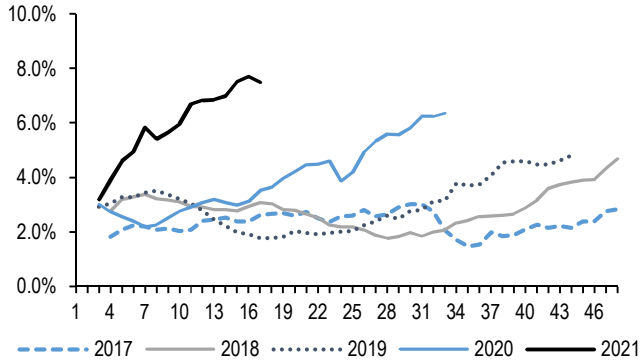
Source: J.P. Morgan, Intex

Exhibit 12: NAVSL refi 30+ delinquencies by vintage/deal age
30+ delinquencies



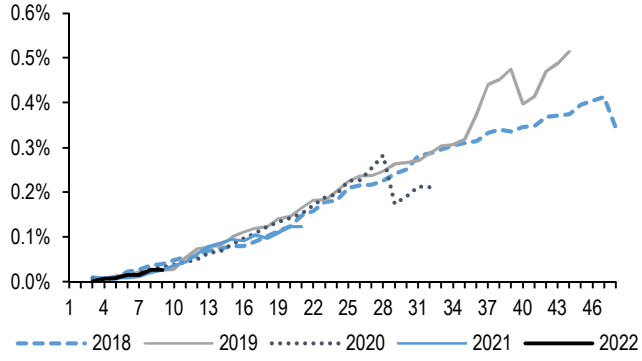
Source: J.P. Morgan, Intex

Exhibit 13: NAVSL non-refi 30+ delinquencies by vintage/deal age
30+ delinquencies



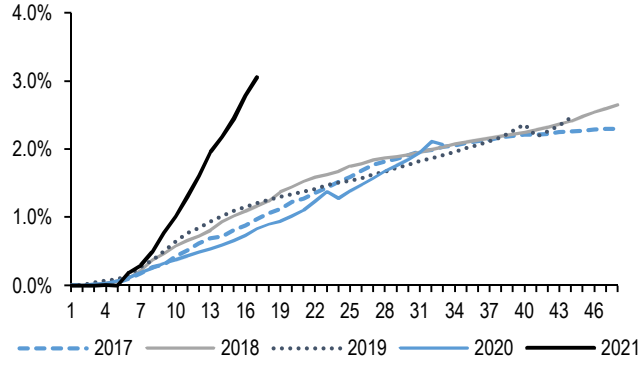
Source: J.P. Morgan, Intex

Exhibit 14: NAVSL refi cumulative net loss by vintage/deal age
Cumulative net loss (%)



Source: J.P. Morgan, Intex

Exhibit 15: NAVSL non-refi cumulative net loss by vintage/deal age
Cumulative net loss (%)



Source: J.P. Morgan, Intex

Sallie Mae Bank's SMB private credit student loan ABS pools are backed predominantly by in-school education loans and have shown very consistent performance through the years. Prepayment speeds (1-month CPR repayment) for SMB has been in a tight range 29%-31% (monthly average for first 12 months) across 2018-2022 vintages (**Exhibit 16**). In terms of delinquencies, we see

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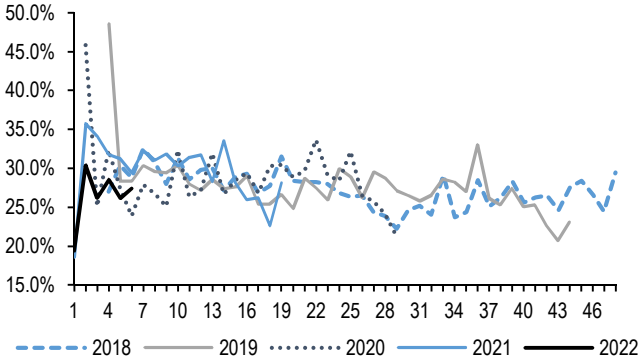
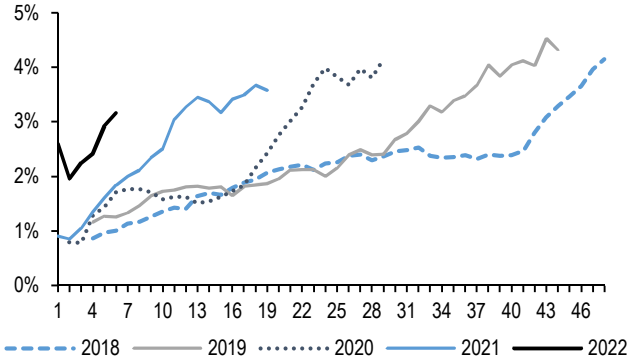
normalization across vintages, with recent 2022 and 2021 books ramping up faster than prior years (**Exhibit 17**). For instance, 30+ delinquencies for 2021 vintage at deal age 19 months tracked 3.6%, compared to 1.9%-2.4% for prior vintages. In addition, 30+ ramps across vintages have started to steepen at the tail end. Cumulative net loss ramps are also trending steeper for recent 2021 and 2022 vintages (**Exhibit 18**). At deal age 6 months, 2022 cumulative net loss rate is tracked 0.9%, compared to 0.2% for 2021 and 0.1% for 2017 through 2020 vintages.

Exhibit 16: SMB prepayment speeds by vintage and deal age
1 mo. CPR (% repayment)



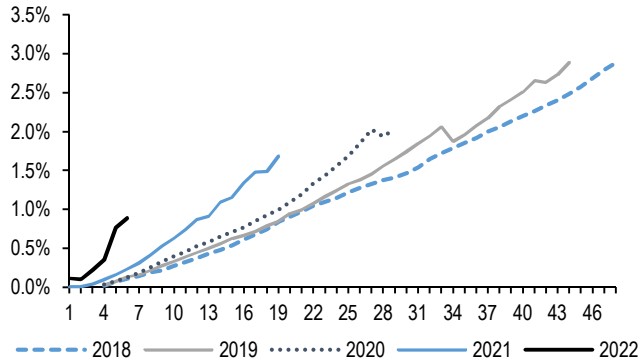
Source: J.P. Morgan, Intex

Exhibit 17: SMB 30+ delinquencies by vintage and deal age
30+ delinquencies



Source: J.P. Morgan, Intex

Exhibit 18: SMB cumulative net loss by vintage/deal age
1 mo. CPR (% repayment)



Source: J.P. Morgan, Intex

Private credit student loan ABS remain one of the cheapest high quality consumer ABS sectors (**Exhibit 19**). On AAA 3-year ABS, indicative private credit spreads currently stands at LIBOR +160bp, compared to FFELP at +105bp and credit cards at +55bp. These levels offer 105bp pick up on cards and +55bp on FFELP. Those differentials were as tight as 30bp to card and 5bp to FFELP in 2019.

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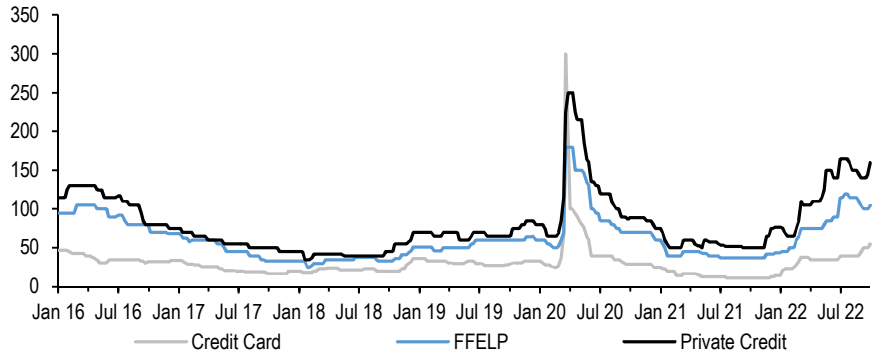
Exhibit 19: Private credit student loan ABS spreads offer attractive pickup versus comparable ABS

AAA 3-year spread to LIBOR (bp)



Source: J.P. Morgan

Week in review

One whole business ABS transaction totalling $500mn priced this past week. This brings 2022 year-to-date volume to $195.4bn, down 2.2% from $199.8bn recorded over the same period last year. September supply total tracked $9.9bn compared to $27.1bn of ABS sold during the whole of September last year. The forward calendar has ten deals totaling $6.5bn in premarketing. Our indicative benchmark ABS spreads widened by 5-15bp across most asset classes with the exception of MPL, which saw spreads widen out 25bp-75bp across the credit spectrum. We updated the ABS outstanding across select ABS sectors for 3Q22 in the ABS volume file[8]. On aggregate, 3Q22 outstandings were roughly unchanged compared to the prior quarter, with stranded assets up $11bn and student loans down $9bn over the same time period. Earlier today, we published our monthly ABS performance statistics file[9] analyzing recent performance trends across various ABS sectors.

[8] https://www.jpmm.com/research/content/GPS-4220072-0

[9] https://www.jpmm.com/research/content/GPS-4219862-0

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Data appendix

Exhibit 1: ABS supply

$bn

	2018	2019	2020	2021	2021 YTD	2022 YTD
Credit Cards	36	24	4	17	11.1	25.1
Bank/Charge	*32*	*21*	*4*	*17*	*10.9*	*23.4*
Retail	*4*	*3*	*0.3*	*0.2*	*0.2*	*1.7*
Autos	104	111	98	132	105.6	90.5
Prime Loan	*46*	*49*	*46*	*50*	*37.5*	*37.8*
Subprime Loan	*32*	*30*	*28*	*43*	*31.4*	*27.1*
Lease	*16*	*21*	*19*	*27*	*25.8*	*16.2*
Fleet	*10*	*10*	*5*	*11*	*9.8*	*8.9*
Motorcycle/Truck	*-*	*1*	*1*	*1*	*1.2*	*0.5*
Student Loans	18	14	17	26	21.3	5.9
FFELP	*8*	*6*	*5*	*8*	*6.6*	*-*
Private Credit	*10*	*8*	*12*	*18*	*14.8*	*5.9*
Equipment	14	19	13	20	16.1	16.1
Floorplan	10	8.9	4	1	0.5	0.7
Unsecured Consumer	12	15	9	16	13.0	12.9
Miscellaneous	36	38	34	54	32.1	44.2
Total ABS	230	230	179	266	199.8	195.4
% 144A	54%	55%	56%	62%	63%	49%
% Floating-rate	15%	9%	4%	5%	5%	4%

Source: J.P. Morgan

Exhibit 2: ABS spread performance

bp

	Bench mark	Current 9/29/22	1-week Change	10-week Avg	10-week Min	10-week Max
Credit Card - Fixed Rate						
2-yr AAA	Treasury	45	5	40	37	45
3-yr AAA	Treasury	50	5	45	42	50
5-yr AAA	Treasury	60	5	54	50	60
10-yr AAA	Treasury	85	5	79	75	85
B-Piece (5-yr)	Treasury	85	5	82	75	90
C-Piece (5-yr)	Treasury	110	5	107	100	115
Credit Card - Floating Rate						
2-yr AAA	Libor	50	5	40	35	50
3-yr AAA	Libor	55	5	45	40	55
5-yr AAA	Libor	75	5	68	65	75
10-yr AAA	Libor	100	5	93	90	100
B-Piece (5-yr)	Libor	105	5	98	95	105
C-Piece (5-yr)	Libor	120	5	113	110	120
Auto - Prime						
1-yr AAA	Treasury	55	5	51	40	60
2-yr AAA	Treasury	60	5	54	40	60
3-yr AAA	Treasury	70	5	63	55	70
3-yr AA	Treasury	130	5	128	120	135
Student Loans (FFELP)						
3-yr AAA	Libor	105	5	108	100	115
7-yr AAA	Libor	120	5	129	115	140
Private Credit Student Loan						
3-yr AAA	Libor	160	15	148	140	160
Unsecured Consumer MPL						
1-yr AAA	Treasury	200	25	199	175	215
3-yr AA	Treasury	250	35	234	215	250
3-4yr A	Treasury	300	30	288	270	310
3-4yr BBB	Treasury	425	45	409	380	440
3-4yr BB	Treasury	675	75	613	550	675
Auto - Subprime						
1-yr AAA	Treasury	90	10	91	80	115
2-yr AAA	Treasury	100	10	100	90	125
3-yr AA	Treasury	140	10	132	125	150
3-yr A	Treasury	175	10	170	160	185
3-yr BBB	Treasury	255	10	239	235	255
3-yr BB	Treasury	435	10	408	395	435

Note: Tier 1 names represented by above.

Source: J.P. Morgan

Exhibit 3: Other ABS supply

$bn

	2018	2019	2020	2021	2022 YTD
Stranded Ast	0.6	0.2		2.3	18.0
Franchise/Whole Bus.	6.1	9.1	4.8	13.7	6.6
Device Payment	2.8	3.8	4.4	3.1	3.7
Solar	2.1	1.9	2.7	3.2	3.4
Timeshare	3.0	3.5	1.9	2.4	2.1
Insurance	1.9	0.8	2.2	1.1	2.1
Railcar	0.7	1.9	0.5	1.0	1.4
Containers	2.4	0.7	7.3	8.5	1.1
Aircraft	7.4	9.2	2.6	2.8	0.9
SBL	0.2	1.6	0.4	5.6	0.8
Healthcare		0.3	0.4	6.2	0.6
Data Bank	0.2	1.3	2.6		0.4
PACE	0.8	0.5	0.3	0.7	0.3
Taxes	0.4	0.3		0.5	0.1
Trade Rec.	0.6	0.2		0.3	
Miscellaneous	6.8	2.5	3.9	3.1	2.8
Total Other ABS	36.0	37.8	34.1	54.4	44.2

Source: J.P. Morgan

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Exhibit 4: Fixed-rate AAA ABS (3-year) spreads to Treasury

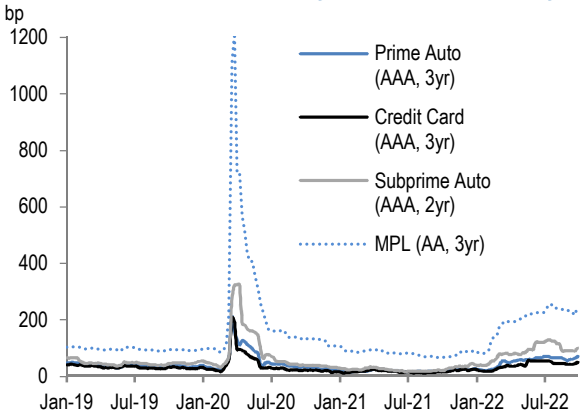


Exhibit 5: Floating-rate AAA ABS (3-year) spreads to Libor

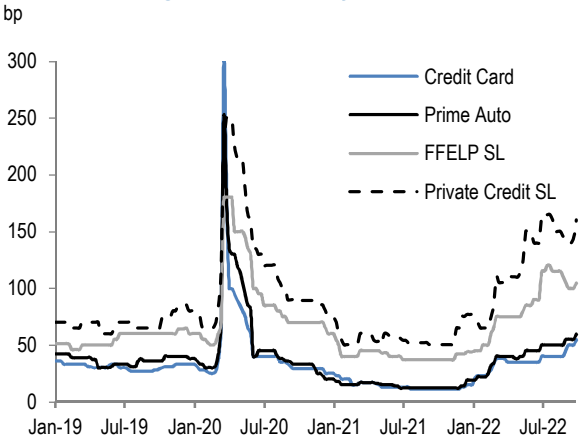
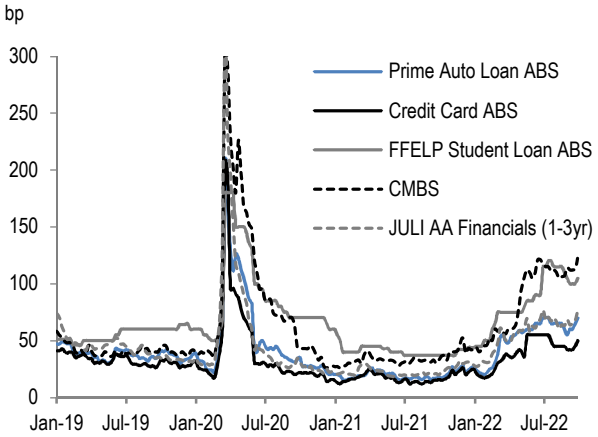


Exhibit 6: AAA cross sector spreads (3-year) to Treasury



Source: J.P. Morgan

Exhibit 7: BBB subprime auto ABS (3-year) vs. BBB financials to Treasury

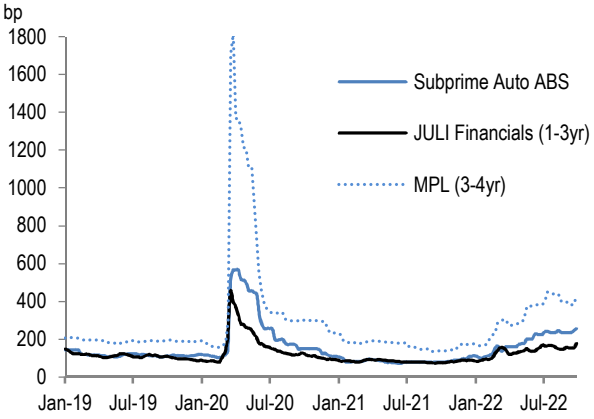
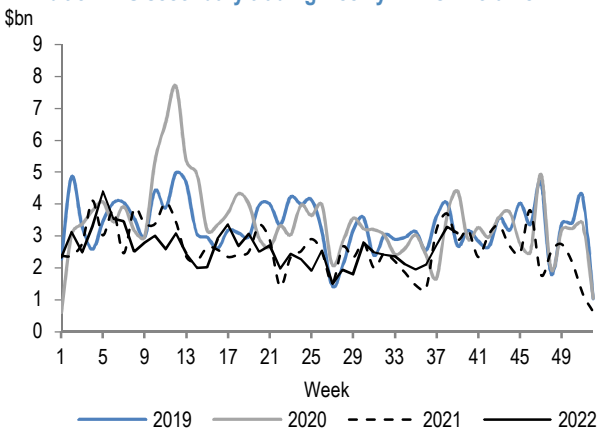


Exhibit 8: ABS secondary trading weekly TRACE volume



Note: TRACE ABS data cut off one day prior to publication
Source: J.P. Morgan, TRACE

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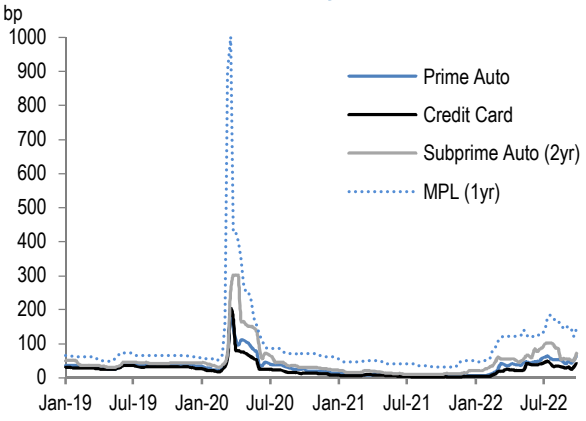
Exhibit 9: ABS fixed-rate spread performance (Swaps)

		Current	1-week	10-week		
	Benchmark	9/2922	Change	Avg	Min	Max
Credit Card - Fixed Rate						
2-yr AAA	Swaps	16	15	6	-3	16
3-yr AAA	Swaps	42	11	32	24	42
5-yr AAA	Swaps	55	8	48	42	55
10-yr AAA	Swaps	80	5	72	66	80
B-Piece (5-yr)	Swaps	80	8	76	67	86
C-Piece (5-yr)	Swaps	105	8	101	92	111
Auto - Prime						
1-yr AAA	EDSF	-3	2	3	-9	16
2-yr AAA	Swaps	31	15	21	4	34
3-yr AAA	Swaps	62	11	50	41	62
3-yr A	Swaps	122	11	115	102	123
Unsecured Consumer MPL						
1-yr AAA	EDSF	142	22	151	120	171
3-yr AA	Swaps	242	41	221	201	242
3-4yr A	Swaps	292	36	275	252	298
3-4yr BBB	Swaps	417	51	396	362	428
3-4yr BB	Swaps	667	81	600	532	667
Auto - Subprime						
1-yr AAA	EDSF	32	65	43	25	71
2-yr AAA	Swaps	71	49	66	50	99
3-yr AA	Swaps	132	24	119	107	138
3-yr A	Swaps	167	24	157	142	173
3-yr BBB	Swaps	247	24	226	217	247
3-yr BB	Swaps	427	16	395	382	427

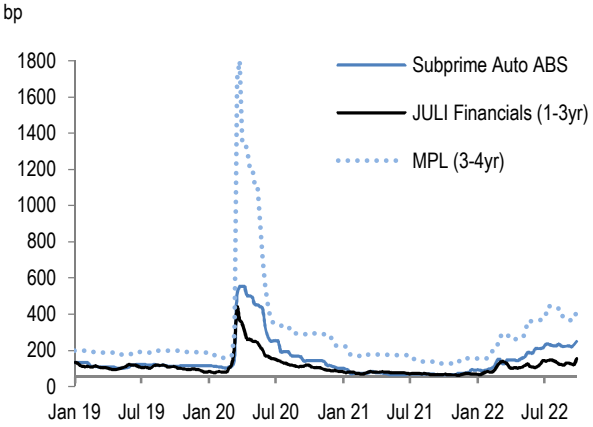
Note: Tier 1 names represented by above.
Source: J.P. Morgan

Exhibit 10: Fixed-rate AAA ABS (3-year) spreads to Swaps



Source: J.P. Morgan

Exhibit 11: BBB subprime auto ABS (3-year) vs. BBB financials to Swaps



Source: J.P. Morgan

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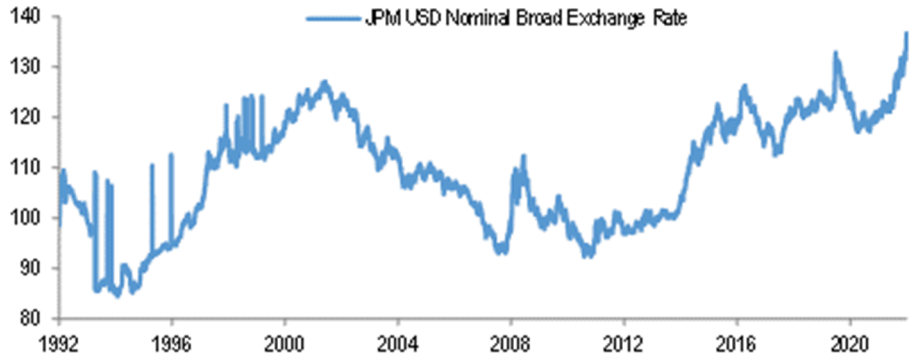
Corporates

- **This week markets weakened as focus turned to the UK pension system and its need to sell fixed income assets including credit to meet collateral calls**
- **The UK pension-led selloff led to a quick policy response which has clearly been sufficient to spark a rally in credit spreads. Hedges responded more than underlying cash spreads though, with CDX tighter while the sharp push lower in UST yields led to wider bond spreads**
- **What is interesting about the traditional low dollar price argument for bond spread outperformance is that lower dollar priced bonds are not actually outperforming high priced bonds in this selloff, in spread terms**

Breaking things

This week markets weakened as focus turned to the UK pension system and its need to sell fixed income assets including credit to meet collateral calls. This is the result of a short term issue driven by the sharp move higher in UK yields and decline in the Pound, and a long term issue of a lack of long duration local currency credit available to the pension system, as discussed further below. Whenever there are significant moves in financial markets there is a risk that investment strategies somewhere in the world become undone – and investors quickly learn about some corner of the financial market that was not a factor in the investment process previously. This risk remains going forward given the divergences in fiscal and monetary policy globally, and their impacts on rates and FX markets. The US Dollar is at its all-time strongest level as per the JPM USD Nominal Broad Exchange Rate Index, as just one reflection of these divergences. Accordingly, the US Dollar is 12.3% stronger YTD and 14.2% stronger than the 2021 average, which will be a headwind for the upcoming corporate earnings season. On a y/y basis earnings from overseas operations of US issuers will be negatively impacted by this FX translation headwind, as well as from weaker growth in Europe.

Figure 1 The US Dollar is at its strongest level in at least 30 years



Source: J.P. Morgan

HG bond spreads widened 17bp on the week and yields rose 39bp. As a result the weekly return was -2.6% (Thursday-Wednesday) and the MTD return is -4.6%. With YTD returns at -17.7% 26% of the YTD losses have occurred in September. This is likely to result in an increase in fund outflows in the coming weeks – a trend

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which has been evident for most of this year. While 'logic' would perhaps dictate that HG bond yields at 5.7% (a 13 year peak) would be a driver of inflows rather than outflows, history suggests the opposite will occur. Offsetting this has been a sharp slowdown in supply. There was $53bn of supply in the first full week of September and just $30bn in the three weeks since. Some of the supply drought has likely been driven by issuers holding off with the extreme market volatility, and some will have been delayed longer given higher yields. A couple of the larger M&A funding transactions are now expected to issue in 2023 rather than this year. There remains considerable uncertainty and apprehension about bank supply which may come after 3Q earnings are reported in September. One of the most common questions asked in recent investor discussions was about the expected bank issuance. The question arises from an overweight position in banks which seems to be commonly held – and the view (which we share) that US bank spreads are attractive but they will not perform until supply pressure slows.

Another frequently asked question recently is why investors should buy HG credit when Treasuries and Mortgages appear offer more value. Regarding Treasuries the negative arguments towards Credit center on the percent of yield pickup one gets in owning credit rather than owning Treasuries. Below we show these trends for the 3yr and 30yr parts of the curve. We have never been a proponent of this argument, as history shows almost no correlation between the LEVEL of UST yields and HG credit spreads. The owners of HG credit have historically bought HG bonds at all different UST yield levels, and the tightest period of HG bond spreads was actually when UST yields were considerably higher than they are this week. That said, there has been a strong correlation between the volatility in UST markets and HG credit spreads, and this elevated volatility this week is contributing to spread weakness.

Figure 2 Spread as % of yield in the front-end

Source: J.P. Morgan

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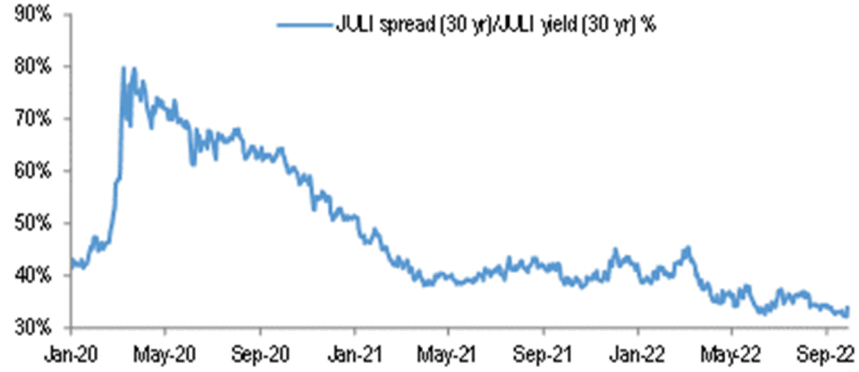
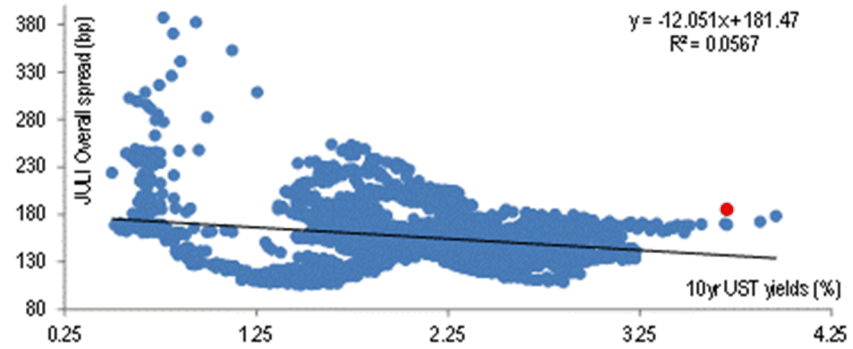
Figure 3 Spread as % of yield in the long-end



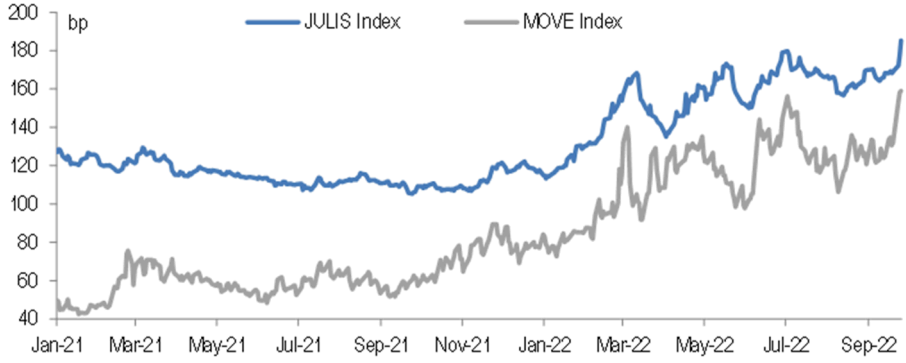
Source: J.P. Morgan

Figure 4 There has been no correlation between the level of rates and the level of spreads over time



Source: J.P. Morgan

Figure 5 Where rate vol goes, spreads follow



Source: J.P. Morgan; Bloomberg Finance L.P.

The relative value between HG credit and MBS is more nuanced and essentially comes down to whether an investor believes that the risks to yields are two-sided or one-sided. In a scenario where there is little risk of substantially lower yields and in turn higher yields are leading to credit spread widening (e.g. the YTD playbook), then MBS is the more resilient spread product for fixed income investors. However, as risks become more two sided with the Fed either nearing the end of their hiking cycle or being stopped out by a recession, then the appeal of MBS declines rapidly given its inherent call risk. Current coupon MBS trades at a ZV-spread of 156bp and a yield of 5.57% but an OAS of 61bp versus 148bp and 5.51% for 5yr HG credit of

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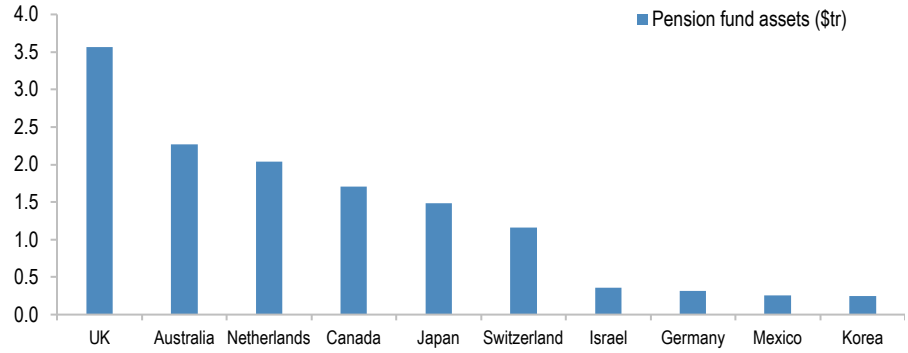
comparable duration. Thus, a one sided view of yields implies a small pickup for MBS at this juncture, making it a competitive alternative for HG so long as rate volatility remains elevated.

Takeaways from the UK pension sell off

The UK pension-led selloff led to a quick policy response (more from JPM's UK economist here) which has clearly been sufficient to spark a rally in credit spreads. Hedges responded more than underlying cash spreads though, with CDX tighter while the sharp push lower in UST yields led to wider bond spreads on the day. Whenever there are sharp realignments in financial markets there is a risk that positioning in various corners of financial markets lead to unexpected issues. A review of pension plans globally highlights that the UK has the 2nd largest pension asset base after the US (at 16% of the US total). As such, if other countries have similar challenges as appeared in the UK they are unlikely to have as much of a global impact (the 3rd largest pension market, Australia, is 36% smaller than that of the UK).

Figure 6: Top 10 pension fund countries, by assets (ex-US)



Source: JP Morgan, OECD

A common challenge that many of these pension markets face (and investors outside the US managing assets broadly) is that the supply of long-duration assets has become increasingly USD-centric in recent years. Below, we show the proportion by FX of >10yr sovereign + corporate bonds issued over the past two decades (converted to USD at time of issuance). The USD share averaged 35% in the first 10 years but then has nearly doubled to 65% on average over the past 5 years. This year USD issuance is on track to make up about 80%, a new high (though this is accentuated by the FX conversion back to USD with DXY +18% YTD). This is coming at a time when pensions are broadly speaking in de-risking mode so their demand for bonds is higher just as the supply in their respective home currencies is somewhat lower. Thus, there is an inherent supply/demand tension which accentuates the need to take FX risks in search for fixed income yield.

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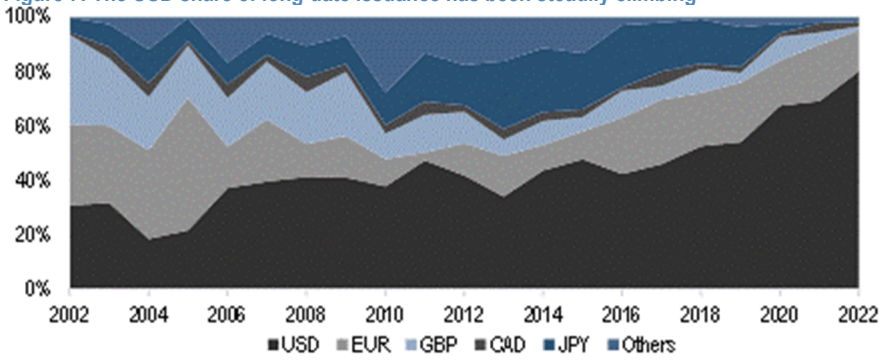
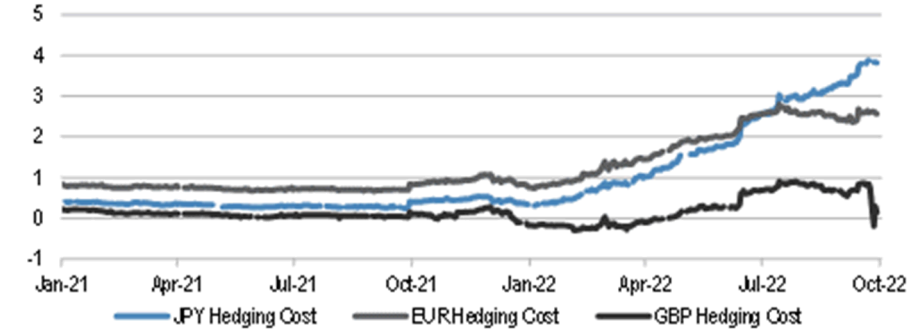
Figure 7: The USD share of long-date issuance has been steadily climbing



Source: JP Morgan, OECD; Bloomberg Finacne L.P

Lastly, it's worth noting that for all the attention on rising hedging costs this year, the GBP was an exception to this with its hedging costs vs. USD up far less than EUR or JPY, owing to the fact that BoE overnight rates were not as low as those of the ECB/BoJ heading into this tightening cycle and the BoE started hiking even before the Fed, with its first hike last November versus March for the Fed. Despite this, the BoE has been unable to keep pace with the Fed more recently and thus hedging costs have increased YTD and been more volatile as well, which may have been a contributing factor to the recent selloff

Figure 8: The USD share of long-date issuance has been steadily climbing



Source: JP Morgan, OECD; Bloomberg Finacne L.P

Little evidence yet that bonds with lower dollar prices are outperforming

The move higher in yields continues at an accelerating pace. On Monday HG bond spreads move wider by 2bp and yields jumped by 18bp to 5.72%. The average HG bond price was down $1.07 on the day to $88.15. The average 30yr bond price was down $1.67 on Monday to $83.73. As we discussed in Monday's note, Bond spreads have been outperforming CDX and equities, in part due the benefit of high yields and low dollar prices. On Monday, CDX.IG was wider by 4.3bp – a regression of 5yr bond spreads vs. CDX levels shows that bonds continue to trade 9bp tight on a 3m regression lookback and 10bp tight with a 6m lookback. Comparing the full JULI index vs. the S&P shows bond trading 4bp tight with both 3m and 6m perspectives.

What is interesting about the traditional low dollar price argument for bond spread outperformance is that lower dollar priced bonds are not actually outperforming high priced bonds in this selloff, in spread terms. The charts below regress the starting

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dollar price on Jan 1 of 30yr bonds (X-Axis) versus the change in spread YTD. One would think that bonds which started the year at a price of $120 (for example) would have underperformed bonds that started at par. However, the regressions below do not show this – the regression line is flat across the range of starting prices. This is true for A-rated, BBB-rated and BB rated bonds (for BB charts bonds longer than 7yrs are included). Only when the full HY universe is included there is a clear evidence that starting price has had an impact on YTD spread changes, but the effect is the opposite that one would expect in HG – bonds which started the year at lower prices widened more in spread than those which started at higher prices. This reflects the underperformance of lower rated credit in HY. The underperformance of lower rated (CCC) credit is partially due to a 'normal' rotation with recessionary fears rising, and partially due to a sector/rating dynamic with CCCs underrepresented among commodity sectors - which continue to largely outperform.

That said, this year has been relatively unique with a rising rate environment that hasn't been seen often in recent history. Bond duration and convexity are typically smaller for high-priced bonds than for low-priced bonds (assuming similar yields). High priced bond have larger coupon payments than lower priced bonds, all else equal. As near term payments tend to have a smaller discounting impact from a rise in yields the higher dollar bonds are less sensitive to rate increases. Therefore, in theory, high-priced bonds should perform better as yields increase more or less uniformly across the curve. Furthermore, dollar price dispersion exists to a much higher degree in the long end of the curve as the higher duration for long dated bonds results in a bigger price difference for the same amount of difference in coupon between bonds. Long end bonds tend to be more skewed towards yield based buyers such as pension funds and insurance companies. Similar yields with a lower sensitivity to rates in an environment where rate increases have been a significant market theme makes higher dollar priced bonds attractive from this perspective. Hence, we believe the lower sensitivity of higher price bonds has been strong offsetting factor to the traditional low dollar price argument in the environment seen this year so far as rates and spreads have both moved wider.

Our take away from this is that the lower duration benefit of higher priced bonds especially for all-in yield buyers and the investor comfort with credit risk has resulted in the lack of price/spread sensitivity for non-distressed names so far. Lower dollar prices matter when default risk is a concern while lower duration matters when rates increases are the primary concern. The fact that the market is not given a systematic benefit to lower dollar prices vs. higher dollar priced bonds so far suggests this credit risk concerns remains low for the BB and up rating buckets and the benefit is being offset by the lower duration benefit of higher price bonds. Note that this observation does not mean there may not be evidence of better spread performance of lower priced bonds if/when yields stabilize (or are expected to stabilize) or if market expectations shift to price in higher default concerns.

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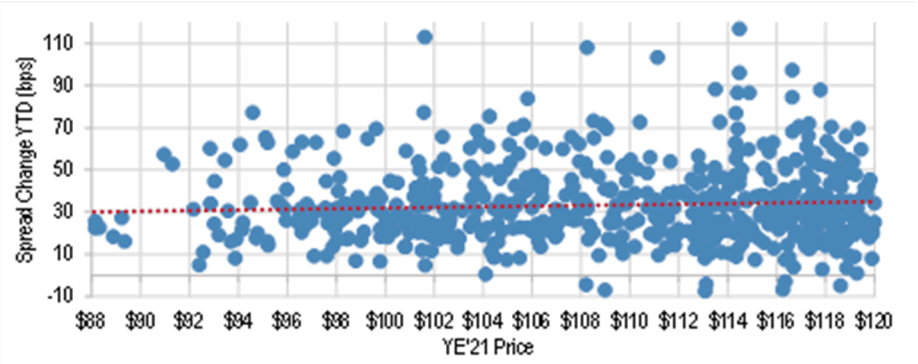
Figure 9: A Rated bonds: There is little evidence that spreads have widened less for bonds which started the year at lower prices than for those at higher prices

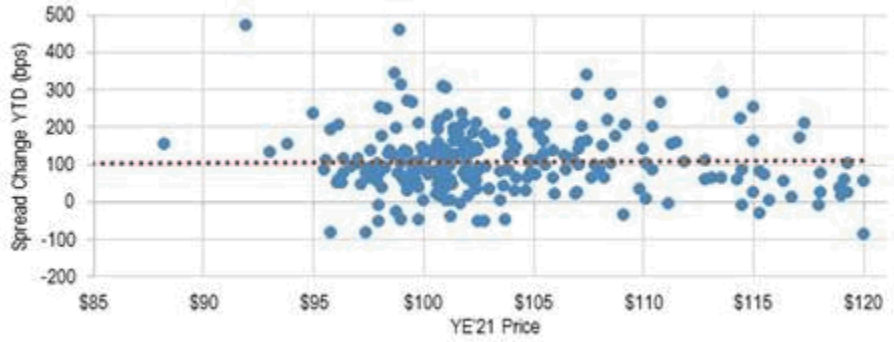


Source: JP Morgan

Figure 10: The same is true for BBB rated bonds

Source: J.P. Morgan

Figure 11: And it is true for BB rated bonds



Source: J.P. Morgan

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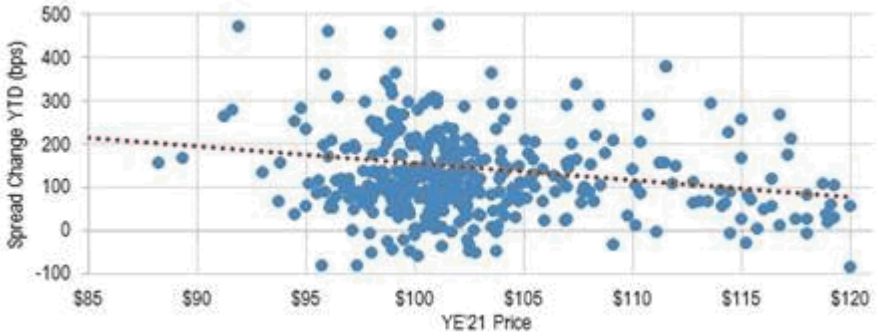
Figure 12: Using the full HY universe bonds which started the year with lower prices have underperformed in spread terms, reflecting the underperformance of lower rated bonds in HY



Source: J.P. Morgan

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High Yield

- **High yield bond spreads widened the most since early July over the past week amid intervention by the BoE, a chorus of hawkish Fed officials, and a fresh 15-year high in the MOVE Treasury volatility index. These conditions produced an extension of retail outflows (-$3bn week, record -$53.6bn YTD), a stall in capital markets, and decompression among ratings (CCC-B +79bp MTD to high since Apr-20). High yield bond yields and spreads increased 63bp and 53bp over the past week to 9.89% and 585bp, 119bp and 50bp higher in September. While yields are well above their previous high in June, HY spreads remain 52bp below their 7/6 wide of 637bp. For context, high grade spreads are through their YTD wide following this week's sell-off. And BB, B, and CCC spreads of 386bp (+45bp w/w), 603bp (+61bp w/w), and 1325bp (+80bp w/w) are now 16%, 16%, and 26% above their long-term non-recessionary averages. The HY index has returned -4.09% in September with BB (-3.89%) outperforming B (-4.04%) and CCCs bonds (-5.84%). And the US HY index is down -13.85% YTD, the second worst annual return in the past 30 years. While spreads are near our 525bp year-end target amid supportive fundamental and technical factors, we are becoming concerned central banks may tighten too far to the detriment of growth given the recent escalation in hawkish rhetoric.**
- **Leveraged loan prices declined $1.37 the past week to within $0.30 of early July's low as a combination of the asset class's unprecedented outperformance and recession concerns are outweighing the benefits of a surge in interest rate expectations. The leveraged loan mutual fund base also endured its second largest outflow of 2022, -$1.9bn, with the past six weeks' exodus totaling -$6.9bn or 7.8% of weekly AUM. The leveraged loan index has provided a -1.90% loss in September with BB loans (-1.06%) outperforming B by 141bp (-2.47%) and CCCs by 182bp (2.88%). Outperformance of 141bp of BB versus B loans is the third largest gap since Sept-11. Loan yields and spreads (3yr takeout) increased 58bp and 59bp over the past week to 10.93% and 673bp, whereas the yield and spread to maturity for the index is 10.02% and 597bp. The leveraged loan index is providing a -2.6% loss YTD, compared to losses for HY (-13.9%), IG (-18.1%), and the S&P 500 (-22.7%).**
- **A 518bp year-to-date rise in high yield bond yields (or +2x) is translating into the lightest annual capital market activity since 2008. And on a quarterly basis, 3Q's HY issuance totaling $18.9bn is tracking a low since 1Q09. HY gross, refi, and non-refi issuance YTD totals only $90bn, $44bn, and $46bn versus FY21's $484bn, $291bn, and $193bn. Note the past decades' low for HY gross, refinancing, and non-refi issuance was 2018's $187.4bn, $114.1bn, and $73.3bn. Meanwhile, 3Q's $23.4bn of institutional loan issuance is tracking a low since 1Q10. And loan issuance YTD totals $204.9bn or $145.1bn ex-refi/repricing, which compares to $642.1bn (-68%) and $276.4bn YTD21 (-48%). We are adjusting our 2022 leveraged credit new issue forecasts down due to the past months' significantly more hawkish Fed narrative and higher yield environment. Our forecasts for FY 2022 high yield bond gross and non-refi related issuance are $115bn and $65bn, which imply 76% and 66% yoy declines off 2021's record activity ($483bn/$192bn). This implies only $25bn of issuance in 4Q and would**

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represent the lightest gross and net annual HY issuance since 2008 and 2009, respectively. Our forecasts for FY 2022 institutional loan gross and non-refi/repricing issuance are $250bn and $185bn, which imply a 70% and 55% yoy decline ($835bn/$409bn). This implies only $45bn of issuance in 4Q and would represent the lightest gross and net annual loan issuance since 2011 and 2020, respectively.

Credit Strategy Weekly Update

High yield bond spreads widened by the most since early July over the past week alongside volatile equities and fresh 15-year high in the MOVE Treasury volatility index as investors absorbed an intervention by the BoE and a chorus of hawkish Fed officials. Following a surge in UK bond yields in response to an announced package of unfunded tax cuts, the BoE said it would buy an unlimited amount of long-dated Gilts to restore market order. The S&P 500 has now declined double digits the past two weeks, and 10yr Treasury yields receded 20bp off the intra-week high to 3.74%. High yield bond funds experienced a -$3.0bn outflow, which increased year-to-date withdrawals to an unprecedented $53.6bn. No issuance priced this week for the first time since mid-July. **High yield bond yields and spreads increased 63bp and 53bp over the past week to 9.89% and 585bp, which are 119bp and 50bp higher in September. And while yields are well above their previous YTD high on 6/30 of 9.21%, HY spreads remain 52bp below their 7/6 wide of 637bp. For context, high-grade bond spreads are through their year-to-date wide following this week's sell-off.** Decompression among ratings within the high yield asset class has also appropriately reemerged following a hiatus in August. **While spreads are near our 525bp year-end target and amid supportive fundamental and technical factors, we are becoming concerned central banks may tighten too far to the detriment of growth given the recent escalation in hawkish rhetoric.**

Table 1: High yield bond spreads widened 53bp over the past week and remain 52bp inside the wide in early July

	High-Yield	IG	BBB	BB	B	CCC	HY/IG	BB-BBB	B-BB	CCC-B
Current	585bp	171bp	207bp	386bp	603bp	1325bp	414bp	179bp	217bp	722bp
2022 High	637bp	171bp	207bp	439bp	682bp	1298bp	473bp	236bp	248bp	722bp
2022 Low	370bp	94bp	115bp	248bp	399bp	718bp	267bp	114bp	136bp	311bp
12M Average	455bp	125bp	154bp	308bp	482bp	911bp	330bp	153bp	174bp	430bp
US Recession Average	971bp	252bp	355bp	561bp	925bp	2149bp	719bp	245bp	363bp	1225bp
US Non Recession Average	519bp	117bp	172bp	331bp	521bp	1054bp	409bp	177bp	189bp	533bp
% Above/(Below) US Non Recession Average	13%	47%	21%	16%	16%	26%	1%	1%	15%	35%
% Below US Recession Average	-40%	-32%	-42%	-31%	-35%	-38%	-42%	-27%	-40%	-41%

Source: J.P. Morgan.

By rating, BB yields are now 7.83% (+52bp w/w), B yields are 10.04% (+69bp w/w), and CCC yields are 17.54% (+109bp w/w). **And BB, B, and CCC spreads of 386bp (+45bp w/w), 603bp (+61bp w/w), and 1325bp (+80bp w/w) are now 16%, 16%, and 26% above their long-term non-recessionary averages.** HY/IG spread of 414bp (+32bp w/w) compares to a low in April and high in July of 267bp and 473bp, respectively. Meanwhile, BBB/BB spreads of 179bp (+22bp w/w) compare to the 12M average of 153bp and a low in March and high in July of 114bp and 236bp. And the CCC-B and CCC-BB spreads of 722bp (+79bp month to date) and 939bp (+105bp MTD) are at a high since April 2020 and May 2020, respectively. **The HY index has returned -4.09% in September with BB bonds (-3.89%) outperforming Single B rated by 15bp (-4.04%) and CCC-rated by 195bp (-5.84%) bonds. Notably, the HY index is tracking its third worst monthly**

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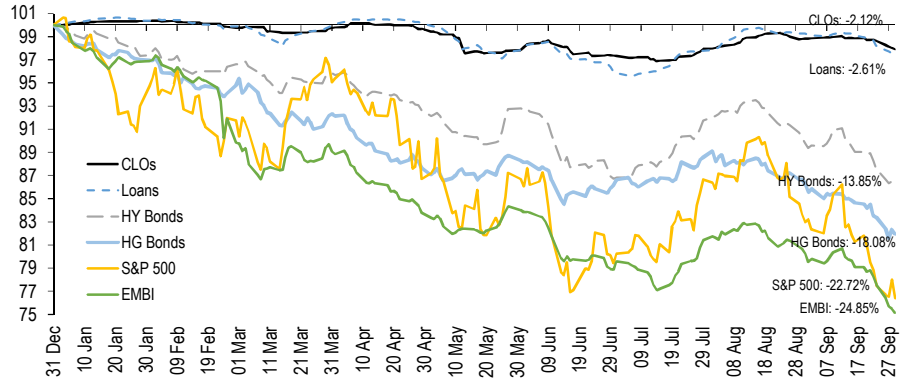
performance since August 2011. And the top performing industries MTD are Diversified Media (-2.48%) and Transportation (-2.72%), whereas Automotive (-6.60%) and Broadcasting (-5.14%) are lagging. **The US HY index is now down -13.85% year to date with Single B bonds (-13.24%) outperforming BB bonds by 40bp (-13.64%) and CCC bonds by 562bp (-18.86%).** For context, the second worst annual return for high yield bonds in the past 30 years was 2000's -6.0% loss. And the year-to-date decline for BB-rated bonds is worse than in the financial crisis.

Figure 1: A 2.6% year-to-date loss for leveraged loans compares to loses totaling 13.9% for high yield bonds and 18.1% for investment grade bonds



Sources: J.P. Morgan; IHS Markit.

Leveraged loan prices declined to within $0.30 of early July's year-to-date low over the past week as a combination of the asset class's unprecedented outperformance and recession concerns are outweighing the benefits of a surge in interest rate expectations. The leveraged loan mutual fund base also endured its second largest outflows of 2022, -$1.9bn, with the past six weeks' exodus totaling -$6.9bn or 7.8% of weekly AUM. Leveraged loan prices decreased $1.37 over the past week to $92.30 with the average price for BB loans decreasing $1.03 to $95.81, while Single B loan prices decreased $1.69 to $91.93 and Split B/CCC loan prices decreased $1.43 to $77.88. **The leveraged loan index has provided a -1.90% loss in September with BB loans (-1.06%) outperforming B by 141bp (-2.47%) and CCCs by 182bp (-2.88%). Outperformance of 141bp of BB vs B loans is the third largest gap since September 2011.** And the worst performing industries MTD are Metals/Mining (-5.34%) and Chemicals (-2.49%). **Leveraged loan yields and spreads (3yr takeout) increased 58bp and 59bp over the past week to 10.93% and 673bp, which are 233bp and 133bp above their mid-August lows, respectively. As well, the yield and spread to maturity for the loan index are now 10.02% and 597bp.** Loans are outperforming high yield bonds by 219bp MTD following 358bp of outperformance in August. Given the surge in the forward curve, yields for the HY bond index (9.89%) are now 53bp below for loan issuers with bonds outstanding (10.42%), which compares to an average gap of 3bp above over the past 12 months. **Year to date, the leveraged loan index is providing a -2.61% loss with BB (-0.68%) and B loans (-3.35%) outperforming CCC loans (-11.33%). For context, this compares to YTD losses for HY (-13.85%), IG (-18.08%), and the S&P 500 (-22.72%).** Meanwhile, the sub-$80, $80-89.99, $90-91.99, $92-93.99, $94-95.99, and >$96 buckets for loans are at 4.00%, 12.50%, 8.79%, 14.60%, 28.22%, and 31.88% of the market, which compare to 7/6's low for prices of 2.64%, 13.56%, 13.47%, 28.40%, 27.54%, and 14.39%. Lastly, the CLO primary market has priced $12.4bn month to date after August ($8.0bn ex-refi/resets) failed to exceed $10bn for the first time in seven months; year-to-date activity of $104.2bn is down -19% vs a year ago.

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Table 2: Average loan spreads in non-recessionary and recessionary environments

	Leveraged Loans	BB	B	CCC	B-BB	CCC-B
Current	673bp	433bp	719bp	1575bp	286bp	856bp
2022 High	681bp	493bp	721bp	1595bp	286bp	984bp
2022 Low	395bp	273bp	398bp	891bp	119bp	487bp
12M Average	492bp	341bp	505bp	1127bp	164bp	622bp
US Recession Average	1058bp	718bp	1258bp	2096bp	539bp	838bp
US Non-Recession Average	501bp	343bp	533bp	1261bp	190bp	728bp
% Above/(Below) US Non-Recession Avg.	34%	26%	35%	25%	51%	18%
% Below US Recession Average	-36%	-40%	-43%	-25%	-47%	2%

Source: J.P. Morgan.

Revising down our FY 2022 high yield bond and institutional loan issuance forecasts

A 518bp year-to-date rise in high yield bond yields (or +2x) is translating into the lightest annual capital market activity since 2008. And on a quarterly basis, 3Q's HY issuance totaling $18.9bn is tracking a low since 1Q09. In particular, September's high yield issuance totaling $9.0bn (or $4.6bn ex-refi) compares to only $8.1bn (or $2.9bn ex-refi) in August and a mere $1.8bn (or $1.8bn ex-refi) in July. For context, high yield bond issuance averaged $40.1bn (or $16.1bn ex-refi) per month in 2021. In particular, bond refinancing activity totaling $44bn is down from $254bn YTD21 and equates to a mere 3% of outstanding. For context, annual refi activity equated to an average 16% of outstanding between 2010 and 2021. Meanwhile, non-refi-related issuance totals $46.0bn year to date, which compares to a record high $297.2bn in 2020. **As such, HY gross, refi, and non-refi issuance YTD totals only $90bn, $44bn, and $46bn versus FY21's $484bn, $291bn, and $193bn. Note the past decades' low for HY gross, refinancing, and non-refi issuance was 2018's $187.4bn, $114.1bn, and $73.3bn. Meanwhile, 3Q's $23.4bn of institutional loan issuance is tracking a low since 1Q10. And loan issuance YTD totals $204.9bn or $145.1bn ex-refi/repricing, which compares to $642.1bn (-68%) and $276.4bn YTD21 (-48%).** Given a 560bp rise in loan yields YTD, repricing ($7.5bn) and refinancing ($52.2bn) activity are tracking a low since 2011 and 2009, respectively. And net loan issuance equating to 10% of outstanding YTD is a low since 2009 and down from 24% per annum between 2010 and 2021. For context, net institutional loan issuance totaling $144.6bn year to date peaked at $409bn in 2021. **We are adjusting our 2022 leveraged credit new-issue forecasts down due to the past months' significantly more hawkish Fed narrative and higher yield environment.** As well, concerns around the credit cycle are expected to remain stubbornly high into year-end. **Our forecasts for FY 2022 high yield bond gross and non-refi related issuance are $115bn and $65bn, which imply a 76% and 66% yoy decline off of 2021's record activity ($483bn/$192bn).** This implies only $25bn of issuance in 4Q and would represent the lightest gross and net annual HY issuance since 2008 and 2009, respectively. **Our forecasts for FY 2022 institutional loan gross and non-refi/repricing issuance are $250bn and $185bn, which imply a 70% and 55% yoy decline ($835bn/$409bn).** This implies only $45bn of issuance in 4Q and would represent the lightest gross and net annual loan issuance since 2011 and 2020, respectively.

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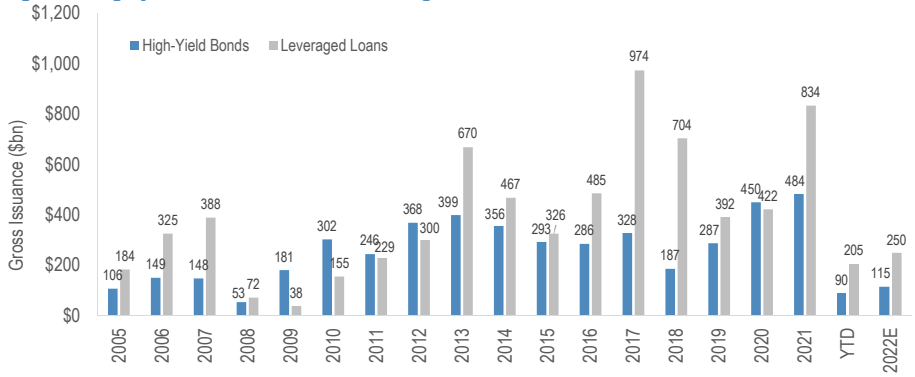
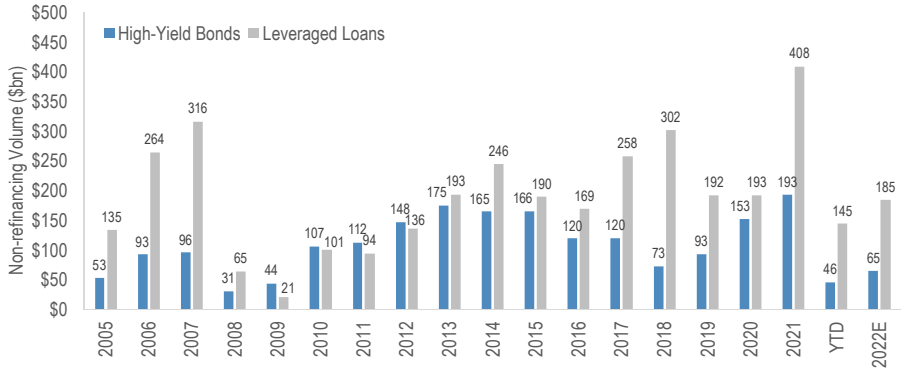
Figure 2: High yield bond issuance is tracking a low since 2008



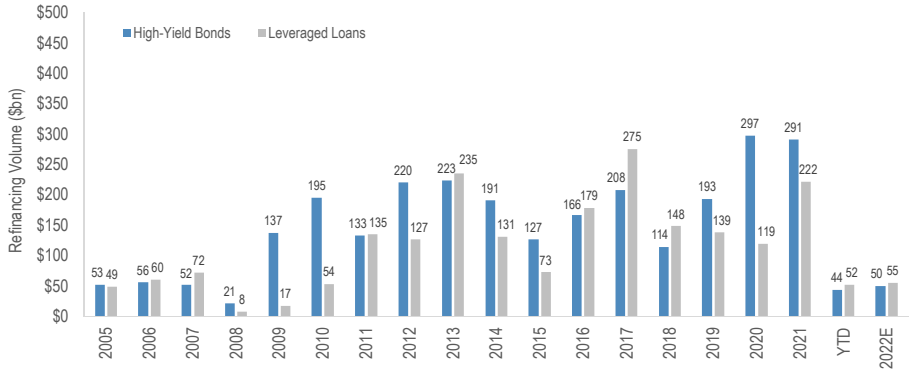
Source: J.P. Morgan.

Figure 3: Non-refinancing-related issuance for high yield bonds and loans



Source: J.P. Morgan.

Figure 4: Refinancing activity in leveraged credit is at a low since 2008



Source: J.P. Morgan.

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CLO

- **We took the view spreads would soften and re-test summer wides (link). CLOIE AAA has set a new wide of 207bps and secondary Euro CLO AAA has gapped towards our 300bps stress/recession case (250-325bps tiered range). We expect new issue US CLO AAA to soften, albeit in a less-disorderly fashion. Look for US midpoint to reach 230bps (220bps currently), in sympathy with global risk aversion and weaker pricing from non-T1/increased tiering, while T1 is better anchored around our 200bps target (195bp currently). CLO Mezz has sold off which in addition to loan fund outflows could lead loan prices lower (down nearly a point this week). On balance, open CLO warehouses are nibbling at weakness. We maintain our $110-120bn and €25bn FY22 forecasts.**
- **Liquidity is a topic du jour from US Treasuries to Equities as volatility picks up and the Fed engineers the fastest tightening cycle in more than 30 years. This report is a deep dive of CLO liquidity for loans. CLOs purchased circa $145bn of US loans this year, mostly new CLO formation ($105bn) but also sizeable net purchases from reinvesting CLO vehicles ($40bn), our focus here. Representing an estimated 71% of $204.4bn YTD loan issuance, the CLO share is likely overstated (assets sourced last year, purchase data includes middle market, some buys in secondary) but speaks to the importance of the product.**
- **A significant amount of reinvesting CLO purchases are in new issue leveraged financings (~42% YTD, 44% avg. since 2013), though this has been declining with low loan supply. While data lags make it tough to observe CLO purchases in real-time, CLOs are providing liquidity at a time of overall tightening in credit standards. Unless CLO formation materially recovers, liquidity from the CLOs will remain muted as slower loan prepayments limit cash inflows to reinvest, and as 35% of CLOs start exiting reinvestment and entering structural amortization over the next two years.**
- **We revisit US CLO manager trading turnover (based on sales data for a representation of manager discretionary activity). Activity is only marginally less than past years (17% YTD annualized turnover, 22% FY'21) but there is some style drift. Finally, we evaluate seasonality of purchases and sales. Since 2013, CLOs' loan trading is most active in March and June, least active in December and September, and intra-week, most active on Thursdays.**

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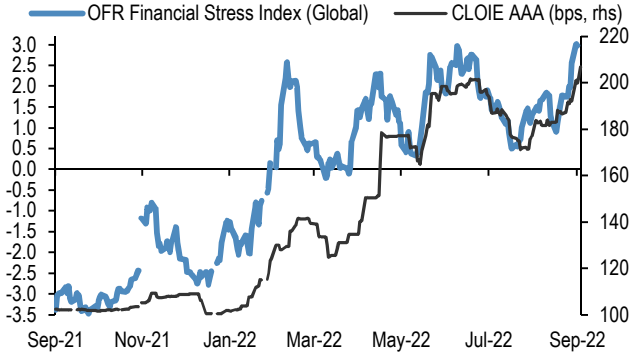
Market Update

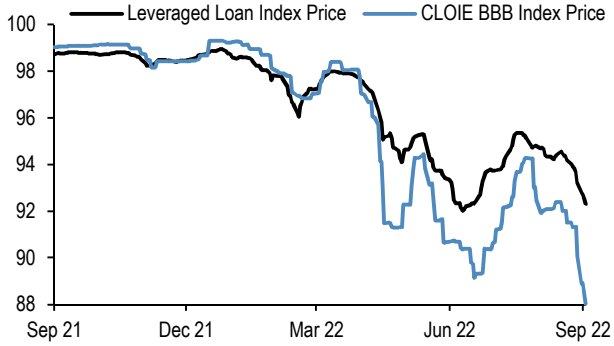
Volatility has been stomach-churning even for our own views, and today's hot PCE print is likely to cause more weakness as CLO investors expect inflation to keep pressuring the Fed. Recall, we said spreads would re-test summer wides (link) and also provided a recession/gap risk case of 300bps for secondary AAA (link). CLOIE AAA has now set a new wide of 207bps (Exhibit 1), and following outsized volatility in regional markets, secondary Euro CLO AAA has gapped towards our 300bps case (250-325bps tiered range). We expect new issue CLO AAA to soften, albeit in a less-disorderly fashion, and expect US midpoint at 230bps (220bp currently) in sympathy to risk aversion and weaker pricing from non-T1/increased tiering, while still maintaining our 200bp T1 forecast (195bp currently). US CLO mezz has widened in recent weeks (CLOIE BBB +150bps) which in addition to loan fund outflows could lead loan prices lower, already -$0.93 in 5 days to $92.30 (Exhibit 2). On balance, open CLO warehouses are nibbling at weakness, and we maintain our $110-120bn and €25bn FY22 CLO supply forecasts. All of this implies situational CLO print-and-sprints (funding cost, warehouse/ramp economics, diversification).

Exhibit 1: CLO AAA index spreads set new 2022 wides as financial stress rapidly increased



Source: J.P. Morgan, Office of Financial Research, Bloomberg Finance LP. As of September 29, 2022.

Exhibit 2: Tail wagging the dog? CLO weakness suggests downside risk for Leveraged Loans



Source: J.P. Morgan. As of September 29, 2022.

Plugging Loan Liquidity: CLO Special Feature

Liquidity is a topic du jour from US Treasuries to Equities as volatility picks up and the Fed engineers the fastest tightening cycle in more than 30 years. This special report is a deep dive of CLO liquidity for underlying leveraged loans. We estimate CLOs purchased circa $145bn of US loans this year, mostly new CLO formation ($105bn) but also sizeable net purchases from existing CLO vehicles ($40bn), which is the focus of this publication. CLO purchases represent an estimated 71% of $204.9bn YTD loan issuance, but the CLO share is likely overstated (some assets may have been sourced late last year, purchase data includes Middle Market, and not all purchases are sourced in the primary loan market). A significant amount of reinvesting CLO purchases are in new issue leveraged financings (~42% YTD, 44% avg. since 2013), though this has been declining with low loan supply. While data lags make it tough to observe CLO purchases in real-time, these vehicles are providing liquidity at a time when overall credit standards are tightening and loan funds are experiencing outflows. (Exhibit 3). Muted loan prepayment rates (rise in refinancing costs) are limiting cash inflows back to CLOs to reinvest in newer loans, further crimping liquidity. Also, as 35% of CLOs exit reinvestment over the next two years, amortization will impact liquidity unless CLO formation recovers. Finally, we also evaluate seasonality of purchases and sales and revisit US CLO manager trading

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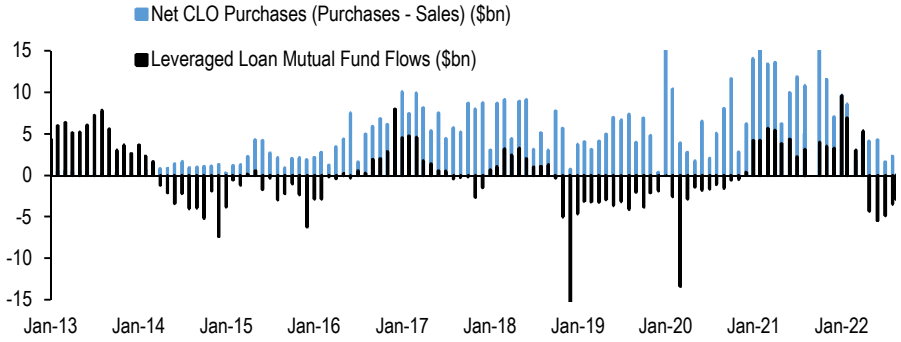
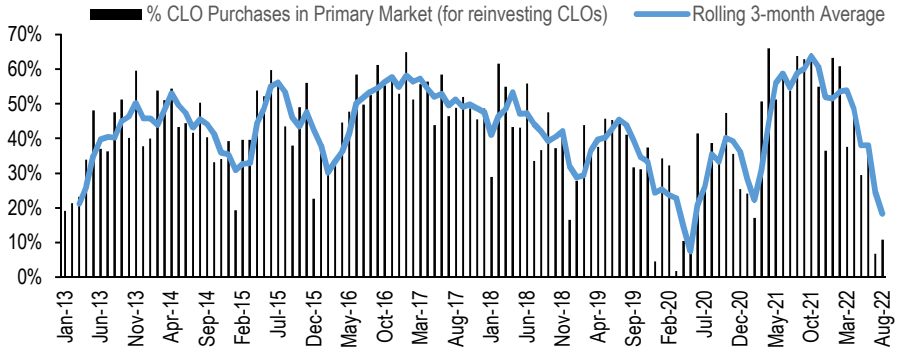
turnover. Activity so far is only marginally slower relative to past years (17% YTD annualized turnover, 22% FY'21).

Exhibit 3: Reinvesting CLO Net Purchase Volumes (Purchase minus Sales) compared to loan mutual fund flows



Source: Lipper FMI; J.P. Morgan, INTEX. Net CLO Trades (purchases minus sales volumes) are based on trades executed within CLO reinvestment period with a reported Loan X and Price executed in 2022YTD from 1,364 US 2.0 CLO portfolios (excluding MM, Static, and Enhanced CLOs). Based on trades available since Jan 1, 2013 through September 26th, 2022 (keeping in mind data lags).

Exhibit 4: CLO Reinvestment Activity in the Primary Loan Market (% of all CLO Purchases)



Source: J.P. Morgan, INTEX. A CLO Purchase in the primary market is determined if the CLO Trade Date is equivalent to the Loan Offer Date. Based on trades executed within CLO reinvestment period with a reported Loan X and Price executed in 2022YTD from 1,364 US 2.0 CLO portfolios (excluding MM, Static, and Enhanced CLOs). Based on trades available since Jan 1, 2013 through September 26th, 2022 (keeping in mind data lags).

CLO Manager Loan Trading Activity

We revisit US CLO manager trading turnover, incorporating 545k US loan trades ($209bn notional) in 2022 YTD into our broader study since 2013, which encompasses 3.97 million trades and $2.7 trillion notional in total. CLO trading turnover is 13% in 2022 YTD (or an estimated annualized 17.2%) which is slightly less active compared to 22% in FY2021 and 21% in FY2020, bearing in mind this comparison is made through September, but with potentially 1-2 months data lag of available recent trades. This is relative to the longer term 10-year average of 20.7%, with dispersion and style drift by manager. About 75% of managers in the top/bottom 25% in 2022YTD are also in the same cohort over the long-term metric suggesting some manager consistency. For example, of the 26 managers that were most active YTD (top 25%) for 2022 YTD turnover, 17 are in the top 25% most active for average annualized portfolio turnover since inception. Of the 26 managers that were least active YTD (bottom 25%), 22 managers are also in the bottom 25% for average annualized portfolio turnover since deal first pay date. Of the 19 managers that have increased trading this year (relative to average annualized since

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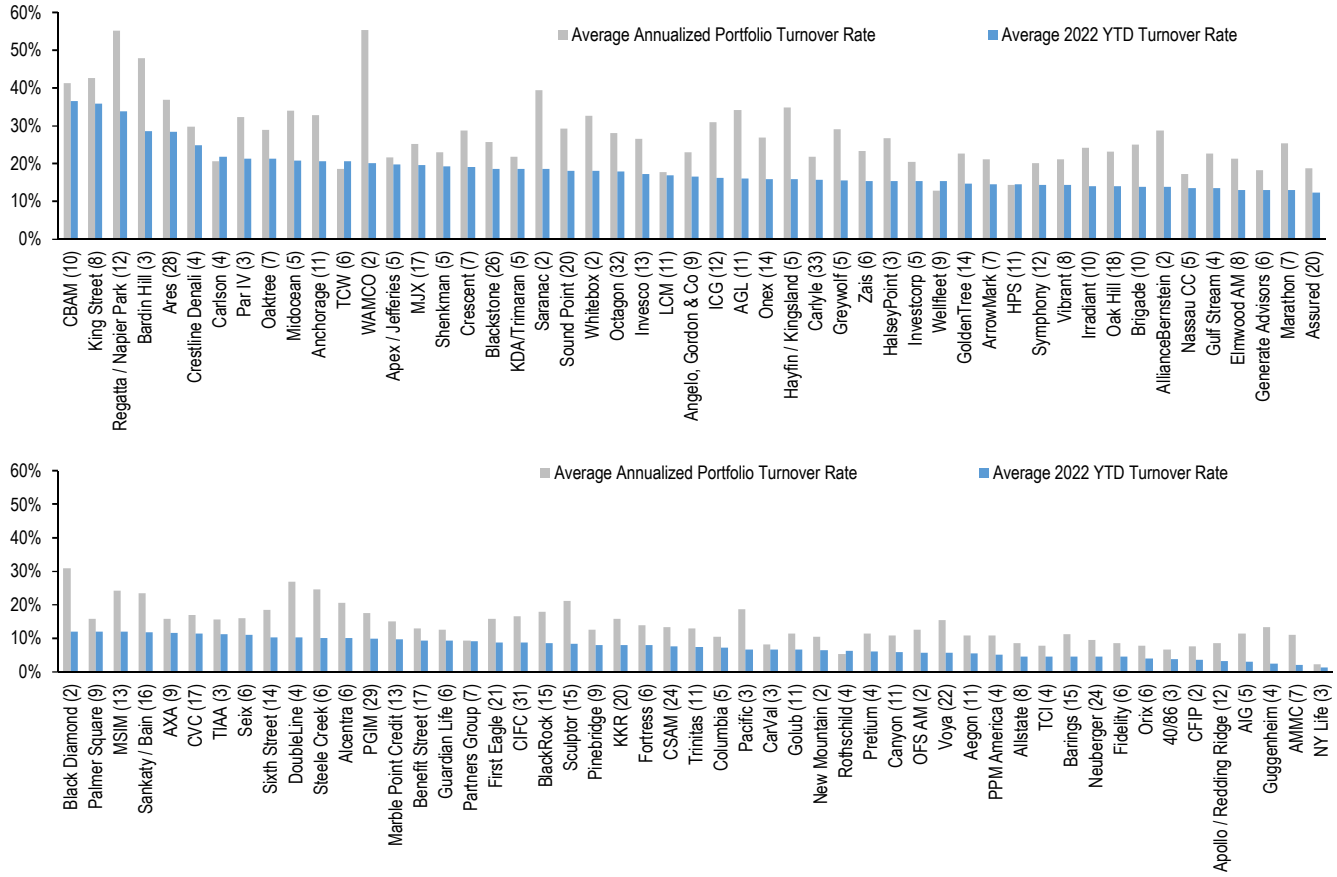
deal first pay date), they did so by an average +3.7%, which compares to 83 managers that have decreased trading this year by an average -5.2%.

Exhibit 5: Average US CLO Manager 2022YTD Sales Turnover Rate vs Average Annualized Sales Turnover Rate since deal first pay date



Source: J.P. Morgan, INTEX. Based on 1,030 US 2.0 CLO portfolios (excluding MM, Static, and Enhanced CLOs) with a first pay date prior to January 1st, 2022 and in reinvestment period as of September 28th, 2022, and a deal factor >=95%. Excludes managers with only 1 CLO in the sample. Based on trades available as of September 26th, 2022 (reporting date may vary).

CLO Manager Loan Trading Seasonality

We also consider the seasonality of loan trading activity in reinvesting CLO portfolios. Based on data since 2013, CLO portfolio loan trading is most active in the months of March and June, which account for 9.8% of trading volumes each, and the least active months are December and September with 5.2% and 6.5%, respectively. Intra-week, CLO loan portfolio trading is busiest on Thursdays but there are some differences between sale and purchase activity, likely to some extent driven by loan primary activity and loan prepayment rates. Sales are lightest on Monday (16%) and Friday (17%) with consistent 22% of trading volumes mid-week. Meanwhile, purchase activity peaks later in the week on Thursday (26%) and Friday (25%) with lighter volumes on Monday (11%), Tuesday (17%) and Wednesday (21%).

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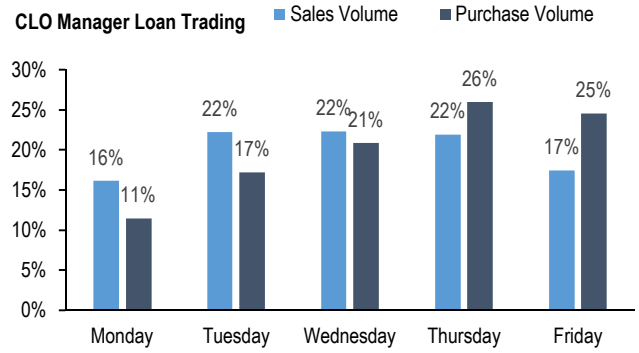
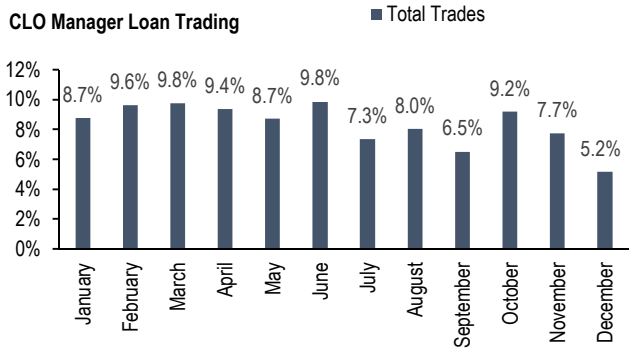
Exhibit 6: Historical US CLO Manager Loan Trading Activity by day of the week (Since 2013)



Source: J.P. Morgan, INTEX. Based on trades executed within CLO reinvestment period with a reported Loan X and Price executed in 2022YTD from 1,364 US 2.0 CLO portfolios (excluding MM, Static, and Enhanced CLOs). Based on trades available since Jan 1, 2013.

Exhibit 7: Historical US CLO Manager Loan Trading Activity by day of the month (Since 2013)



Source: J.P. Morgan, INTEX. Based on trades executed within CLO reinvestment period with a reported Loan X and Price executed in 2022YTD from 1,364 US 2.0 CLO portfolios (excluding MM, Static, and Enhanced CLOs). Based on trades (combines purchases and sales) available since Jan 1, 2013.

Methodology

Recall, in our manager trading activity analyses, we only consider sales and purchases in CLO portfolios executed during the reinvestment period (starting after the first payment date and before end of reinvestment period). We do not account for warehouse or ramp-related activity that takes place prior to this period given lack of data availability. For this report, we consider trades available through September 26th, 2022. There are data limitations including potential data lags (typically ~1-2 months lag to when reported transactions become available) which complicates the analysis and may understate trade volumes. For our manager turnover charts, we additionally curate the deal sample to only consider CLO portfolios with a first payment date prior to Jan 1st, 2022 and in reinvestment period date as of Sept 28th, 2022 (with a deal factor of at least 95%) so that all CLO portfolios in the sample have nine months of trading data to assess turnover activity. CLO Sales activity best represents manager discretionary trading turnover as purchases will be elevated due to reinvestments of prepaid or matured proceeds in addition to sold assets.

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Credit Derivatives

- **A synthetic recession – Synthetic credit index spreads screen wide, both relative to cash as well as outright**
- **Bond-CDS Basis – Regional divergence across EUR and US as the basis moves higher in Europe driven by hedging demand**
- **Curves – IG curves move flatter with CDX.IG catching up with Main. HY curves a touch steeper**
- **Options – Implied volatility moves higher while realised stays lower keeping volatility sales attractive**
- **Tranches – IG correlations continued to decline but higher rates have had a disproportionate impact on tranches with large upfront leading to outperformance of equity and underperformance of senior tranches**
- **Credit-Equity – European credit has underperformed relative to equities**
- **TRS & ETF – Cash markets see both headline yields and spreads widen while implied funding spreads continue to trade at levels of stress**
- **Market Themes**
- **No. 1: Hedging Sunlit Uplands. After a week of elevated volatility in UK assets, we take a look at credit markets and potential hedges for UK-based IG weakness. We conclude that UK credit has widened in line with FX weakness thus far but looks to have room to run relative to other credit metrics**
- **No. 2: CDX.HY tranche roll. CDX.HY Series 39 tranches start trading on Monday. We discuss our expectations with regards to tranche roll valuations**
- **Trade Ideas**
- **No. 1: Chicago Bulls. We position for a reversal in recent market weakness with a buffer against deep recession pricing between now and expiry**
- **No. 2: Cash isn't king: Synthetics screen wide relative to cash bonds, especially in US HG credit market. We position for CDX.IG outperformance versus 7-10 US HG cash**
- **Portfolio Performance**
- **Our CD Player Total Return Portfolio is down €1.6mm since our last publication. We open two new trades, see Trade Ideas section above. We closed and rolled several trades; see details in Figure 44. Also we buy back the receivers in our Short Main vol with downside protection from last week to give the trade a more bullish leaning given the current spread levels**

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Market Trends and Outlook

A synthetic recession

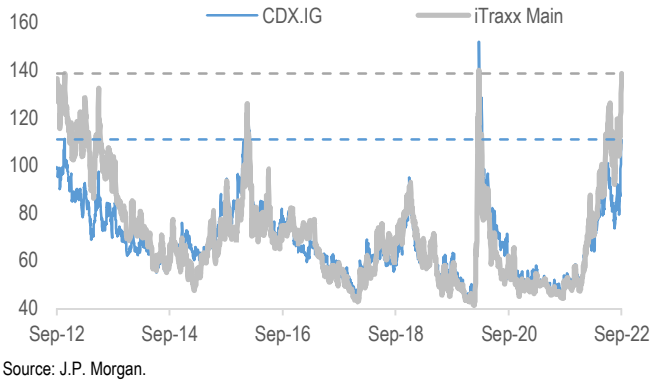
Demand for hedges has picked up further, resulting in synthetics underperforming relative to cash products for the most part. As a result, the new on-the-run CDX index series are currently trading around recessionary levels though tighter than a "deep" recession. Notably, IG CDX indices ex the 10 widest names are trading around their COVID-19 peak levels. As a result, most of the indicators for our Fear and Greed index are currently indicating CDS index protection is overbought with the exception of skew. This indicates that markets maybe concerned regarding market stress but do not think a "deep" recession is likely to materialize in the near term.

In the *Market Themes* section, we look at credit markets and potential hedges for UK based IG weakness in light of recent UK-based volatility. We conclude that UK credit has widened in line with FX weakness thus far but looks to have room to run relative to other credit metrics. We also discuss our expectations regarding valuations for the upcoming CDX.HY tranche roll.

In *Trade Ideas* we discuss two trades to take advantage of the wide spreads on synthetic indices. We suggest a bullish seagull in CDX.IG given the index ex-10 widest names is trading around its widest levels over the past decade and just shy of its March 2020 peak. We also suggest a cash-CDX basis trade using CDX.IG 5y index versus 7-10yr USD HG cash bonds. Cash synthetic basis in the US HG credit market are currently around the most dislocated levels since 2013 after the recent underperformance of synthetics. Synthetics stand to outperform in a recovery from the recent underperformance. On the other hand, we expect investor focus to shift from hedging to de-risking if market stress continues to build up.

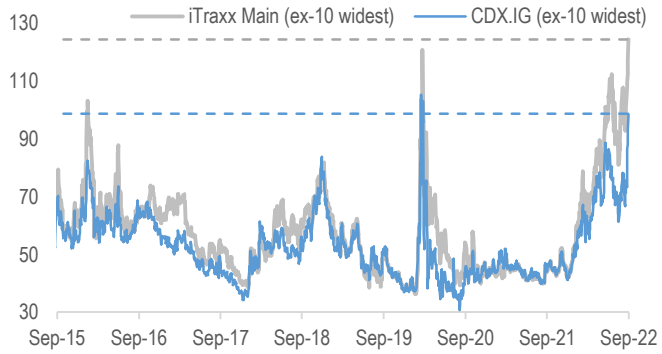
Our *CD Player Total Return Portfolio* is down €1.6mm since our last publication. We open two new trades, see *Trade Ideas* section above. We closed and rolled several trades; see details in Figure 35. Also we buy back the receivers in our Short Main vol with downside protection from last week to give the trade a more bullish leaning given the current spread levels.

Figure 1: IG CDS Indices are trading at recessionary levels



Source: J.P. Morgan.

Figure 2: IG CDS index spreads excluding 10 widest names is around the Covid peak levels



Source: J.P. Morgan.

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Table 2: Market Performance

Index Levels and Z-Score relative to 4 year history and 14 day history

		Outright			Recent Moves	
		Current	v Ave (4y)	ZScore (4y)	14d Move	Z-Score
iTraxx	Main	137	72	3.5	26	2.7
	SenFin	149	74	3.2	28	2.4
	SubFin	272	122	2.7	53	2.1
	XO	656	338	3.2	113	2.4
	Japan	108	47	2.8	20	2.0
	AsiaExJ	170	85	3.2	30	2.9
	Australia	132	56	2.3	26	3.3
CDX	CDXIG	111	47	2.8	16	1.6
	CDXHY	631	257	2.5	90	1.8
	CDXEM	331	118	2.0	58	1.9
Global TRS	QW5A Z	153	58	1.7	6	0.4
	IBOXMJA G	653	213	1.9	38	0.7
	€AT1 Z	877	342	1.9	94	0.8
	IBOXIG Z	246	80	2.1	32	1.6
	IBOXHY Z	550	110	1.1	61	1.3
	$AT1 Z	727	296	2.0	105	1.1
	QW5A yld	4.31	3.20	3.8	0.65	2.9
	IBOXIG yld	5.99	2.53	3.0	0.71	3.1
Global Index Tranches	Main Eq	55%	20%	2.6	10%	3.4
	Main JM	584	324	3.3	112	2.4
	Main SMez	313	200	4.2	80	3.3
	Main SS	67	41	3.8	19	3.5
	XO Eq	77%	20%	1.9	8%	1.9
	XO JM	1,503	824	3.1	318	2.1
	XO SMez	778	531	4.1	248	3.8
	XO SS	239	163	3.9	84	4.2
	CDXIG Eq	53%	15%	1.9	11%	2.9
	CDXIG JM	595	308	3.2	138	2.4
	CDXIG SMez	189	107	3.3	53	2.6
	CDXIG SS	39	21	3.4	13	3.1
	CDXHY Eq	63%	8%	0.6	5%	1.1
	CDXHY JM	911	294	0.8	236	1.3
	CDXHY SMez	420	184	1.5	111	1.5
	CDXHY SS	120	47	1.3	25	1.2
Equities	-SX5E	-3,329	636	1.6	239	1.6
	-SX7E	-80	5	0.4	6	1.0
	-SPX	-3,647	774	1.2	299	2.1
Equity Vol	SX5E 1m Vol	26.9	8.8	1.1	4.6	0.8
	SX5E 3m Vol	26.3	7.6	1.2	2.9	0.7
	SPX 1m Vol	29.5	11.0	1.3	5.6	0.9
	SPX 3m Vol	27.4	8.0	1.2	3.5	0.8
Rates	Bunds	2.21	2.28	4.0	0.52	3.6
	OATs	2.81	2.51	3.8	0.56	3.7
	BONOs	0.60	0.09	0.6	0.01	0.1
	BTPs	1.90	0.50	0.9	0.17	1.2
	USTs	3.96	2.16	2.7	0.55	3.5
Curves	Main 3y	115	74	3.7	26	2.6
	Main 10y	162	58	3.4	24	3.1
Cross Market	CDXIG-1*Main	-28	-27	-3.4	-10	-2.5
	CDXHY-1*XO	-39	-95	-2.3	-24	-1.0
	CDXHY-5*CDXIG	75.6	22.5	0.6	8	0.3
	XO-5*Main	-27	-24	-0.7	-15	-1.1
	SenFin-1*Main	13	1	0.3	2	0.7
	SubFin-1.5*SenFin	48	11	0.8	11	1.5

Source: J.P. Morgan.

Table 3: Market Indicators

Standard Score of Metric Assuming Normal Distribution

	US IG	EUR IG	EUR FIN	EUR SUBFIN	EUR HY	US HY	Average
CDS_Index	100%	100%	100%	100%	100%	100%	100%
Basis to Theo	1%	23%	46%	84%	99%	11%	44%
Basis to Cash	50%	100%	3%	100%	100%	62%	69%
Cash_Zspread	50%	99%	100%	100%	99%	42%	82%
Cash_TRS_Prem	35%	0%		14%	0%	10%	12%
Cash_ETF_Prem	3%	0%			5%	4%	3%
3s5s	0%	0%	13%	0%	1%	23%	6%
5s10s	98%	58%			53%	28%	59%
Tranche Correl	10%	15%			97%	42%	41%
VTRAC-X 1M	100%	100%	100%		100%	100%	100%
VTRAC-X 3M	100%	100%	100%		100%	100%	100%
DTCC	94%	88%	91%	95%	98%	72%	90%
Dispersion	93%	100%			99%	100%	98%

Source: J.P. Morgan.

Table 4: Fear and Greed (*Link*)

	VTRAC-X	Skew	Momentum	ETF Premium	CDS Strength
EUR IG	100%	18%	93%		94%
EUR Fin	100%	17%	93%		100%
EUR HY	98%	14%	91%	65%	
USD IG	99%	22%	91%	72%	
USD HY	100%	28%	95%	74%	
Total	100%	19%	93%	70%	96%

Source: J.P. Morgan

Table 5: CreditCARD Cross Asset Alerts

Model	Current Position	YTD P&L	Last Publication
VGA v Main	Flat	€297k	*Link*
Commodity Momentum	Long Risk Main and XO	-€5,112k	*Link*
OATs/BUNDs v Main	Long Risk iTraxx Main v Fra Ger Bond Spread	-77k	*Link*

Source: J.P. Morgan.

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Basis-to-Theoretical

The basis-to-theo has risen over the last couple of weeks in Europe as investors have rolled hedges into the new series which started trading on 20 September. iTraxx Main is now trading at -1.6bp, while Crossover is at +59bp, both levels are close to the highest the basis has been over the past year (Table 6, Figure 3 and Figure 4). Positioning is broadly inline with data from DTCC which similarly shows that investors have been reluctant to roll long risk positions into the new series. In US the basis has been less directional suggesting that the macro hedging being expressed in Europe is less prevalent in US CDS Indices.

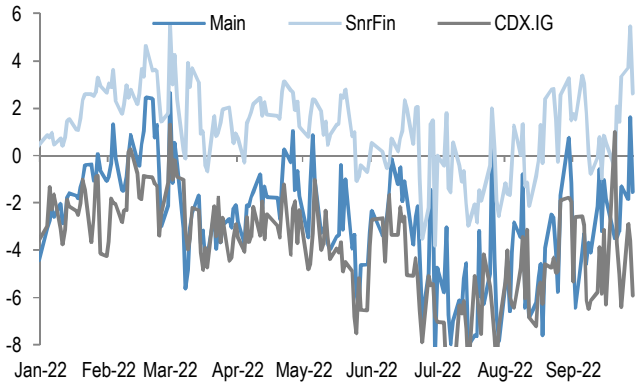
Going forward, we would expect the basis to decline as single names underperform versus the index. With earnings season around the corner, it appears to us that dispersion is likely to rise as single name risks come to the fore. At the same time, CDS indices already price in an elevated degree of macro risk suggesting that the basis should move higher.

Table 6: Basis to Theo Snapshot

Index	Current	14-Sep-22	Chg	6m Range	Idx Level
Main	-1.6	-3.2	1.6	68%	137.7
XO	59.0	40.9	18.1	74%	663.5
SnrFin	2.6	-1.0	3.6	69%	150.4
SubFin	8.4	3.1	5.3	59%	274.8
CDX.IG	-5.9	-5.8	-0.1	37%	109.6
CDX.HY	-1.5	3.6	-5.1	56%	617.9

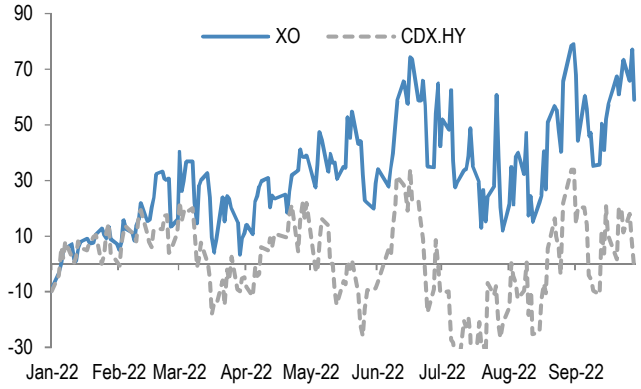
Source: J.P. Morgan.

Figure 3: IG basis-to-theo



Source: J.P. Morgan.

Figure 4: HY basis-to-theo



Source: J.P. Morgan.

Bond-CDS Basis

As with the basis-to-theo, there has been significant divergence between the bond-CDS basis between the US and Europe. In the US, the basis has moved lower over the past couple of weeks, primarily over the past few trading sessions; CDS has been weak but bond spreads have widened even more. In Europe by contrast, the basis has moved increasingly higher as bond spreads have not kept up with CDS spreads which have borne the brunt of the hedging activity.

It seems to us that we are close to the point where the levee must break and bonds, particularly in Europe will underperform CDS. Investors already appear to be close to fully hedged in the CDS market with the basis and DTCC client positioning

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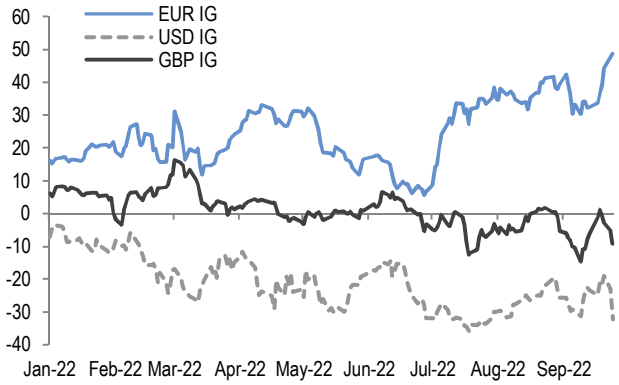
elevated. This suggests that either a relief rally is on the outcome or cash spreads, particularly in Europe move wider.

Table 7: Bond CDS Basis Snapshot

	EUR IG	GBP IG	USD IG	EUR HY	USD HY
Current	49	-9	-32	134	48
Chg (13 Sep)	**15**	**2**	**-5**	**48**	**-4**
Bond Change	7	20	29	45	62
CDS Change	21	22	24	93	58

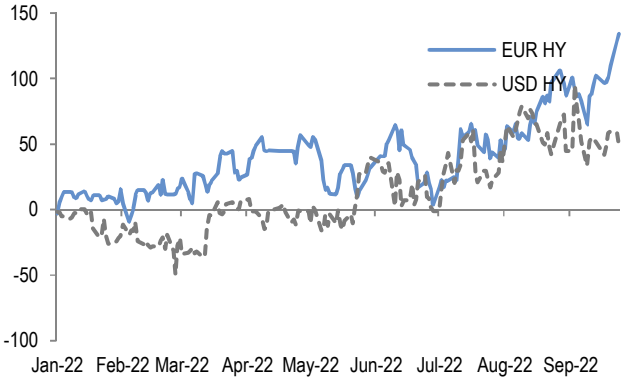
Source: J.P. Morgan.

Figure 5: Bond-CDS Basis in IG



Source: J.P. Morgan

Figure 6: Bond-CDS Basis in HY



Source: J.P. Morgan

Trade ideas

- Cash isn't king (*Trade ideas*)
- US HY BB Positive CDS-Bond Basis (*CD Player, 28Jul*)
- US HG Macro Positive Basis (*CD Player, 7 Jul*)
- Long US IG synthetics vs cash bonds (*CD Player, 12May*)

Curves

IG curves flatten across the board over the last couple of weeks with the US in particular moving significantly flatter closing the gap to EUR IG curves. In US HY curves moved 12.9bps steeper, but this should be viewed as broadly remaining within a very volatile range in recent months. EUR HY curves also moved steeper back towards the steepest levels of the year despite the broad economic weakness.

We continue to think flatter curves will prevail for as long as the risk off environment persists, especially in European HY. We continue to like positioning for this in Crossover 3s5s duration weighted flatteners as highlighted in our outlook. In investment grade curve flatteners should be seen more as a systemic tail risk hedge, especially given the very wide levels of index spreads already present in the market.

Table 8: US Credit Index Curve Summary

CDX.IG	3s5s	5s10s	CDX.IG 5y	3s5s fwd	5s10s fwd	CDX.HY	3s5s	CDX.HY 5y	3s5s fwd
Current	24.8	29.9	111.0	159.7	187.5		51.6	630.6	774.5
2 Week Chg	-1.0	-6.1	25.3	33.2	18.0		12.9	126.2	195.4
YTD	3.8	-9.9	61.7	77.5	49.9		6.5	339.8	407.4

Source: J.P. Morgan.

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Table 9: European Credit Index Curve Summary

Main	3s5s	5s10s	Main 5y	3s5s fwd	5s10s fwd	XO	3s5s	XO 5y	3s5s fwd
Current	21.8	25.0	138.5	180.7	201.9		70.5	670.0	875.4
2 Week Chg	-0.3	-2.1	29.7	33.4	22.0		3.2	139.5	203.0
YTD	0.1	-14.1	86.7	101.3	69.7		9.5	412.1	535.5

Source: J.P. Morgan.

Figure 7: HY CDS Index 3s5s spread curves

Source: J.P. Morgan.

Figure 8: IG CDS Index 5s10s Time Series

Source: J.P. Morgan.

Options

Implied volatility has picked up in the last couple of weeks across the board with the exception of iTraxx Crossover. Realised volatility has moved a touch lower despite the last few days which have seen some large moves, particularly in Europe. Once again though much of these moves have reverted during the day. This leaves vol premium looking higher again across the board, although within European IG especially.

The levels of volatility premium, performance of short volatility strategies this year and the often intraday mean reverting nature of markets are some of the reasons we continue to like selling volatility ranges at the moment although in Europe especially we have one eye on the downside tails stemming from energy security risks.

Several investors have asked us about skew in the market. It is not atypical for skew to look low at wider spreads as demonstrated by Figure 10 which shows the historical relationship between skew and CDX.IG index spreads.

Table 10: Options Market Snapshot

	1m Implied Volatility			1m Realised Volatility			Volatility Premium		
Index	Current	15-Sep	Change	Current	15-Sep	Change	Current	15-Sep	Change
Main	68.8%	64.4%	+4.4%	50.4%	59.1%	-8.7%	+18.4%	+5.3%	+13.1%
Crossover	60.2%	60.9%	-0.7%	48.4%	57.5%	-9.1%	+11.8%	+3.4%	+8.4%
Snr Fin	68.9%	65.9%	+3.0%	49.9%	58.4%	-8.4%	+19.0%	+7.5%	+11.4%
CDX IG	64.9%	60.3%	+4.6%	52.1%	54.3%	-2.2%	+12.8%	+6.0%	+6.8%
CDX HY	64.3%	61.3%	+3.0%	53.0%	56.5%	-3.4%	+11.3%	+4.8%	+6.5%

Source: J.P. Morgan.

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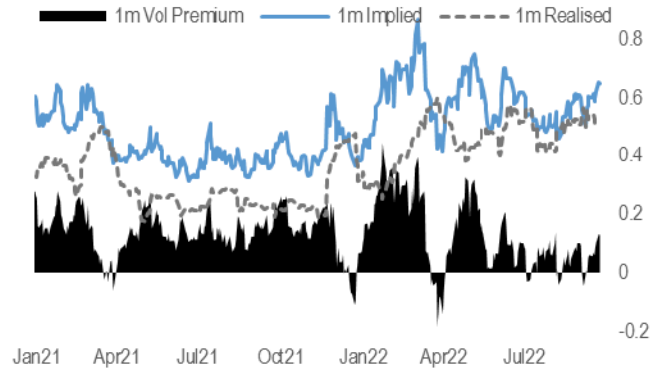
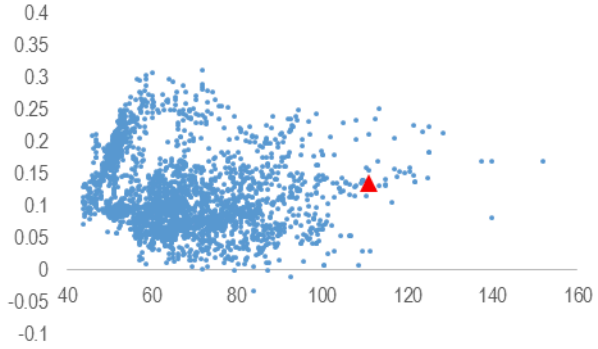
Figure 9: CDX.IG 1m iVol,rVol and Vol Premium



Source: J.P. Morgan.

Figure 10: CDX.IG 75-25d Skew Versus Index Level



Source: J.P. Morgan.

Trade Ideas

- Chicago Bulls (*Trade Ideas*)
- Conditional Compression (*CD Player, 8Sep*)
- Paying the Bills (*CD Player, 8Sep*)
- The Straddle is Real (*CD Player, 8Sep)*
- CDX.IG 1x2 Payer Spread (*CD Player, 1Sep*)
- Buy Main Put Spread vs CDX.IG Put Spread (*CD Player, 21Jul*)
- Main Strangles with downside protection (*CD Player, 7Jul*)

Tranches

The tranche markets officially rolled on Monday -- with the exception of CDX.HY index, where tranches formally roll next Monday after the underlying index rolled this Tuesday. In Europe, correlations reset higher in the new series having declined in the weeks prior to the roll resulting in underperformance of the equity tranche. Meanwhile, 6-12 correlation skew has steepened resulting in outperformance of the senior mezz tranche and underperformance of the super senior tranche. In Crossover, the equity tranche saw a reversal of fortune after the roll largely erasing the September gains. In CDX.IG correlations rolled relatively flat and continued their march lower, although from the delta-hedged perspective, the equity tranche actually outperformed due to the rise in risk-free rates that resulted in lower equity upfronts.

With correlations at the lows, we think that high grade senior tranches are attractive convex hedges in deep recession and gas rationing scenarios where the systemic risk should pick up. Meanwhile, given higher correlations in Crossover, the senior mezz and super senior tranches are looking cheap making these contracts our longs of choice.

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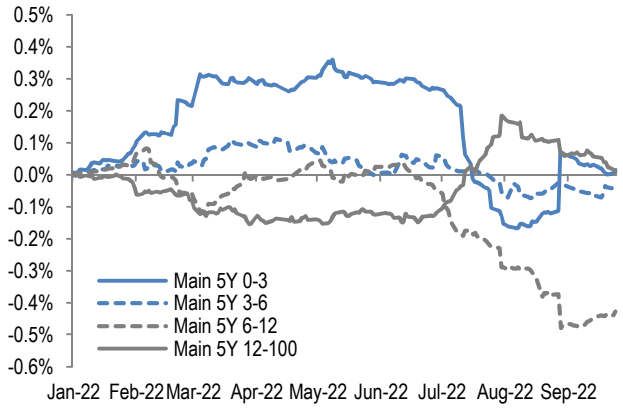
Table 11: Tranche Market Snapshot

	Main S38	IG S39	XO S38	HY S38
Equity	1,805 (55.0pt)	1,845 (53.6pt)	4,433 (77.0pt)	3,647 (63.6pt)
Jnr Mezz	592 (21.0pt)	600 (20.4pt)	1506 (34.7pt)	923 (13.7pt)
Snr Mezz	319.0	190.6	795 (12.0pt)	424 (-2.7pt)
Super Snr	68.0	39.9	246.0	121.6
Index	134.0	108.0	655	541

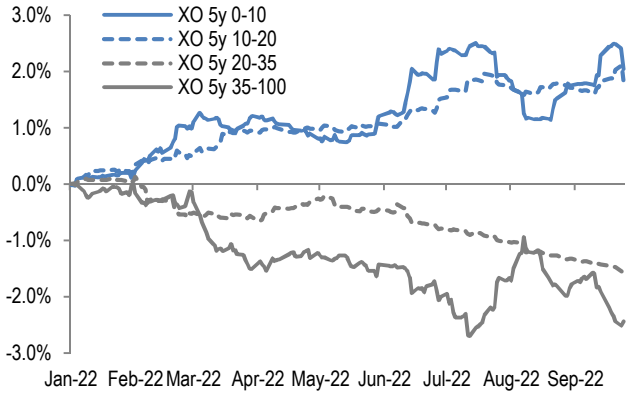
Source: J.P. Morgan.

Figure 11: Main Tranches YTD Performance vs Delta



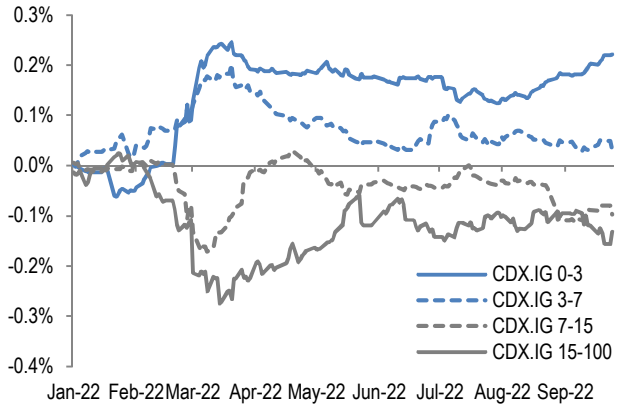
Source: J.P. Morgan.

Figure 12: Crossover Tranches YTD Performance vs Delta



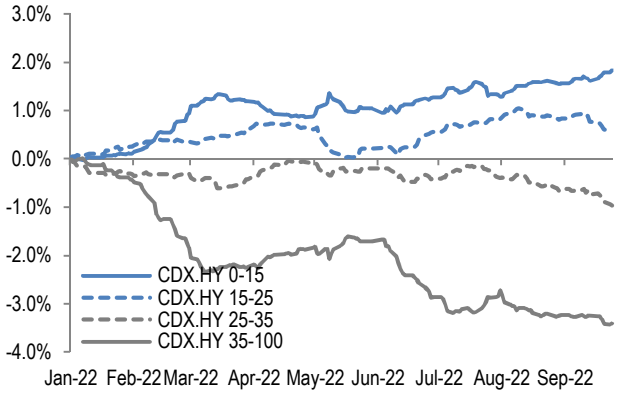
Source: J.P. Morgan.

Figure 13: IG Tranches YTD Performance vs Delta



Source: J.P. Morgan.

Figure 14: HY Tranches YTD Performance vs Delta



Source: J.P. Morgan.

Trade Ideas

- Europe Decompression via Index and Tranches (*CD Player, 12 May*)
- Long Main Super Senior v Delta (*CD Player, 12 May*)

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Credit-Equity

Similar to the beginning of the month, the European equity markets continue to outperform credit when weighted by volatility. In the US markets, both credit and equity performance has taken a hit. We think there is a possibility of risk reversal in the US credit markets and in Trade Ideas section we suggest a CDX.IG bullish seagull. Additionally, similar to the beginning of the month rVol credit equity beta continue to match implied volatility (Figure 15 & Figure 16).

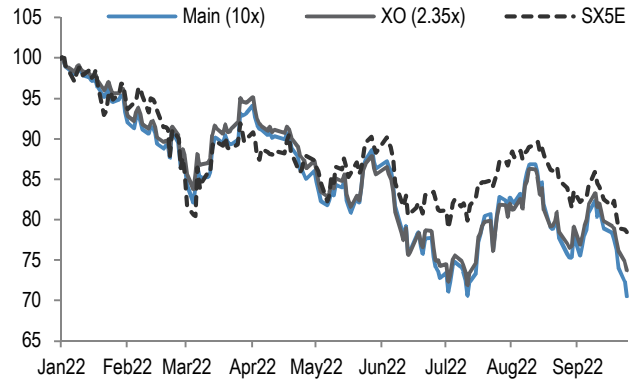
Across the board, all credit indices are showing poor performance. In Europe, SubFin continue to be the best performer. On the other hand, CDX.IG and CDX.HY performance seems to track each other and continue to see declines since the beginning of the month.

Table 12: Credit Indices volatility weighted returns relative to Equity (YTD lookback)

	Main (10x)	XO (2.35x)	SX5E	CDX.IG (11.75x)	CDX.HY (2.55x)	S&P	Nasdaq	Dow
Return (%)	-29.5	-26.3	-21.5	-19.2	-18.7	-23.0	-30.3	-19.6
Volatility	28.0	25.5	25.1	23.9	24.2	23.8	32.5	19.3
Sharpe	-1.05	-1.03	-0.86	-0.80	-0.77	-0.97	-0.93	-1.01

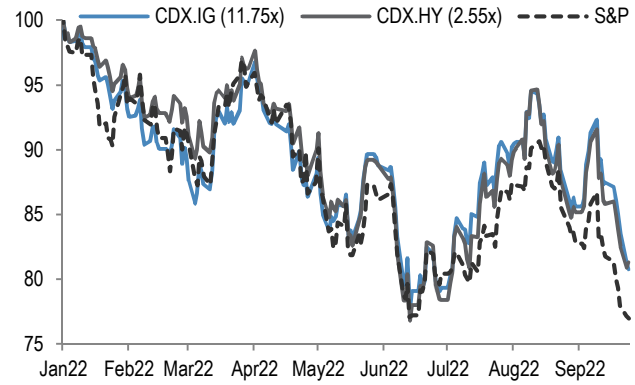
Source: J.P. Morgan.

Figure 15: Volatility Weighted iTraxx Main and XO Returns v SX5E



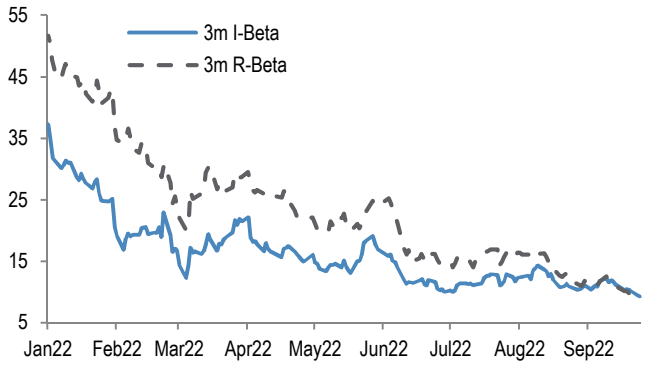
Source: J.P. Morgan.

Figure 16: Volatility Weighted CDX.IG and CDX.HY Returns v S&P



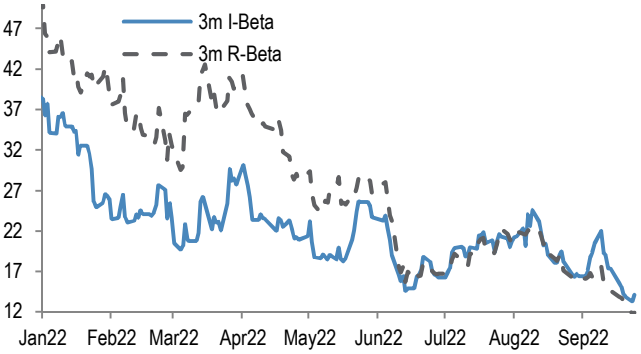
Source: J.P. Morgan.

Figure 17: Main v SX5E iVol and rVol Betas



Source: J.P. Morgan.

Figure 18: CDX.IG and S&P500 iVol and rVol Betas



Source: J.P. Morgan.

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Trade Ideas

- Cross-over into Credit (*CD Player, 8Sep*)
- RCL Credit Equity (*CD Player, 18May*)
- German Bank Credit-Equity (*CD Player, 3Feb)*
- Avis Credit-Equity (*CD Player, 21Oct*)
- Boeing Credit-Equity (*CD Player, 9Sep*)

TRS and ETFs

Credit market performance was weak over the past two weeks, with broader markets. Yields surged and rates increased along with spread widening. As a result, credit markets across ratings and region saw significantly negative total returns. In terms of scale, the performance of credit markets over the past two weeks accounts for about 25-30% of YTD negative returns.

Spread performance has been consistent with risk and liquidity. Unsurprisingly, GBP IG led the charts in negative returns after the sudden repricing in the currency though most of the underperformance was rates related with GBP IG spreads performing more or less in line with USD and EUR IG credit spreads. HY credit spreads have widened more than HG equivalents while AT1s have performed the worst.

Most TRS products continue to trade at significant discount to NAV with EUR TRS products, both IG and HY, further underperforming relative to their NAV over the past week. The large discount to NAVs for TRS contracts across credit markets has resulted in implied funding spreads for these contracts trading around their most negative level in five years - outside of the period when credit market stress owing to COVID-19 peaked.

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Table 13: Snapshot of TRS levels

	Yield, bp	OAS, bp	Dur	TRI	3M Prem, ct
EUR IG	431	224	4.6	205.1	-78
GBP IG	696	226	5.7	296.5	-20
EUR HY	854	650	3.1	186.6	-117
EUR AT1	1,151	953	2.9	143.2	-27
USD IG	599	187	8.1	273.4	-23
USD HY	931	512	4.1	283.6	-51
USD AT1	1,125	700	2.7	151.0	-13
Bund 5y	216				
UST 10y	396				

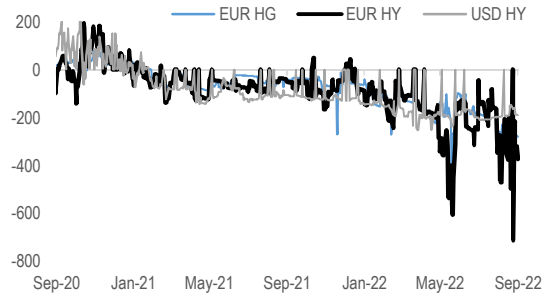
Source: J.P. Morgan.

Table 14: Performance since 13 September, 2022

	Yield, bp	Z-OAS, bp	TRI	3M
EUR IG	67	13	-3.0%	
GBP IG	159	19	-8.8%	
EUR HY	112	53	-3.0%	
EUR AT1	182	124	-4.7%	
USD IG	69	19	-5.3%	
USD HY	116	56	-4.4%	
USD AT1	161	99	-4.0%	
Bund 5y	59			
UST 10y	54			

Source: J.P. Morgan.

Figure 17: Implied funding spreads for TRS contracts continue to be elevated



Source: J.P. Morgan.

Figure 18: ….while TRS positioning is towards the shorter end of its range since YE20 for EUR IG, USD HY and USD Lev loan

	Current ($mn)	% of range	Min since YE20	Max since YE20
EUR IG TRS	-373	0%	-373	1,262
EUR HY TRS	-204	39%	-415	129
USD IG TRS	-27	64%	-1,371	716
USD HY TRS	-1,175	12%	-1,582	1,687
USD Lev loan TRS	301	14%	164	1,114

Source: J.P. Morgan.

Trade Ideas

- Cash isn't king (*Trade Ideas*)
- Long iTraxx SubFin 5y v AT1 TRS (*CD Player, 1Jun*)
- LQD v TLT. Straddles (*CD Player, 21Apr*)
- iTraxx Main 3y v QW5A TRS (*CD Player, 24Mar*)
- Long XO versus EUR AT1 TRS (*CD Player, 24Feb*)

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Municipals

- **For the week, UST yield fell 1bp in 2yrs but rose 5-11-15bps in 5-10-30yr spots on the curve. Benchmark muni yields rose by 17-17-19-17bps in 2-5-10-30yrs, underperforming UST by 18-12-8-2bps**
- **Headline PCE rose 0.3% in Aug (6.2%oya) and the core index was up 0.6% (4.9%oya), while the Univ of Mich saw mixed revisions to Sept. inflation expectation measures. Initial claims fell to 193k, the lowest level since April. The BEA continues to show that real 2Q GDP contracted 0.6% saar**
- **Our rates team acknowledges cheap valuations, but with a structural absence of demand and weak risk appetite, they stay neutral on duration. With Fed tightening cyclicals and valuations, they maintain 2s/10s flatteners**
- **Lipper reported an 8th consecutive combined weekly/monthly outflow, with $3.6bn out of muni funds, increasing the record YTD outflows to $91.5bn**
- **Next week, we expect total supply of just $4.1bn, or 39% of the 5yr equiv week avg ($10.5bn). We anticipate tax-exempt supply of $3.7bn (49% of avg), and taxable/corp cusip supply of just $0.4bn (14% of the avg)**
- **Outflows have driven trade yields on generic AA or better rated 5s higher across the curve, with the entire AA curve out to 10yrs trading from ~3.2-3.5%. The last time short and intermediate tax-exempt yields reached current levels was the 2007 tightening cycle, and the last time long end was at similar levels was around the 2013 Taper Tantrum**
- **30yr 5% AA AMT airport bonds were trading at ~5.04% this week, 2bps wider than same term AA corporate bond yields. This is also the case for long dated AA New York 3s**
- **Over recent recessions, the peak to trough price return on the 1-10yr IG muni index outpaced the 1-10 IG Corporate bond index, by an average of 4.58%. The peak to trough price return on the 8-12yr HY Muni Index outpaced the 7-10yr Corporate HY Index, by an average of 10.1%**
- **The less economically sensitive HY municipal market outperforms from a spread perspective in each of the recessions, with spreads in the corporate HY market wider by an average of 335bps over the periods shown**
- **Municipal defaults in absolute dollar amounts and defaulted debt as a percentage of outstanding market size, have been a fraction of those in the corporate bond market, with the difference particularly evident during recessionary periods, such as 2001- 2002, 2008-2009, and 2020. The relative very small rating drift compared to corporates also reflects the relative stability of municipals over the longer term**
- **Hurricane Ian landed as a Category 4 hurricane on Florida's southwest coast, causing massive flooding and destruction. The storm made landfall in South Carolina as a Category 1 hurricane on Friday, with expected flooding in the Carolinas and Georgia this weekend. Estimates of insured losses range from $20bn - $40bn, but the full extent remains to be seen**
- **Citizens Property Insurance, Florida's insurer of last resort, has seen increasing market share and growing insured values in Florida, as the**

insurance market sees rising insolvencies and players pulling away from the region. Broad assessment base, approved rate increases, and a recently passed State reinsurance package support the company's position

- **Florida Hurricane Catastrophe Fund, a State run reinsurance program, has been well managed and is financially prepared for Ian and associated loss payouts. FHCF has liquid resources of ~$16.2bn and additional bonding capacity of $16.8bn over the next two years**

HG and HY muni indices outperformed similar term corporate indices, by an average of more than 4.5% and 10%, respectively, in past recessions. Default and rating transitions show better as well in economic downturns. Outflows drive yields to decade highs as AA 1-10yr 5s yield 3.2% - 3.5% and long AA Airports and 3% NY bonds to 5%

Please join us on Monday, October 3rd at 4pm ET, for a webinar as we share our thoughts on the recent performance of the municipal market and our outlook going forward. In addition to the Municipal Research and Strategy Team, we will be joined by Jay Barry, Head of USD Government Bond Strategy, who will discuss his views on the rates market. **Please register your attendance here to receive connection details.**

This week, benchmark AAA muni curve saw a parallel shift higher with rates up 17-17-19-17bps in 2-5-10-30yrs, against a steepening UST market curve. WTD AAA tax-exempt rates underperformed the UST market by 22-18-14-9bps, in 2-5-10-30yr spots. The municipal curve remains stubbornly steep on a relative basis versus taxable fixed income, but historically flat by municipal market standards, as discussed herein.

The broader fund flow story continued to be dismal, with Lipper reporting an 8th consecutive combined weekly/monthly outflow ($3.6bn) and new record for YTD outflows ($91.5bn). Thursday also saw $459mn in outflows from muni funds, on $604mn out of mutual funds, but an encouraging 2nd consecutive day of muni ETF inflows ($145mn). The need to raise capital to meet fund redemptions was reflected in a 51% increase in WTD BWIC volume. **The wings of the curve saw the greatest selling pressure, with increases in long duration 20+yrs (+79%) and 5-10yrs (+67%).**

The outflows have driven trade yields on generic AA or better 5% coupon bonds, with the entire AA curve out to 10yrs trading from ~3.20-3.5%. In fact, the last time short and intermediate tax-exempt yields reached current levels was the 2007 tightening cycle, and the last time long end rates were at similar levels was around 2013 Taper Tantrum period (Exhibit 1).

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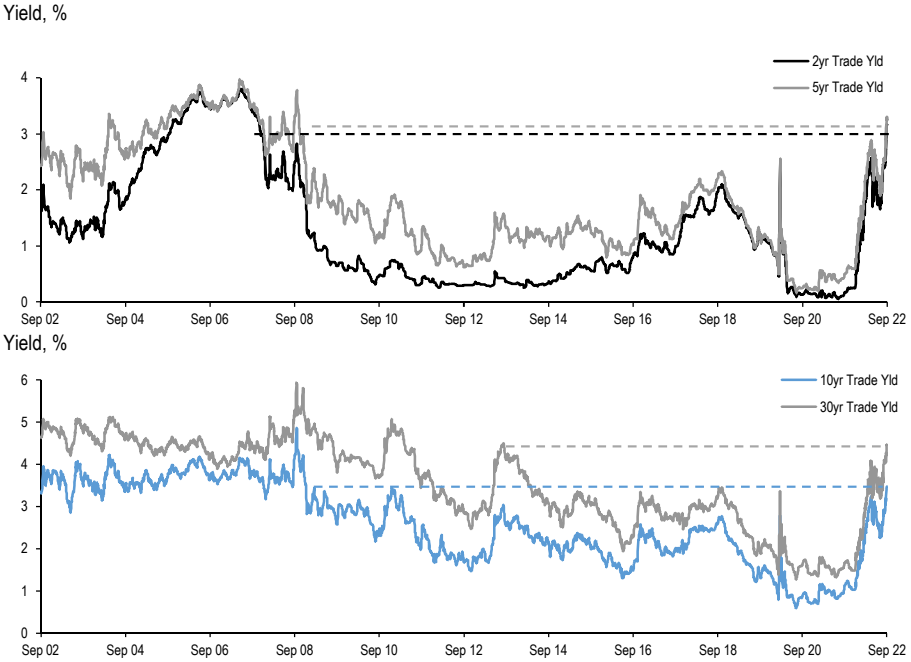
Exhibit 1: Short and intermediate tax-exempt yields are at decades highs, long tax-exempt yields are highest since 2013 Taper Tantrum

Maturity	Avg Trade Yield (%)	Highest Since
2yr	3.17	Dec-07
5yr	3.30	Nov-08
10yr	3.47	Jan-09
30yr	4.46	Sep-13



Source: MSRB, Refinitiv, J.P. Morgan. Note: as of 9/29/2022. Historical yields were using HG muni, 2022 periods yields are MSRB trade data

The aforementioned elevated yields inside of 10yrs pushed drove an increase of 43% in investment in 5-10yrs, which has typically been the focus of SMA investors. Bank and insurance buying in the longer portions of the curve with yields in the ~4.5% range for AA bonds, and 5% for spread product. **Overall, secondary purchases are up 36% vs. the 5wk average for the week. The focus from corporate based buyers drove a 54% increase in 20yr+ and a 43% jump in tax-exempt buying in 10-20yrs.**

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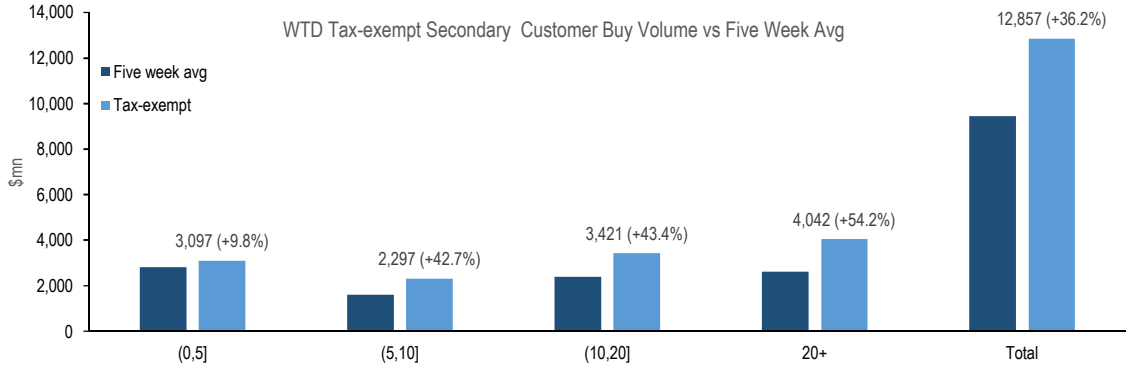
Exhibit 2: Higher yields are driving increased SMA focus in 5-10yrs, with the entire AA curve out to 10yrs trading from 3.25-3.5%, and bank and insurance buying in the longer portions of the curve with yields in the +4.5% range for AA bonds, and 5% for spread product

Tax-exempt secondary customer buy volume, $mn



Source: MSRB, J.P. Morgan

Long dated AA AMT airports and 3% coupon AA New York bonds, continue to print 5% and higher yields. This week, 30yr 5% AA AMT airport bond traded at an average yield of ~5.04%. This was 2bps wider than same term and rated corporate bonds. There are many examples of AA rated issuer transactions posted late this week including LA Airport 5s of 2052 (2031 call, AMT) (544445F87) at a 5.01%, and New York State Urban Development Corp 3s of 2050 (2030 call) (650036AQ9) at a 5.08%.

We continue to believe that the underperformance in NY and airport sector bonds is not due to elevated credit risk, but rather the confluence of elevated issuance during the current steep and sustained outflow cycle. **YTD 20yr+ NY and Airport issuance are up 15% and 46%, respectively, versus the same period in 2021 (5/20/2022 publication).** A long-short structure of tax-exempt or AMT munis, versus similar term/rated corporates, will provide significant returns when municipal fund flows revert.

Exhibit 3: 30yr 5% AA AMT airport bonds were trading at ~5.04% this week, 2bps wider than same term AA corporate bond yields

Yield, %

Source: ICE, J.P. Morgan

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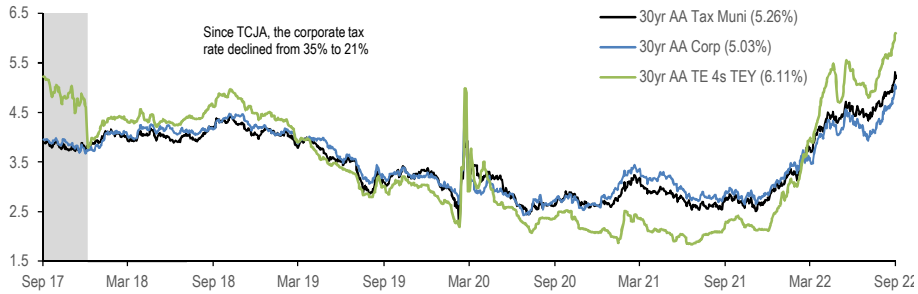
Exhibit 4: AA 5% munis are attractive versus similar term corporates for corporate based buyers, in 30yr spot. Long sub-5s and cheaper trading sectors (New York, Hsp, Hsg, AMT Airports, etc.) are yielding at same level (without the TEY multiplier) versus taxable fixed-income alternatives

		2	5	10	30
AAA	UST	4.20	4.03	3.80	3.77
	HG Muni	3.09	3.12	3.30	3.90
	HG Muni@21%	3.91	3.95	4.18	4.94
	HG Muni@40.8%	5.22	5.27	5.57	6.59
AA	AA TE 5s	3.22	3.35	3.51	4.43
	AA TAX	4.49	4.72	4.92	5.26
	AA Corp	4.61	4.73	4.79	5.03
	TEY@21%	4.08	4.25	4.45	5.61
	TEY@40.8%	5.44	5.67	5.94	7.49

Source: Refinitiv, ICE, J.P. Morgan. As of 09/30/2022

As illustrated in the line charts below, the taxable equivalent yield for banks (using a 21% tax-rate) on 30yr AA 4% tax-exempts provides 108bps of spread pick-up over similar structure corporates. Further, from a long-term price performance perspective, AA AMT airports are routinely trading at similar or higher nominal yields vs. similar term and rated corporate bonds.

Exhibit 5: The taxable equivalent yield for banks (using a 21% tax-rate) on 30yr AA 4% tax-exempts provides 108bps of spread pick-up over similar structure corporates
Yield, %



Source: ICE, J.P. Morgan. As of 9/29/2022.

Muni/UST ratios of 74-77-87% in 2-5-10yrs are moving closer to fair value, show better comparisons to taxable fixed-income, and appear to be at or near levels where the market can transact. **After this week's sell-off, the 30yr Muni/UST ratio (104%) stands out as attractive versus historical averages (Exhibit 6).**

Exhibit 6: Muni yields continued moving higher, the 30yr Muni/UST ratio (104%) stands out as attractive versus historical averages

Horizon	2Yr Muni/UST Ratio	5Yr Muni/UST Ratio	10Yr Muni/UST Ratio	20Yr Muni/UST Ratio	30Yr Muni/UST Ratio
1Yr	62.1%	66.5%	81.9%	81.5%	92.1%
3Yr	99.1%	82.4%	91.3%	90.7%	94.4%
5Yr	87.0%	78.5%	87.7%	92.6%	94.9%
10Yr	89.2%	80.6%	91.0%	99.6%	98.2%
20Yr	90.8%	83.5%	90.9%	98.0%	99.3%
30Yr	84.6%	80.7%	87.2%	93.6%	95.5%
LAST	73.6%	77.4%	86.8%	93.3%	103.6%

Source: Refinitiv, J.P. Morgan. Note: As 09/30/2022

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2-5-10-30yr AA Muni/Corp ratios of 70-71-75-88% are all cheap to historical averages. **The 30yr spot still represents the most value, with the 88% ratio now 1.9 standard deviations cheap to the trailing 3-year average (Exhibit 7).**

Exhibit 7: AA tax-exempts progressively show better value moving out on the curve versus Corporates

Horizon	2Yr AA Muni/AA Corp Ratio	5Yr AA Muni/AA Corp Ratio	10Yr AA Muni/AA Corp Ratio	20Yr AA Muni/AA Corp Ratio	30Yr AA Muni/AA Corp Ratio
1Yr	57.4%	60.2%	69.7%	67.7%	73.3%
3Yr	61.3%	57.4%	65.7%	64.0%	67.1%
5Yr	61.1%	59.4%	66.9%	68.5%	70.2%
10Yr	61.9%	61.9%	70.8%	75.3%	75.8%
LAST	69.8%	71.3%	75.1%	80.2%	88.2%

Source: ICE, J.P. Morgan. Note: As 09/29/2022

Turning to this week's economic data, August PCE price data came out above expectations and shows the trend for inflation continuing to run significantly above the Fed's 2% target. **The headline measure rose 0.3% in August (+6.2% oya) while the core index was up 0.6% (+4.9% oya).** Real consumer spending growth ticked up 0.1% in August, as the recent trend in the data has been soft, and we still think that real consumer spending is on track for a fairly modest quarterly gain in 3Q of about 1% saar (PCE inflation trends remain strong into August, Silver).

Meanwhile, there were mixed revisions to the University of Michigan survey's inflation expectation measures. The median 5-year-ahead measure was revised down from 2.8% to 2.7% between the preliminary and final September reports while the median 1-year-ahead measure was revised up from 4.6% to 4.7%. Both show some cooling in inflation expectations over the past few months, which generally has coincided with recent declines in gasoline prices (Mixed revisions for consumer inflation expectations, Silver).

In labor market data, the latest jobless claims report suggests that the labor market remains strong. Initial claims fell from 209k to 193k during the week ending September 24. **This latest print for the seasonally adjusted series was the lowest reported since April, and the data also look very upbeat before seasonal adjustment (Initial claims beat expectations, Silver).**

Following on last week's downbeat housing market indicators, the pending home sales index declined 2.0% in August. **As the index has fallen sharply throughout the year so far, it looks clear that higher rates have been weighing on activity in the housing market (Pending home sales decline again, Silver).**

The BEA continues to show that real GDP contracted 0.6% saar in 2Q, with this headline print unrevised relative to the estimate reported by the BEA late in August. While the headline print still looks weak and GDP is still shown to have contracted in both quarters in the first half of the year, there was some relatively favorable news in the revisions to the 2Q details (Real GDP still down 0.6% saar in 2Q, Silver).

Our rates strategy team acknowledges that valuations look cheap, but given a structural absence of demand and weak risk appetite, they remain neutral on duration. With Fed tightening cyclicals and valuations supporting a flatter curve, they maintain 2s/10s flatteners.

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For the week, UST yield curve bear steepened, with yields lower by 1bp in 2yrs but higher by 5-11-15bps in 5-10-30yr spots on the curve. **Benchmark muni yields rose by 17-17-19-17bps in 2-5-10-30yr spots on the curve, underperforming UST by 18-12-8-2bps in 2-5-10-30yr spots (Exhibit 8).**

Exhibit 8: Benchmark muni yields rose by 17-17-19-17bps in 2-5-10-30yr spots on the curve, underperforming UST by 18-12-8-2bps in 2-5-10-30yr spots

	HG Municipal Yields		Treasury Yields		Relative	HG Muni/Tsy Ratio	
Sector	Current (%)	1w k chg (bps)	Current (%)	1w k chg (bps)	Change	Ratio (%)	change (% pts)
2yr	3.09	17	4.20	-1	-18	74	4
5yr	3.12	17	4.03	5	-12	77	3
10yr	3.30	19	3.80	11	-8	87	3
30yr	3.90	17	3.77	15	-2	104	0

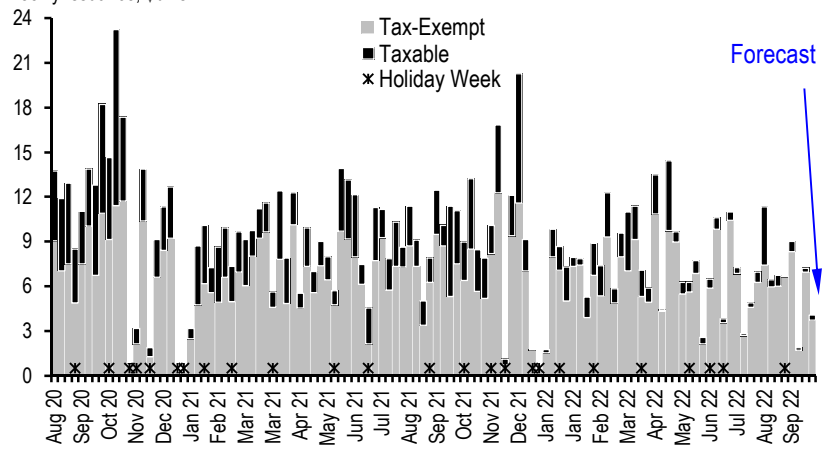
Source: Refinitiv, J.P. Morgan. Note: As of 09/30/2022

This week's total issuance of $7.2bn, included $7bn tax-exempt supply and just $0.3bn taxable/corp supply**. Next week, we expect total supply of just $4.1bn, or 39% of the 5yr equiv week avg ($10.5bn).** We anticipate tax-exempt supply of $3.7bn (49% of avg), and taxable/corp cusip supply of just $0.4bn (14% of the avg).

The largest deal next week is the City of New York, with $950mn of tax-exempt bonds. The second largest deal is also the City of New York, expected to bring $400mn of taxable bonds. The third largest issue is Spring Branch Independent School District (Harris County, TX) with $308mn of tax-exempt bonds.

Exhibit 9: We anticipate tax-exempt supply of just $3.7bn (49% of avg), and taxable/corp cusip supply of just $0.4bn (14% of the avg)

Weekly Issuance, $bn's



Source: IPREO, Bloomberg Finance L.P., J.P. Morgan

For the period ending 09/28/2022, Lipper reported combined weekly and monthly outflows of $3.6bn

Lipper reported an 8th consecutive combined weekly and monthly outflow, with $3.6bn leaving muni funds for the period ending September 28th, increasing the record YTD outflows to $91.5bn. High Yield funds recorded $1.0bn of outflows, Intermediate funds saw $586mn of outflows, and Long Term funds saw $2.4bn of outflows. **Municipal ETFs registered $296mn of outflows.**

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Weekly reporting funds were responsible for nearly all of the flows this period. Weekly reporting funds reported outflows of $3.6bn, while monthly reporting funds were responsible for just $14mn of reported outflows.

California municipal bond funds experienced $117mn of outflows, and New York municipal funds indicated $93mn of outflows.

For the period, Tax-exempt money market funds reported outflows of $782mn, while Taxable money market funds reported net inflows of $6.4bn.

Taxable Fixed Income funds reported outflows of $14.9bn, and Equity funds (US & Global) saw outflows of $11.8bn.

Excluding ETFs, all term muni funds reported $3.3bn of combined weekly and monthly outflows.

Exhibit 10: Municipal bond funds indicated combined monthly and weekly outflows of $3.6bn for the period ending 09/28/2022
Fund flows and fund assets, $mn's

	Fund flows			Fund Assets	
Type of funds	Actual	YTD Total	4-wk. avg.	Actual	4-wk. avg.
All term muni funds	-3,615	-91,474	-1,954	854,285	869,282
New York	-93	-3,204	-68	27,768	28,167
California	-117	-9,264	-120	74,082	74,932
National funds	-3,197	-71,786	-1,650	691,546	704,207
High Yield	-1,038	-15,049	-615	119,626	123,850
Intermediate	-586	-23,040	-192	200,896	203,381
Long Term	-2,413	-47,726	-1,316	486,714	497,314
Tax-exempt money market	-782	13,699	-274	98,813	100,772
Taxable money market	6,389	-154,670	3,918	4,354,344	4,336,490
Taxable Fixed Income	-14,928	-143,399	-2,283	6,014,022	6,102,511
Equity	-11,773	-17,084	-10,584	15,208,973	15,605,262

Source: Refinitiv Lipper US Flow, J.P. Morgan. Note: Combined weekly and Monthly flows

With the resumption of outflows persisting now for eight consecutive weeks, YTD outflows have reached a new record of $91.5bn, and the highest since the data series began in 1992. The current outflow cycle has further seen a record $92.5bn of net outflows over 38 weeks.

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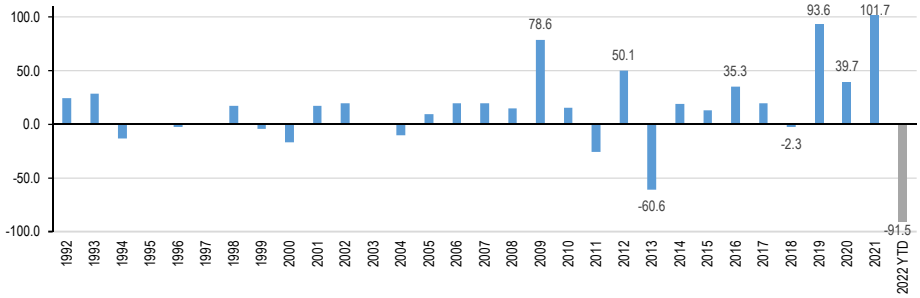
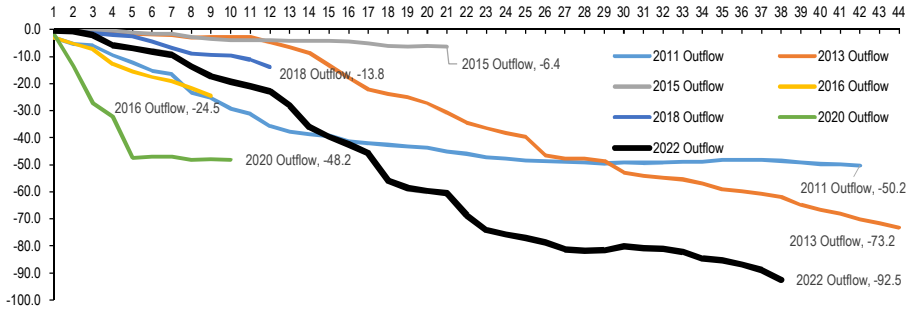
Exhibit 11: YTD outflows reached a record $91.5bn, and the highest since the data series began in 1992. The current outflow cycle has further seen a record $92.5bn of net outflows over 38 weeks

Cumulative fund flows, $bn



Cumulative outflows, $bn



Source: Refinitiv Lipper US Flow, J.P. Morgan. Note: Combined weekly and Monthly flows

In periods of recession, IG and HY Municipals outperform on both a price performance and default/ratings transition basis

The FOMC hiked rates 75bps at the September meeting, and now by 300bps year-to-date. Despite this, inflation has remained high and the labor market tight, as confirmed by Friday's above consensus print on PCE, which is now up 6.2% from a year ago and the core up 4.9%, versus the Fed's target of 2%. At the September meeting, the FOMC is about evenly split between anticipating 100bps and 125bps of tightening at the two remaining meetings this year, and our economists now expect 50bps hikes in both November and December. **JPM economists and the FOMC, look for more tightening next year, with JPM targeting a top target range to 4.5% early next year, while the median FOMC forecast points to 4.75% at the end of next year (Bring the pain, Feroli, 9/21/22).**

The more the Fed tightens (and the longer inflation stays firm), the more likely we think it is that the economy will get pushed into recession at some point. With this in mind, we examine the performance of the municipal and corporate bond IG and HY markets in past recessionary periods. In the exhibits that follow, we illustrate price performance of comparable term IG and HY muni indices, versus IG and HY corporate bond indices, in past recessions. In addition, we provide comparisons of default and rating transition data through past recessions in the respective markets.

Beginning with the performance of the market in recessionary periods, to minimize the impact of structural differences between the muni and corporate bond markets, we compare the price return of Bloomberg's 1-10yr IG Muni (LMISTR) and 1-10yr IG Corporate bond (LD06TRUU) indices. **As illustrated in the recessionary**

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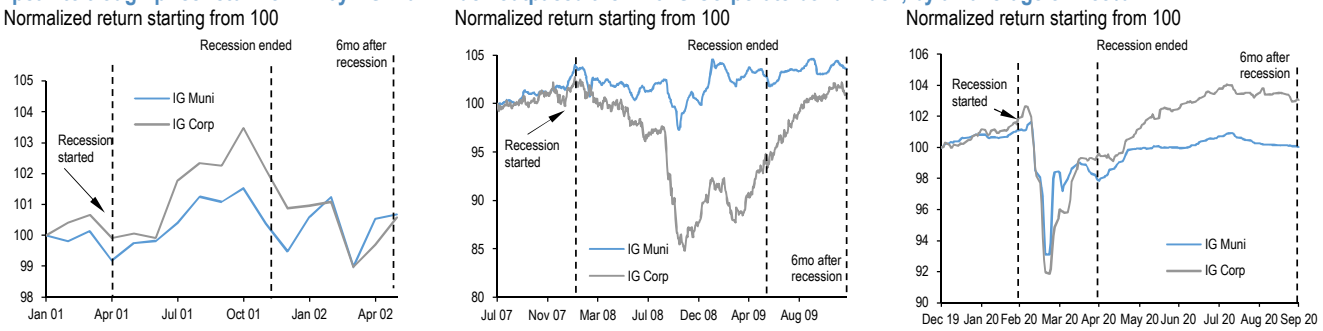
periods in the dashed line area, peak to trough, IG municipals significantly outperform IG corporates, in each of the recessionary periods below. The performance periods generally begin before the recessions, at a time when spreads in the two markets are closer to parody.

Over the recent recessions, the peak to trough price return on 1-10yr IG muni index outpaced the 1-10 IG Corporate bond index, by an average of 4.58% (Exhibit 12). It is also apparent that, sometime before the end of the recession, the market beings to look towards the recovery, and corporates handily outperform. **In the six month period after these recessions, the 1-10 IG Corporate bond index, outpaced the muni index by an average of 3.03%.**

Exhibit 12: IG municipals significantly outperform IG corporates, in each of the recessionary periods below. Over the recent recessions, the peak to trough price return on 1-10yr IG muni index outpaced the 1-10 IG Corporate bond index, by an average of 4.58%

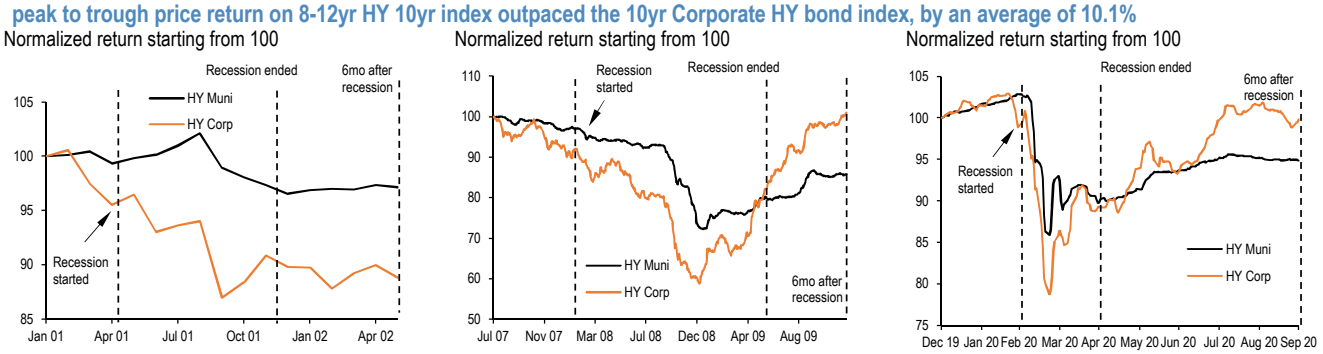


Source: Bloomberg Finance L.P., J.P. Morgan

Moving to the high-yield markets, we compare the price performance of Bloomberg's 7-12yr HY Muni Index (I14027US) to J.P. Morgan's 7-10yr High Yield Corporate bond Index, over the periods around these recessions. **Based on peak to trough performance, HY municipals significantly outperform HY corporates, in each of the recessionary periods below. Over the three recessions, the peak to trough price return on the 8-12yr HY Muni Index outpaced the 7-10yr Corporate HY Index, by an average of 10.1%.**

Similar to the IG market, it is also apparent that, sometime before the end of the recession, HY corporates begin to handily outperform. **In the six month period after these recessions, the 7-10yr HY Corporate bond index, outpaced the 8-12yr HY muni index by an average of 7.96%.**

Exhibit 13: HY municipals significantly outperform HY corporates, in each of the recessionary periods below. Over the three recessions, the peak to trough price return on 8-12yr HY 10yr index outpaced the 10yr Corporate HY bond index, by an average of 10.1%



Source: Bloomberg Finance L.P., J.P. Morgan

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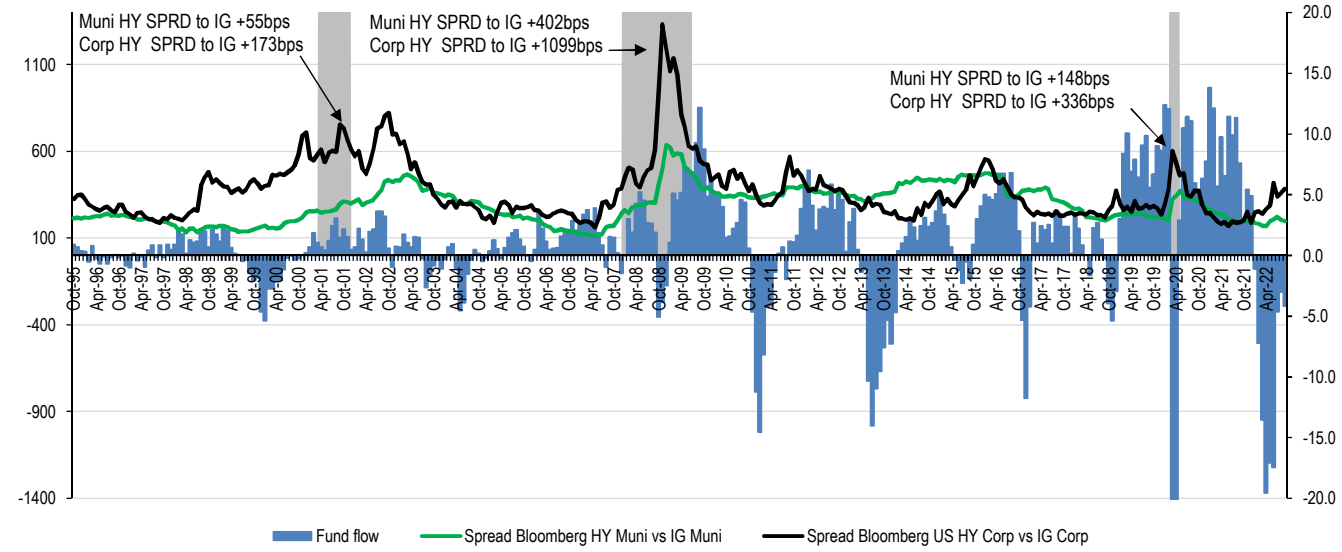
Looking at the HY muni and corporate bond markets, over these recessionary periods, from a spread perspective, we find similar conclusions. Exhibit 14 below, shows the spread of the HY muni and corporate bond markets, using the spread of the yield-to-worst on Bloomberg's HY vs. IG indices. Spreads in the highlighted recessions are from the month-end prior to the beginning of the recession, to the peak spread over the periods.

The less economically sensitive HY municipal market outperforms from a spread perspective in each of the recessions, with spreads in the corporate HY market wider by an average of 335bps over the periods shown. It is also apparent that in the expansion cycle that follows, spreads in the corporate bond market eventually collapse, at times moving through the absolute spreads in the municipal space.

Exhibit 14: The less economically sensitive HY municipal market outperforms from a spread perspective in each of the recessions, with spreads in the corporate HY market wider by an average of 335bps over the periods shown

HY over IG spread of muni and corporates, bps (left axis) Fund flow, $bn (right axis)



Source: The Federal Reserve, Bloomberg Finance L.P., Refinitiv Lipper US Fund Flow, J.P. Morgan.

Indicative of both the pressure and opportunity in the muni HY sector, Buckeye 5s of 2055 (2030 call) traded at a ~6.15% yield yesterday. These bonds have only traded at 6%+ yield a handful of times, and all in March of 2020. **We are confident that this is fund flow related as the total return performance of the tobacco index has a strong R^2 (91%) vs. HY muni fund flows. For investors with the capital and luxury of time to wait-out the outflow cycle, we believe that these bellwether tobacco bonds are an attractive long term total return opportunity** (JPM Municipal Market's Weekly, August 26, 2022).

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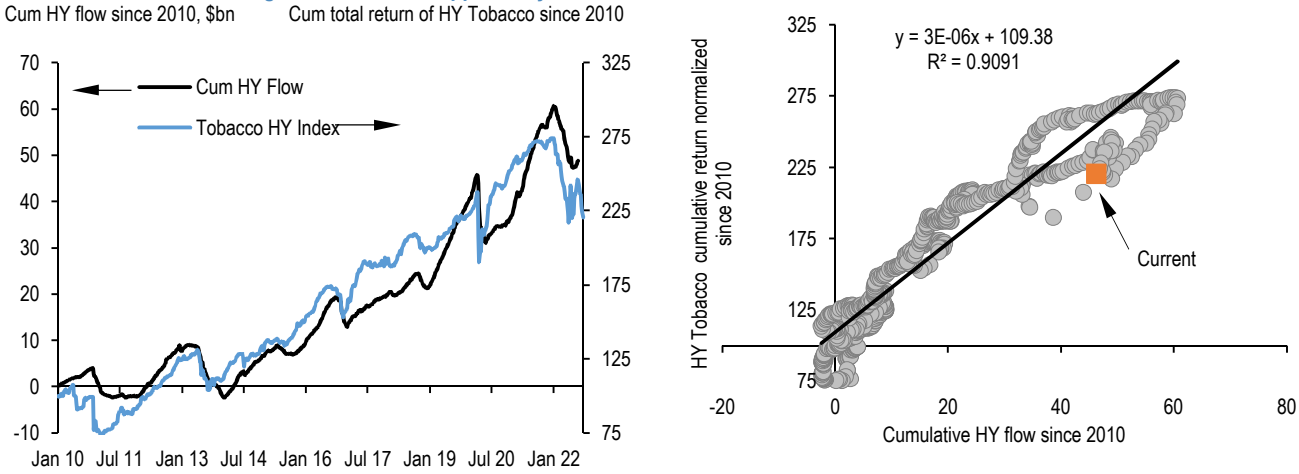
Exhibit 15: We are confident that this is fund flow related as the total return performance of the tobacco index has a strong R2 (91%) vs. HY muni fund flows. For investors with the capital and luxury of time to wait-out the outflow cycle, we believe that these bellwether tobacco bonds are an attractive long term total return opportunity

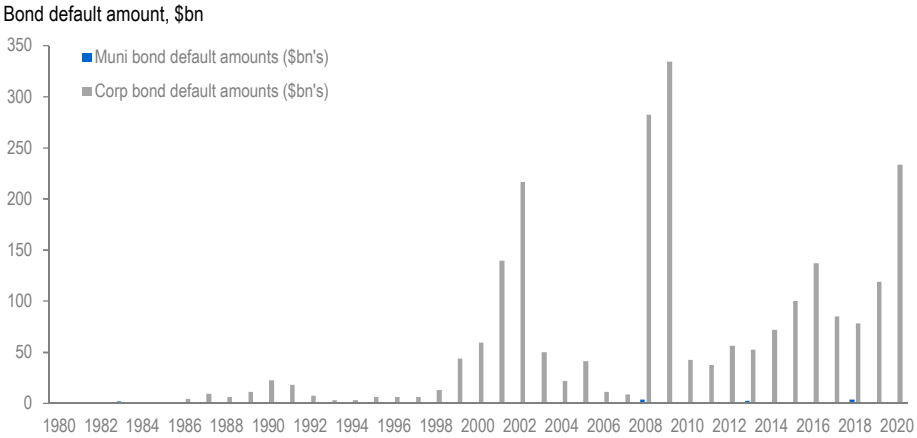


Source: Bloomberg Finance L.P., MSRB, ICE, J.P. Morgan. Note: y-axis is Buckeye bond yield, and x-axis is Bloomberg HY muni index yield

Municipal market defaults/negative ratings transitions remain substantially lower in periods of economic stress

We once again highlight that default rates in the municipal market are far lower than that of the corporate market. Looking at a historical comparison by year, we see that municipal defaults in absolute dollar amounts and defaulted debt as a percentage of outstanding market, have been a fraction of those in the corporate bond market. **The difference is particularly evident during and around recessionary periods, such as 2001- 2002, 2008-2009, and 2020, where corporate defaults spike materially higher than those in the municipal market (Exhibit 16).**

Exhibit 16: Municipal defaults in absolute dollar amounts and defaulted debt as a percentage of outstanding market size, have been a fraction of those in the corporate bond market, with the difference particularly evident during recessionary periods, such as 2001- 2002, 2008-2009, and 2020



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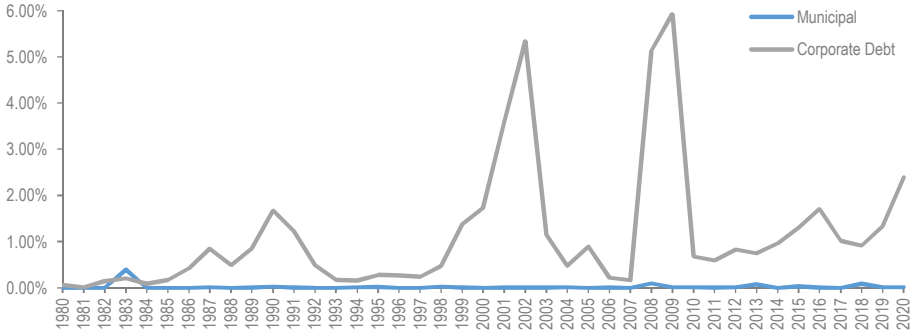
Bond defaults as a % of respective total market outstanding, %



Source: Moody's Investors Service, SIFMA, J.P. Morgan

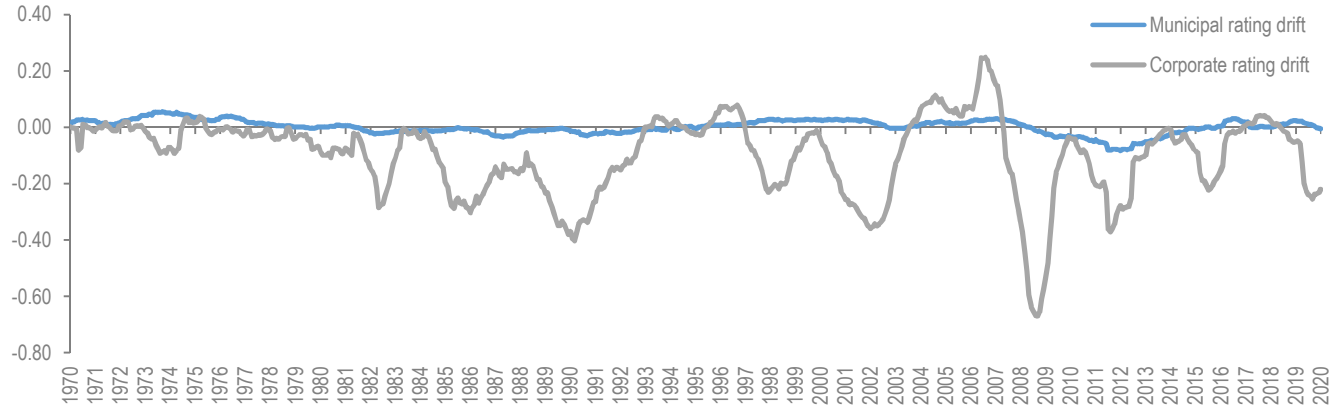
While municipal defaults are relatively rare, it is more common to see higher volumes of negative ratings actions around periods of economic downturn. **In the 2008-09 recession, the pace of downgrades increased from 2Q08 through 2011 and 2012, due to the delayed effects of the recession and economic downturn.**

Despite this, rating volatility for municipals has been significantly lower compared to rating volatility in global corporates, and in recessionary periods in particular (Exhibit 17). Corporate rating drift bottomed out at –67 notches per 100 credits during the Great Recession in 2009. **In 2020, while municipal rating drift was nearly 0, corporate rating drift was -22 notches per 100 credits, reflecting the relative resilience of municipals during the virus-related crisis.** Overall, the relative very small rating drift compared to corporates also reflects the comparative stability of municipals over the longer term.

For a detailed analysis of sector specific municipal ratings actions during periods of economic stress please see our 03-11-2022 publication (link).

Exhibit 17: Overall, the relative very small rating drift compared to corporates also reflects the relative stability of municipals over the longer term

One-year rating drift, x



Source: Moody's Investors Service, J.P. Morgan

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Hurricane Ian causes major flooding and destruction in Florida, headed toward the Carolinas this weekend

We note that the situation around Hurricane Ian and its impacts are still evolving, and what is presented below is as of the time of publication.

After a slow start, it appears that hurricane season has picked up, as Hurricane Fiona brought strong winds and floods across Puerto Rico and eastern Canada last week, and Hurricane Ian battered Florida's west coast.

On Wednesday, Ian made landfall on Florida's southwest coast as a Category 4 hurricane, and has marked the worst hurricane the state has seen in Late Wednesday afternoon, the National Hurricane Center forecast a storm surge of 12 to 18 feet above ground, but determining the actual storm surge levels that occurred will take several days.

Hurricane Ian has caused devastating flooding and destruction across Florida. As of Friday morning, nearly 2 million people were still without power in the state. Federal and state officials expect loss of life as a result of the storm, with at least 19 fatalities as of 10am Friday morning according to CNN, though the ultimate toll will not be clear for several days or even weeks.

Prior to the storm, Florida Governor Ron DeSantis declared a Florida-wide emergency and mobilized 5,000 Florida National Guard troops, with another 2,000 on standby in neighboring states. **President Biden also declared an emergency, authorizing the Department of Homeland Security and the Federal Emergency Management Agency (FEMA) to coordinate disaster relief and provide assistance to protect lives and property.**

President Biden has also declared an emergency in South Carolina, in order to mobilize federal assistance. Ian made its second US landfall in the state on Friday afternoon as a Category 1 hurricane. The National Weather Service warned that the storm could produce life-threatening floods in Georgia and the Carolinas. The governors of Georgia and South Carolina have declared states of emergency

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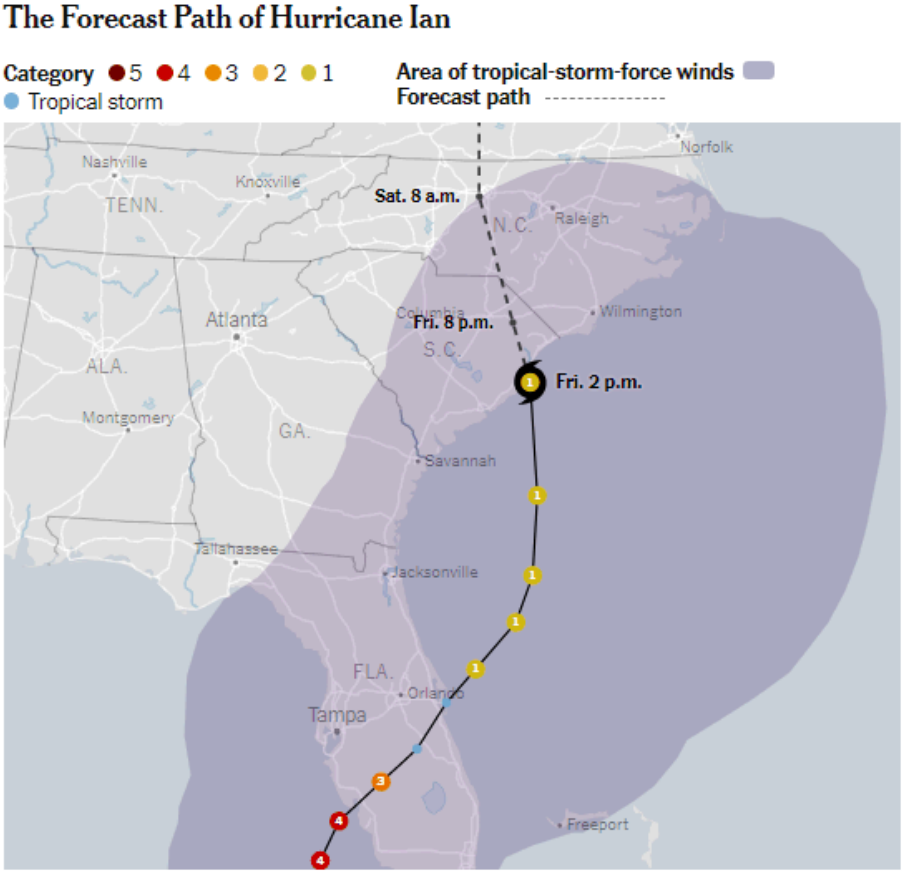
Exhibit 18: As of Friday afternoon, Hurricane Ian made landfall in South Carolina as a Category 1 hurricane



Source: New York Times, observed and forecast storm positions from NOAA. Note: Times are Eastern. As of 3pm on 9/30/2022

Ahead of the storm, there was major concern with a hurricane of this magnitude in and around Tampa, Florida, given the geography of the region makes it particularly susceptible to storm surges. A major hurricane (Category 3 or higher, winds of at least 111 mph) hasn't directly hit Tampa in over 100 years. **While Tampa appears to have been spared the worst of Hurricane Ian as it veered further south than expected, communities in its path took the full force of the storm.**

Atlantic hurricanes are a major source of catastrophe losses for the insurance industry. Exhibit 19 below highlights the top 10 costliest in terms of insured losses, from 1980 through 2021 (noted in 2021 USD). **Even so, there is minimal historical precedent for a storm of this magnitude on this path. Its path is similar to Hurricane Charley of 2004, which resulted in ~$10-15bn insurance industry loss.**

However, with unprecedented storm surges and a slower moving pace over land likely to cause major inland flooding, it is more difficult to estimate damages. As of 9/28/22, BMS Group noted that Hurricane Ian is likely to drive insurance industry losses of over $20bn (link), while estimates across a variety of sources put generally put expected insured losses between $20bn and $40bn.

Exhibit 19: Atlantic hurricanes are a major source of catastrophe losses for the insurance industry, with Hurricane Katrina seeing the highest level of insured losses in the last 40 years
Top 10 costliest hurricanes in 2021 dollars (1980-2021), $bn

Hurricane	Year	Category	Insured losses ($bn)	Total cost ($bn)
Katrina	2005	3	90	186
Irma	2017	4	37	60
Ida	2021	4	36	79
Sandy	2012	1	35	82
Harvey	2017	4	33	149
Maria	2017	4	33	107
Andrew	1992	5	31	56
Ike	2008	2	23	40
Wilma	2005	3	17	28
Ivan	2004	3	15	32

Source: AON, J.P. Morgan. Note: Losses in 2021 inflation-adjusted billions of dollars

If insured losses are as high, or higher, than currently projected, we expect we would see P&C insurers buying fewer muni bonds. This would be particularly difficult form the municipal market that is entrenched in the largest outflow cycle on record. As noted in our recent discussion of the 2Q22 Fed Flow of Funds results, P&C holdings accounted for 7% of municipal market holdings, and have seen a 34% decline (-$136bn) since the end of the credit crisis and beginning of the subsequent expansion (3Q09) (JPM Muni Markets Weekly, 9/16/2022).

Insurance availability in the Florida market is stressed, with reliance on the State's insurer of last resort rising

Six Florida market insurers have gone insolvent in 2022, faced with rising claims costs and increased costs for reinsurance, along with lawsuits and fraud in the industry. Remaining insurers, meanwhile, are opting not to renew policies. **Given the current trend, losses from Hurricane Ian may lead to additional insolvencies or an acceleration of insurers pulling out of the market.**

With fewer options for insurers, homeowners and other policyholders face limited options; they may pay higher premiums, forego coverage, or go forward with the state's insurer of last resort. **In Florida, this is Citizens Property Insurance, which is the second largest homeowners' insurance company in the state by share of direct premiums written (Exhibit 20), and the largest carrier by insured value in a number of counties in Hurricane Ian's path (Exhibit 21).**

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Exhibit 20: Citizens Property Insurance is the second largest homeowners' insurance company in the state by share of direct premiums written

Top P&C insurers in Florida by share of direct premium written, %

Homeowners	Share (%)
Universal Ins Holdings Grp	10.5
Citizens Property Ins Corp	10.1
State Farm Group	6.7
Progressive Insurance Group	4.4
USAA Group	4.1
Chubb INA Group	2.7
Allstate Insurance Group	2.6
American International Group	2.1
Tokio Marine US PC Group	1.8
Farmers Insurance Group	1.5

Commercial Property/MP	Share (%)
Chubb INA Group	5.4
Zurich Ins US PC Group	5.1
Citizens Property Ins Corp	5.0
Assurant P&C Group	5.0
American International Group	3.9
Liberty Mutual Insurance Cos	3.4
CNA Insurance Companies	3.2
Nationwide Group	2.6
Progressive Insurance Group	2.5
Markel Corporation Group	2.2

Source: Bloomberg Finance L.P., J.P. Morgan. Data as of 12/31/2021

Exhibit 21: Citizens is also the largest carrier by insured value in a number of counties in Hurricane Ian's path

Top P&C insurers in at-risk counties by total insured value, $mn

Collier County	Total Insured Value ($bn)
Federal Insurance Company	8.1
Privilege Underwriters Reciprocal Exchange	6.5
Olympus Insurance Company	3.8
AIG Property Casualty Company	2.8
Citizens Property Insurance Corporation	2.7
Ace Insurance Company Of The Midwest	2.6
Castle Key Indemnity Company	2.0
Vault Reciprocal Exchange	1.9
Cypress Property & Casualty Insurance Com	1.4
QBE Insurance Corporation	1.1

Lee County	Total Insured Value ($bn)
Citizens Property Insurance Corporation	5.6
Castle Key Indemnity Company	2.4
Cypress Property & Casualty Insurance Com	2.1
Homeowners Choice Property & Casualty In	2.0
United Services Automobile Association	1.7
Privilege Underwriters Reciprocal Exchange	1.6
Federal Insurance Company	1.6
Olympus Insurance Company	1.5
Typtap Insurance Company	1.5
Truck Insurance Exchange	1.4

Charlotte County	Total Insured Value ($bn)
Citizens Property Insurance Corporation	2.3
Olympus Insurance Company	1.1
Cypress Property & Casualty Insurance Com	0.8
Typtap Insurance Company	0.7
United Services Automobile Association	0.6
Homeowners Choice Property & Casualty In	0.5
Safepoint Insurance Company	0.4
Southern Fidelity Insurance Company	0.2
Castle Key Indemnity Company	0.2
Amica Mutual Insurance Company	0.2

Monroe County	Total Insured Value ($bn)
Citizens Property Insurance Corporation	8.8
Federal Insurance Company	0.5
AIG Property Casualty Company	0.5
Privilege Underwriters Reciprocal Exchange	0.5
Homeowners Choice Property & Casualty In	0.3
Ace Insurance Company Of The Midwest	0.1
Vault Reciprocal Exchange	0.04
American Bankers Insurance Company Of F	0.03
Berkley Insurance Company	0.02
The Cincinnati Insurance Company	0.02

Sarasota County	Total Insured Value ($bn)
Olympus Insurance Company	6.8
Citizens Property Insurance Corporation	5.8
Homeowners Choice Property & Casualty In	1.8
Typtap Insurance Company	1.4
Federal Insurance Company	1.2
Privilege Underwriters Reciprocal Exchange	1.1
Vault Reciprocal Exchange	1.0
Castle Key Indemnity Company	0.9
United Services Automobile Association	0.9
Cypress Property & Casualty Insurance Com	0.8

Hillsborough County	Total Insured Value ($bn)
Citizens Property Insurance Corporation	12.4
United Services Automobile Association	5.8
Olympus Insurance Company	3.3
Castle Key Indemnity Company	3.2
Lighthouse Property Insurance Corporation	3.0
Federal Insurance Company	2.7
USAA Casualty Insurance Company	2.2
Cypress Property & Casualty Insurance Com	2.1
Privilege Underwriters Reciprocal Exchange	2.0
Southern Fidelity Insurance Company	1.6

Source: Bloomberg Finance L.P., J.P. Morgan. Data as of 3/31/2022. Note: Not an exhaustive list of impacted counties

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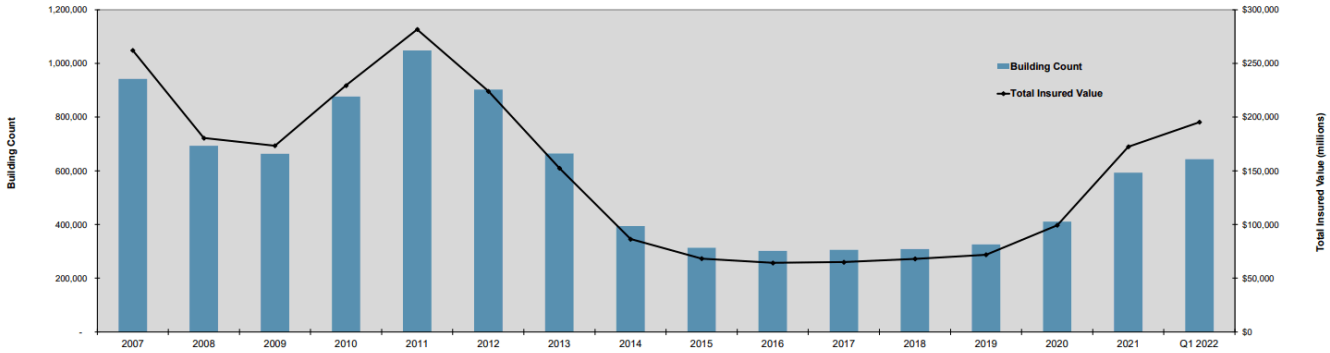
Citizens saw their market share in the homeowners insurance market increase from 6.7% in 2020 to 10.1% in 2021, highlighting the shift in the market away from the region. We further see this trend in Exhibit 22 below, with its building count more than doubling since its lowest levels in 2016, while total insured value tripled over the same period. **From 2021 year end to 1Q22, total insured value increased 13.3% (Exhibit 22).**

According to an interview with the Florida Phoenix (link), a spokesman for Citizens said the company is now carrying 1,065,000 policies, with tens of thousands added in the past few weeks alone.

Citizens Property Insurance does not have a maximum payout limit, and all of its exposure is in the State of Florida, with high levels of concentration in the South and Southwest coast in Ian's path (Exhibit 23). As such, Citizens is particularly exposed to the damage and resulted costs and insured losses from a major hurricane such as Ian.

Exhibit 22: Citizens has seen an increase in policies and insured value in recent years, with total insured value up 13.3% from year-end 2021 to 1Q22 alone

Building count, # (left axis); Total insured value, $mn (right axis)



Source: Citizens Property Insurance Corporate Analytics Business Overview – March 31, 2022 report

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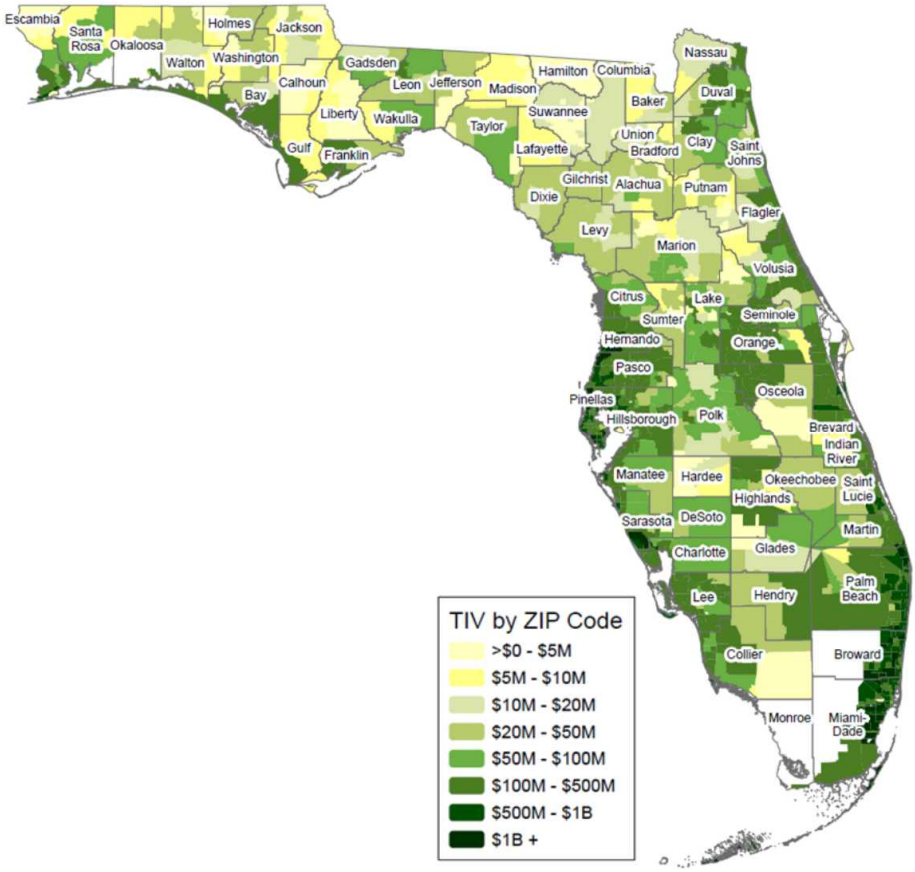
Exhibit 23: All of Citizens Property Insurance's exposure is in the State of Florida, with high levels of concentration in the South and Southwest coast in Ian's path

Total insured value by zip code, $mn



Source: Citizens Property Insurance Corporate Analytics Business Overview – March 31, 2022 report

In the event of a hurricane and deficit of financial resources to pay claims from policyholders, Citizens may issue post-event bonds secured by Emergency Assessments. **The emergency assessment may be levied up to the greater of 10% of direct written premium or 10% of the deficit per annum in each of its three accounts (Personal Line, Commercial Line, and Coastal) to cover deficits that may arise as the result of storm damage.**

Citizens benefits from a broad assessment base of almost all property and casualty insurable activity in the State of Florida, as all those who are insured would be required to pay the Emergency Assessment captured on their premium statement.

In March, the company also requested approval for new rate hikes from the Office of Insurance Regulation (OIR) in order to strengthen its financial position. The increases were granted by the OIR in June, though at lower levels than requested. **Beginning September 1st, for new policies and renewals, rates from Citizens increased 6.4% to 10.7%, depending on the policy type. While the rate increases will financially benefit the company, it may exacerbate the existing availability and affordability problem currently facing the Florida insurance market.**

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Positively, Florida also passed a major reform package into law in May 2022 in an effort to stabilize the property insurance market in the state. The reforms (Senate Bills 578, 2-D and 4-D) target forces which are driving up costs for insurers and reducing access to private insurance for property owners. **The State will bear the upfront costs, the largest of which is a new $2bn temporary reinsurance program - the Reinsurance to Assist Policyholders (RAP), which will be funded by general reserves of the State. We note that it will likely take at least a year for the legislation to take effect.**

The passage of this legislation is, of course, a positive for the state's insurance industry, but will also be a credit positive for the State and local governments of Florida. **Affordable property insurance will make real estate and communities more accessible and attractive, and thus strengthen tax bases.**

The Florida Hurricane Catastrophe Fund provides re-insurance for the State's P&C insurers. Further, FHCF is well-capitalized and prepared to handle anticipated insurer losses

In 1993, the state of Florida created the Florida Hurricane Catastrophe Fund (FHCF) in response to Hurricane Andrew, which resulted in 11 insurer insolvencies and caused over $15bn in insured losses (1992 dollars, not adjusted for inflation). The FHCF tax-exempt state trust fund that provides reimbursement to residential property insurers for a portion of their Florida catastrophic hurricane losses. The FHCF was created to improve availability and affordability of residential property insurance. Since its creation, the fund has paid reimbursement to insurers for hurricane losses for five hurricane seasons (Exhibit 24).

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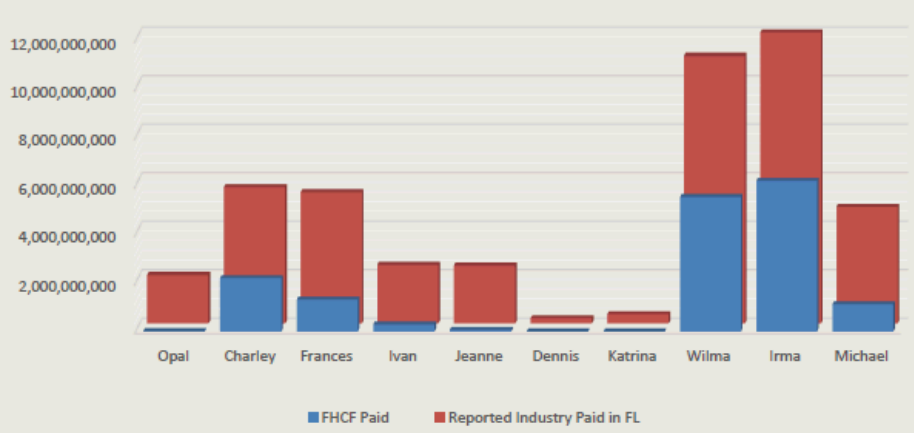
Exhibit 24: FHCF has paid reimbursement to insurers for hurricane losses for five hurricane seasons

Historical losses, $



Name	Landfall Date	FHCF Paid	Reported Industry Paid in FL	% of Reported Paid In FL
Opal	10/4/1995	13,000,000	2,000,000,000	0.7%
Charley	8/13/2004	2,192,817,892	5,625,724,216	39.0%
Frances	9/5/2004	1,313,617,491	5,417,759,217	24.2%
Ivan	9/16/2004	283,602,146	2,427,257,517	11.7%
Jeanne	9/25/2004	69,262,522	2,388,968,705	2.9%
Dennis	7/10/2005	390,401	215,323,989	0.2%
Katrina	8/25/2005	149,992	387,786,477	0.0%
Wilma	10/23/2005	5,535,455,718	11,038,707,351	50.1%
Irma	9/10/2017	6,200,947,503	14,450,214,889	42.9%
Michael	10/10/2018	1,113,957,476	4,810,951,171	23.2%

As of 12/31/2021. Does not reflect the total value of Florida residential losses, as insurers do not report losses to the FHCF after they have reached their coverage limit.

Source: FHCF 2021 Annual Report

Participation in FHCF is required by law for insurers that underwrite residential property insurance in the state (with exceptions for insurers with state exposure below a threshold). Each insurer pays an actuarially determined premium, based on location, type, construction of insured properties, along with other accepted factors in accordance with standards set forth by the Florida commission on hurricane loss projection methodology. FHCF provides a similar service as private re-insurance, but is able to charge lower rates and costs to policyholders and insurers due to its non-exempt tax status, and lack of a profit factor in its actuarial calculations and risk models.

Participating insurers can choose between three coverage levels of 45%, 75%, and 90% when it executes its FHCF reimbursement contract. **In the event of a severe storm or hurricane, FHCF covers the chosen percentage of the insurer's hurricane losses in excess of the insurer's 'retention' (similar to a deductible).** For the 2022-2023 contract year (June 1, 2022 – May 31, 2023), the aggregate retention amount for all insurers is $8.5bn; this reflects the maximum loss across all participating insurers before FHCF covers the remaining costs. That said, each insurer's coverage begins after the respective retentions are met.

There is a maximum $17bn payout for FHCF for this contract year; the fund is not obligated to cover losses beyond that point in a given annual period. This

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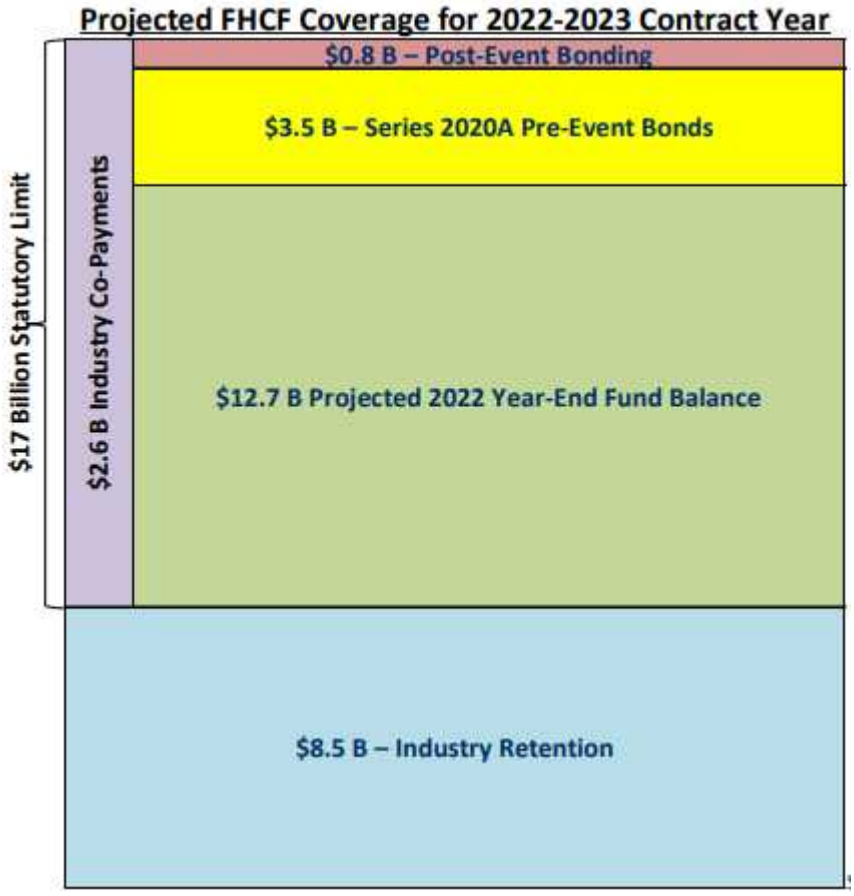
payout cap provides protection from potential extensive losses in the event of major destruction. Projected available total liquid resources are approximately $16.2bn, comprised of $12.7bn of projected year-end fund balance and $3.5bn of pre-event bond proceeds (Exhibit 25).

Exhibit 25: Projected available total liquid resources are approximately $16.2bn, comprised of $12.7bn of projected year-end fund balance and $3.5bn of pre-event bond proceeds
Estimated FHCF coverage for the 2021-2022 contract year



Source: FHCF May 2022 Bonding Capacity Report. Note: FHCF has a $17bn statutory limit, which includes a 10% allowance for loss adjustment expenses

Per its May 2022 Bonding Capacity Report, FHCF expects it would take industry losses of ~$25.6bn (based on the detailed company approach) to exhaust the FHCF's projected liquid resources of $16.2bn. Beyond this, the fund estimates ~$8bn of bonding capacity in the 12 months after an event, and an additional $8.8bn in the 12 months thereafter.

While Hurricane Ian is unique in its path and its impacts, expected insured losses in the $20-40bn range are within the capacity of FHCF as described above. When compared to historical losses, Hurricane Andrew, which hit Florida in 1992, resulted in insured losses of ~$31bn when adjusted for 2021 inflation. **Given the FHCF was created in response to the impacts to the insurance industry from Andrew, and the fund is now well capitalized, we expect the P&C insurance industry to be more resilient to losses compared to 1992, with reimbursement from the fund supporting their financial positions.**

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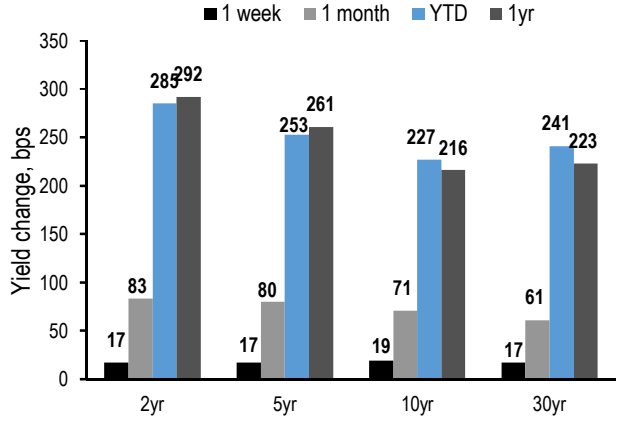
Markets at a glance

YTD, yields across the HG curve have rose by 285-253-227-241bps in 2-5-10-30yr spots



Source: Refinitiv, J.P. Morgan

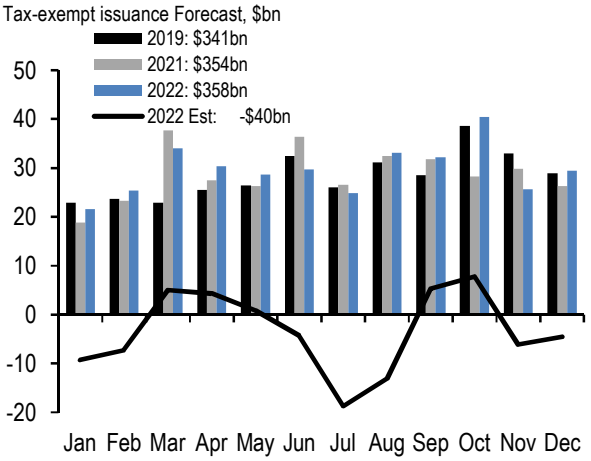
Our updated forecast projects a 10yr municipal high-grade yield of 3.20% by year-end 2022

Yields, %

Treasury	9/30/2022	1m ahead Forecast	4Q22 Forecast	1Q23 Forecast	2Q23 Forecast	3Q23 Forecast
2yr	4.20	4.20	4.45	4.30	4.20	4.05
5yr	4.03	4.00	4.00	3.90	3.85	3.80
10yr	3.80	3.80	3.75	3.65	3.60	3.55
30yr	3.77	3.75	3.65	3.60	3.60	3.60
AAA Tax-exempt						
2yr	3.09	2.90	3.00	2.80	2.65	2.40
5yr	3.12	2.95	3.05	2.85	2.70	2.50
10yr	3.30	3.30	3.20	3.00	2.85	2.80
30yr	3.90	3.90	3.80	3.65	3.55	3.50
AAA / TSY Ratios						
2yr	74%	69%	67%	65%	63%	59%
5yr	77%	74%	76%	73%	70%	66%
10yr	87%	87%	85%	82%	79%	79%
30yr	103%	104%	104%	101%	99%	97%

Source: Bloomberg Finance L.P., Refinitiv, J.P. Morgan

We project 2022 tax-exempt gross supply of $358bn with net supply of -$40bn



Source: Bloomberg Finance L.P., Refinitiv, J.P. Morgan

Tax-exempt munis are leaning rich vs AA corporates in 2-5-10yrs

AAA tax-exempt yield / Treasury yield (%)	Last	Min	Max	Mean	St. Dev.	Z-score 3yr	Z-score 5yr
2yr	74.2	51.4	75.5	61.5	6.6	-0.3	-0.2
5yr	78.4	60.9	79.6	68.7	4.5	-0.1	0.0
10yr	88.1	77.6	92.9	83.3	3.0	-0.1	0.0
30yr	105.6	92.1	105.6	98.9	3.5	0.5	0.6

AA corporate yield - AA tax-exempt yield (bp)	Last	Min	Max	Mean	St. Dev.	Z-score 3yr	Z-score 5yr
3-5yr	145	122	164	145	11	*2.2*	*1.8*
5-7yr	154	127	172	149	10	*2.4*	*2.0*
7-10yr	142	109	157	130	10	*2.6*	*2.2*
25yr	92	75	120	97	10	-0.5	-0.4

values over last 3 months displayed, as of , Z-Score +/- 1.5 Rich / Cheap

yy indicates rich yy indicates cheap

Source: TRACE, Refinitiv, J.P. Morgan

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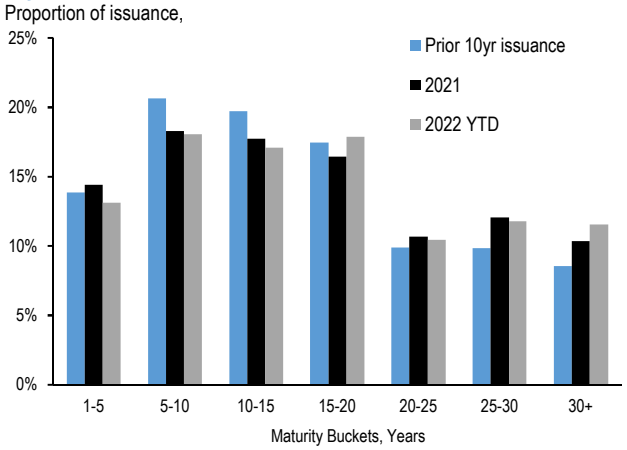
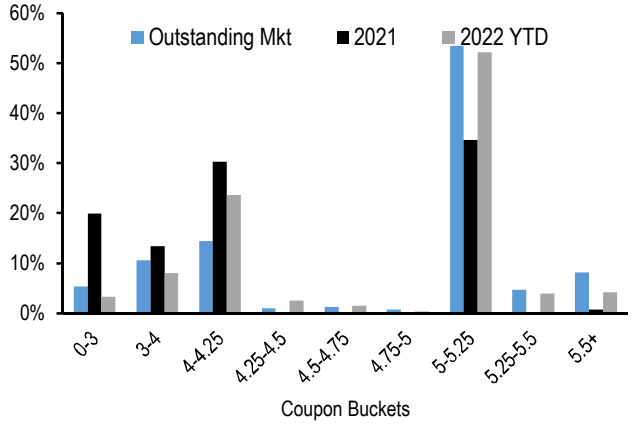
YTD Issuance and Trading Trends

30yr+ maturities are about 12% of YTD issuance



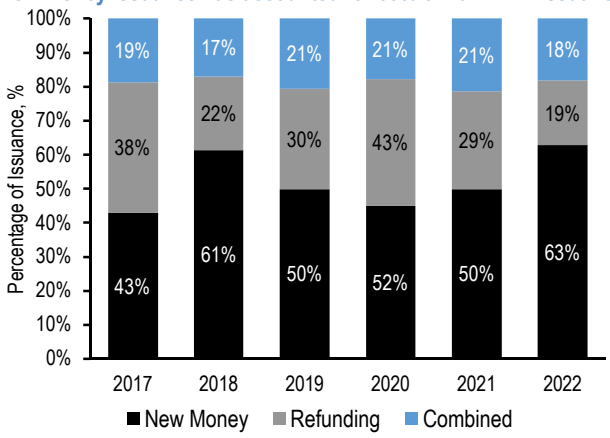
Note: Long term, fixed coupon, tax-exempt bonds only
Source: ICE, J.P. Morgan

32% of YTD issuance has been in 3-4.25% coupon bonds



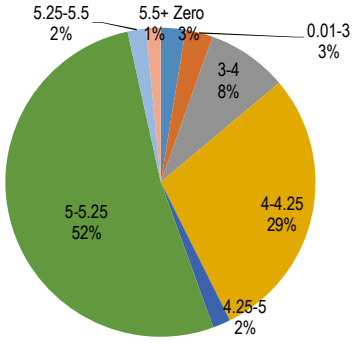
Note: Long term, fixed coupon, tax-exempt bonds only
Source: ICE, J.P. Morgan

New Money issuance has accounted for 63% of 2022 YTD issuance



Note: Long term bonds only
Source: Bloomberg Finance L.P., J.P. Morgan

3% to 4% coupon bonds have accounted for 8% of YTD trading volume



Note: Long term, fixed coupon, tax-exempt bonds only
Source: MSRB, ICE, J.P. Morgan.

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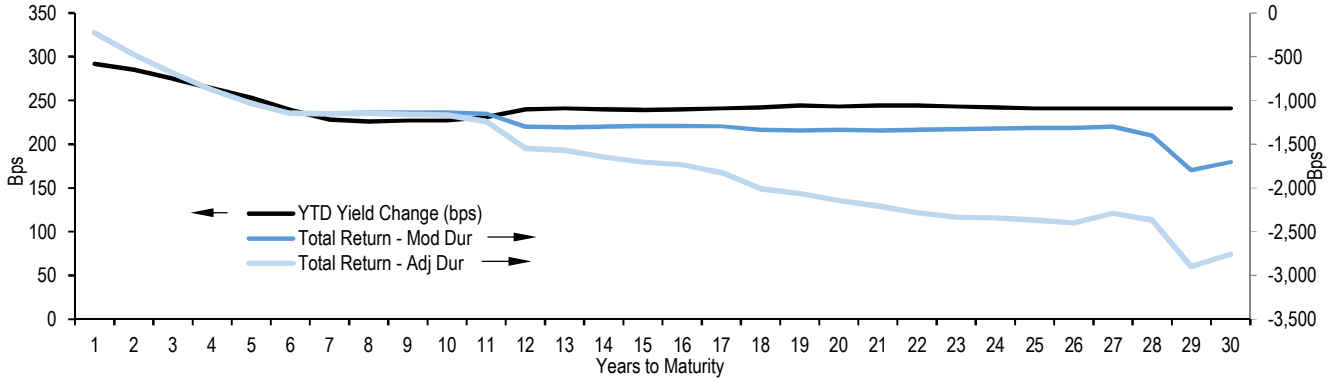
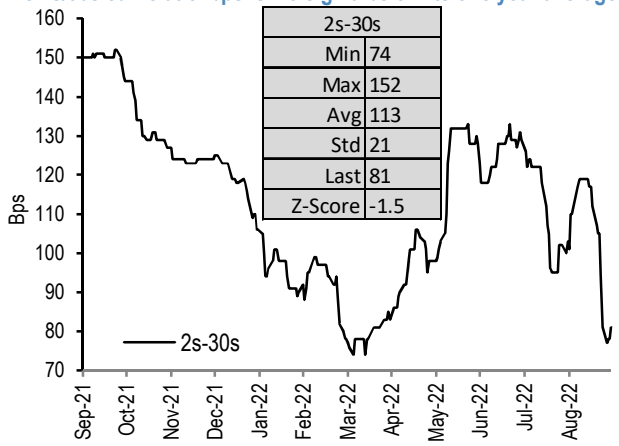
YTD Total return and Curve Spreads

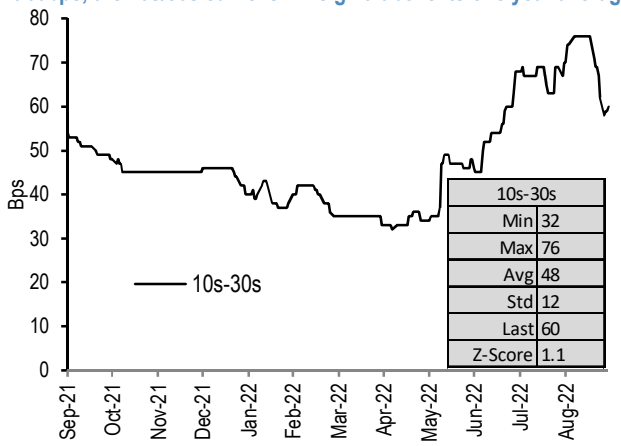
YTD total returns are negative across the curve



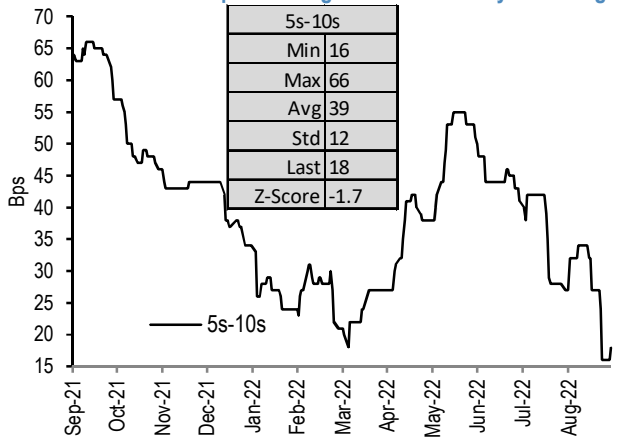
The 2s/30s curve at 81bps is 1.5 sigma below its one year average



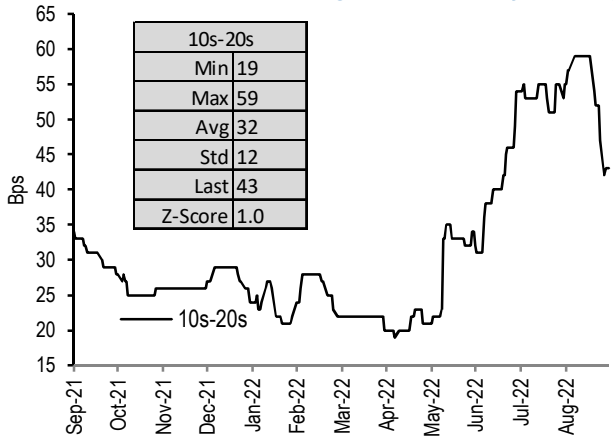
At 60bps, the 10s/30s curve is 1.1 sigma above its one year average



The 5s/10s curve at 18bps is 1.7 sigma below its one year average



At 43bps, the 10s/20s curve is 1.0 sigma above its one year average



Source: Refinitiv, Bloomberg Finance L.P., J.P. Morgan. Note: As of 09/29/2022

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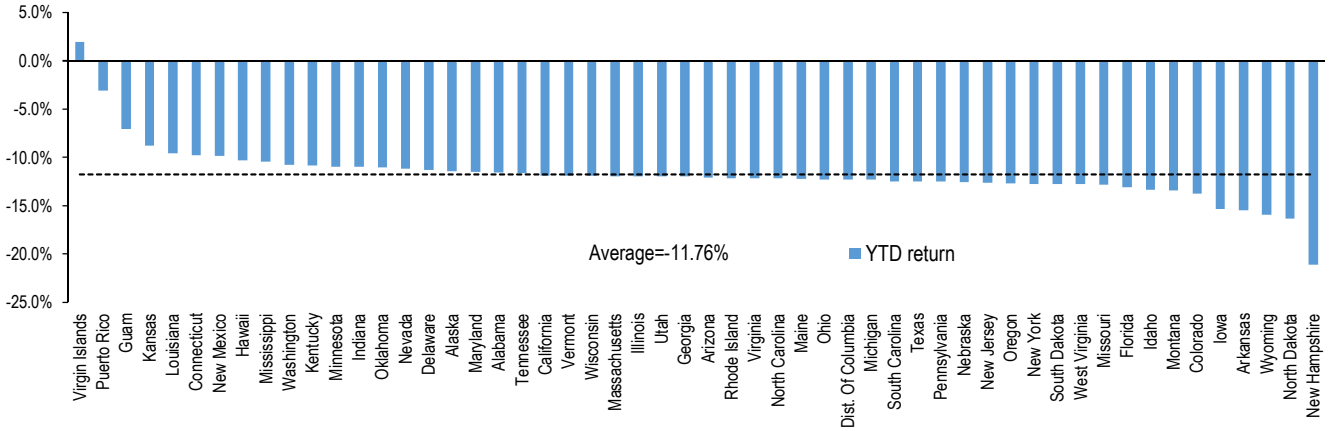
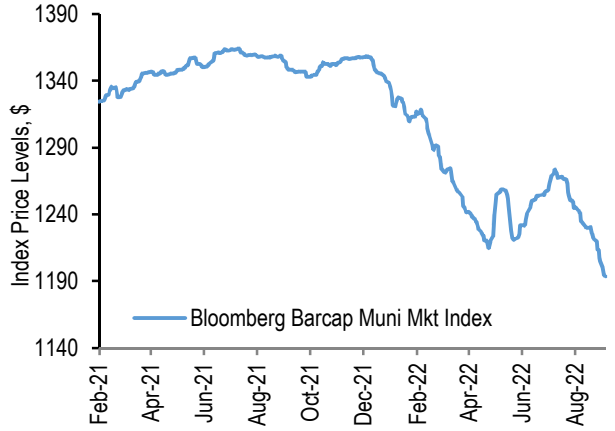
Total return by State and Sector

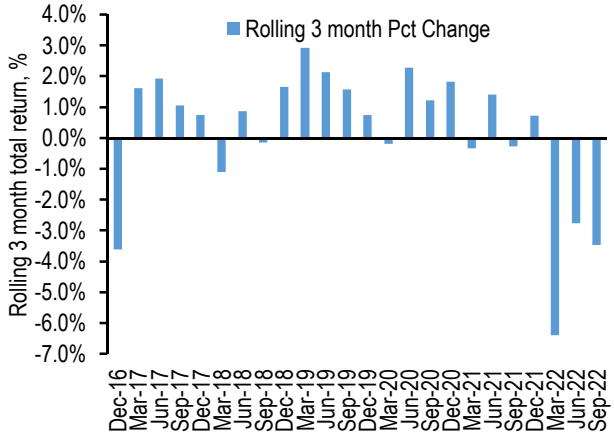
The average YTD total return for Bloomberg municipal bond indices by state is -11.76%



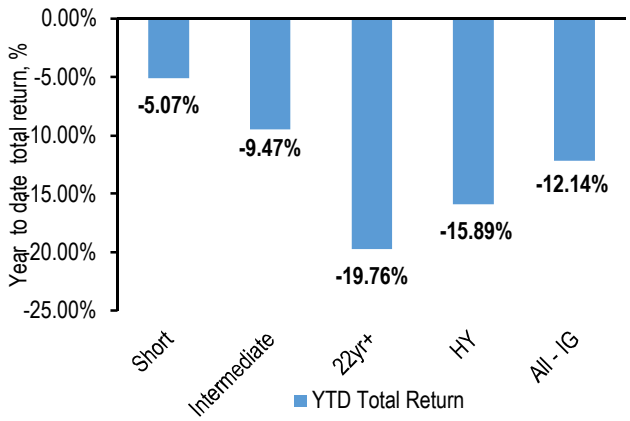
The broader municipal market has returned -12.14% YTD



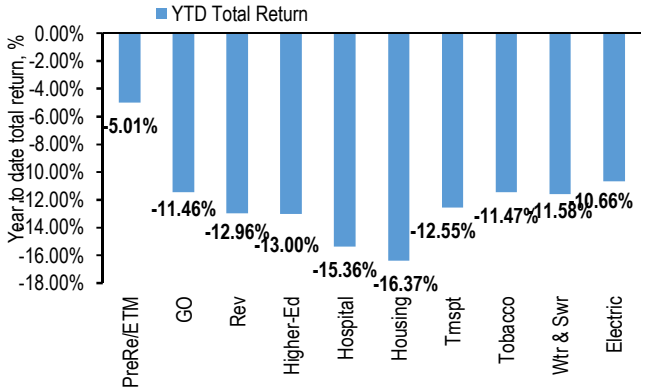
The Bloomberg Muni index has decreased 3.47% in the three months between 6/30/2022 and 9/30/2022



The Short term index has the highest YTD returns of -5.07%



The PreRe/ETM sector exhibits the best YTD return of -5.01%



Source: Bloomberg Finance L.P., J.P. Morgan, as of 09/29/2022. Note: Total return calculated as the percentage change in index levels. Bloomberg Municipal bond total return indices used

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Glossary of Publication Topics

Sector Overviews

- Airports: 04/13/2018, 04/20/2018, 09/06/2019, 05/15/2020, 06/11/2021, 01/10/2022, 02/11/2022, 08/19/2022
- Bond Insurance: 03/18/2016, 6/23/2017, 10/27/2017
- Double-Barreled Bonds: 05/13/2016, 6/24/2016, 05/13/2022
- Energy: 01/29/2016, 02/05/2016, 02/19/2016, 04/23/2021, 02/11/2022
- Environmental, Social, Governance (ESG) Bonds:06/01/2018, 10/22/2021
- Housing: 1/20/2017, 10/20/2017, 07/26/2019, 08/02/2019, 12/10/2021
- Healthcare: 04/29/2016, 1/27/2017, 3/03/2017, 1/19/2018, 1/28/2019, 2/1/2019, 01/24/2020, 10/16/2020, 01/22/2021, 08/27/2021, 06/03/2022, 06/10/2022
- Higher-Education: 5/19/2017, 9/14/2018, 07/24/2020, 07/16/2021, 08/05/2022
- High/Enhanced Yield: 9/8/2017, 9/15/2017, 7/27/2018, 8/03/2018, 05/08/2020, 05/15/2020, 06/05/2020, 06/12/2020, 08/28/2020
- Local Government Credit: 4/07/2017, 11/10/2017, 06/18/2021, 10/29/2021
- Low beta/defensive: 08/25/2017
- Pensions: 11/03/2017, 10/12/2018, 10/19/2018, 10/26/2018, 04/05/2019, 04/17/2019, 08/16/2019, 08/23/2019, 10/18/2019, 07/30/2021, 11/05/2021
- Pre-paid Gas: 3/10/2017, 06/07/2019
- Pre-refunded bonds: 1/29/2018
- Primary and secondary (K-12) education: 11/02/2018
- Public Power/Electric: 2/09/2018, 02/19/2021, 07/09/2021, 03/18/2022
- U.S. Ports: 04/15/2016, 05/20/2016, 11/18/2016, 04/06/2018, 10/15/2021
- Secured Credits: https://jpmm.com/research/content/GPS-1700072-008/07/2015, 09/18/2015, 09/25/2015,
- Special Tax Bonds: 05/01/2015, 07/31/2015, 09/25/2015, 01/29/2016, 5/5/2017, 09/29/2017, 5/18/2018, 04/26/2019, 05/03/2019, 01/31/2020, 05/20/2022
- States: 11/13/2020, 2/5/2021, 09/24/2021, 02/25/2022, 03/04/2022, 07/08/2022
- SIFMA/Floating Rate notes: 03/15/2016, 08/26/2016, 3/31/2017, 4/28/2017, 04/13/2018, 9/14/2018, 02/20/2019, 04/26/2019
- Taxable bonds: 5/11/2018, 12/14/2018, 03/29/2019, 05/31/2019, 09/27/2019, 04/03/2020, 07/10/2020, 07/24/2020, 08/14/2020, 08/21/2020, 10/16/2020, 10/23/2020, 08/06/2021, 10/22/2021, 11/12/2021, 04/08/2022, 06/03/2022, 07/29/2022, 08/05/2022
- Toll Roads: 9/16/2016, 5/12/2017, 09/15/2017, 07/10/2020, 07/15/2022
- Tobacco: 11/20/2015, 12/15/2017, 7/27/2018, 03/29/2019, 05/07/2021, 08/19/2022, 08/26/2022
- Water & Sewer: 05/06/2016, 6/24/2016, 02/02/2018, 12/17/2021

Specific Credits

- Assured Guaranty: 03/18/2016, 6/23/2017, 10/27/2017
- National Public Finance Guarantee Corporation: 6/23/2017, 10/27/2017
- Chicago & related credits: 9/23/2016, 2/10/2017, 04/13/2018, 10/25/2019, 02/07/2020, 06/12/2020, 10/23/2020, 02/19/2021, 10/01/2021, 05/13/2022
- Detroit: 05/14/2021
- Dallas/Fort Worth & related credits: 6/02/2017, 08/04/2017, 04/13/2018
- Houston & related credits: 02/19/2016, 6/02/2017, 08/04/2017, 09/01/2017
- New York City & related credits: 03/31/2015, 6/17/2016, 9/9/2016, 8/17/2018, 08/23/2019, 06/12/2020, 05/21/2021, 04/08/2022, 04/22/2022, 05/20/2022
- Puerto Rico: 3/17/2017, 5/5/2017, 5/12/2017, 6/02/2017, 09/22/2017, 5/04/2018, 9/7/2018, 02/22/2019, 04/26/2019, 05/10/2019, 05/17/2019, 02/21/2020, 03/05/2021, 04/30/2021, 01/28/2022, 02/04/2022, 03/11/2022, 03/18/2022
- Santee Cooper / MEAG / Westinghouse Bankruptcy: 3/17/2017, 3/24/2017, 3/31/2017, 9/21/2018, 9/28/2018
- State of Alaska: 07/28/2017, 06/15/2018
- State of California & locals: 03/02/2018, 03/09/2018, 06/08/2018, 02/05/2021, 04/29/2022, 05/06/2022
- State of Connecticut & locals: 8/18/2017, 5/18/2018, 10/4/2019, 05/01/2020
- State of Illinois & related credits: https://jpmm.com/research/content/GPS-1857744-09/29/2017, 7/13/2018, 1/11/2019, 03/01/2019, 05/31/2019, 07/26/2019, 02/28/2020, 05/01/2020, 02/19/2021, 05/20/2022
- State of New York: 5/16/2014, 09/29/2017, 2/8/2019
- State of New Jersey & locals: 6/17/2016, 8/05/2016, 3/24/2017, 3/31/2017, 4/27/2018, 5/04/2018, 03/15/2019, 05/01/2020, 05/21/2021, 06/04/2021
- State of Pennsylvania: 7/15/2016
- State of Texas & locals: 08/04/2017, 08/16/2019, 03/12/2021, 03/19/2021
- State of Wisconsin & locals: 03/15/2015, 9/30/2016
- U.S. Virgin Islands & Guam: 07/15/2016, 07/29/2016, 2/24/2017

Defaults/Distressed Munis

- Chapter 9/Distressed locals: 10/31/2014, 11/21/2014, 06/30/2015, 07/08/2016, 04/26/2019, 01/31/2020, 02/07/2020
- Defaults: 11/20/2015, 06/24/2016, 07/08/2016, 08/26/2016, 8/24/2018, 04/23/2020, 07/24/2020, 09/24/2021, 02/11/2022, 03/11/2022, 07/29/2022
- GO Security/Statutory Lien: 10/2/2015, 11/4/2016

Tax Policy

- AMT: 03/16/2018, 5/18/2018, 10/19/2018, 06/14/2019, 04/01/2022, 05/20/2022
- De minimis: 03/02/2018, 06/14/2019, 03/25/2022, 05/06/2022, 05/13/2022
- State and local tax (SALT) deduction cap: 1/26/2018, 7/6/2018, 4/16/2021, 10/22/2021
- Tax-exemption: 3/1/2013, 3/15/2013, 05/20/2016
- Tax swapping: 1/24/2014, 10/28/2016, 2/09/2018, 10/12/2018, 11/15/2019
- Tax reform: 2/28/2014, 12/16/2016, 4/28/2017, 5/05/2017, 6/16/2017, 09/29/2017, 10/272017, 11/03/2017, 11/10/2017, 1/26/2018

Other Federal Public Policy

- COVID-19: 03/06/2020, 03/13/2020, 03/20/2020, 03/27/2020, 04/03/2020, 04/17/2020, 06/26/2020, 07/31/2020, 01/08/2021, 02/26/2021, 09/17/2021
- CARES Act: 04/03/2020, 01/21/2022
- American Rescue Plan: 03/26/2021, 04/09/2021, 05/21/2021, 01/21/2022
- Inflation Reduction Act: 08/05/2022, 08/19/2022, 08/26/2022
- Infrastructure spending: 04/09/2021, 05/14/2021, 07/16/2021, 08/06/2021, 09/17/2021, 01/21/2022
- Fed facilities/Municipal Liquidity Facility: 8/11/2020
- Regulatory reform/High-Quality Liquid Assets: 04/01/2016, 07/14/2017, 03/09/2018, 8/24/2018
- Health-care reform/Medicaid funding: 3/10/2017, 3/17/2017, 3/24/2017, 6/23/2017, 07/28/2017, 11/22/2017
- Trade war and tariffs: 04/06/2018, 06/07/2019

Periodic Updates

- Coupon performance: 04/08/2016, 9/21/2018, 03/15/2019, 06/14/2019, 06/28/2019, 10/18/2019, 08/20/2021, 04/01/2022, 08/26/2022, 09/09/2022
- Federal Reserve Flow of Funds: 01/10/2020, 03/27/2020, 06/26/2020, 09/25/2020, 12/11/2020, 06/18/2021, 09/24/2021, 12/17/2021, 03/18/2022, 06/10/2022, 09/16/2022
- Make-Whole Call: 04/22/2016, 07/12/2019
- Outflow cycle: 10/29/2021, 11/05/2021, 03/11/2022, 04/01/2022, 04/29/2022, 05/06/2022, 05/13/2022, 09/16/2022
- Short call bonds: 08/28/2015, 12/11/2015, 03/04/2016, 3/3/2017, 3/10/2017, 08/04/2017, 03/26/2021, 10/01/2021, 06/10/2022
- Taxable advance refunding: 09/13/2019, 10/25/2019, 10/16/2020, 10/01/2021
- Total Return & Performance: 05/13/2016, 06/10/2016, 5/19/2017, 07/07/2017, 11/10/2017, 02/23/2018, 1/4/2019, 01/10/2022, 04/08/2022
- Sovereign Government Relative Value: 09/09/2016, 01/19/2018, 8/17/2018
- State and Local revenues: 04/13/2018, 9/21/2018, 1/11/2019, 05/17/2019, 06/21/2019, 09/20/2019, 01/10/2020, 04/17/2020, 09/11/2020, 09/18/2020, 11/13/2020, 01/29/2921, 06/18/2021, 11/12/2021, 03/25/2022, 09/09/2022
- Appropriation debt: 8/19/2016

Municipal Market Outlook

- 2H22 Outlook: 06/25/2022
- 2022 Outlook: 11/23/2021https://www.jpmm.com/research/content/GPS-3193647-0

Weekly Updates

- Economic and policy updates
- Next week's supply
- Fund flows
- Comparisons versus Corporates, Treasuries, and Global Sovereigns
- Full year gross and net-supply estimates
- Interest rate forecast

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Emerging Markets

- **In EM fixed income, we stay MW GBI-EM local rates and UW EMBIGD and CEMBI.**
- **EM bond flows were -$4.2bn (-1.9% of weekly AUM, down from -$2.6bn)**

Weekly summary

EM credit widened materially over a week that marked the largest EM retail hard currency bond outflow since March 2020. EMBIGD STW at 569bp, CEMBI Broad STW at 397bp and GBI-EM GD yield at 7.36% widened by 67bp, 41bp and 48bp, respectively compared to a 4bp widening in 10y UST yields. On the flows side, EM bond fund outflows increased for the third consecutive week as hard currency outflows were the largest since March 2020 (-$3.1bn, from -$1.6bn), and local currency outflows were the largest in 10 weeks (-$1.1bn, from -$997mn). Outflows were equally across non-ETFs (-$2.1bn) and ETFs (-$2.1bn). Within local currency bond funds, outflows were mainly from EM ex-China funds (-$904mn) but also from China-focused funds (-$245mn). Within local currency bond funds, outflows were mainly from EM ex-China funds (-$904mn) but also from China-focused funds (-$245mn). On the hard currency side, outflows were mainly from 'broad' EM bond funds (-$2.9bn) but also from EM AsiaXJ funds (-$192mn). For more details, see EM Flows Weekly.

EM Fixed Income Focus: It goes on and on and on and on

The pressures from higher US yields are accumulating. The challenge for EM assets from a market that keeps repricing the Fed has entered a new phase. We highlighted last week that rising US real yields – as markets price an increasingly restrictive Fed – are likely to lead to further weakness for EM assets. With 10y US real yields another 26bp higher over the week at 1.37% (which is now at the last 25 year average), EM currencies have depreciated another 2.2% versus the USD, EM spreads have widened 57bp for EMBIG / 33bp for CEMBI and local bond yields are 30bp higher. This is an under-reaction to the move in US real yields, even though in the short-term US rates could be overshooting and our EM FX Risk Appetite Index is nearing oversold levels which may signal a pause in this sell-off. We remain UW EM FX and EM credit. We stay MW in EM local rates as EM inflation/monetary policy cycles are diverging, although bottom-up we are short duration in vulnerable markets.

EM crisis management is prioritizing currency intervention. Our preference for being UW EM FX rather than rates is also being driven by the signals from EM central banks. Having started their hiking cycles before the Fed – and with resolve to tackle inflation – EM central banks are starting to signal the end of hiking cycles (Brazil, Hungary, and Turkey as an exception cut). In countries where external or fiscal financing needs are present, falling behind the Fed leaves currencies vulnerable at this stage in the cycle, as the UK experience demonstrates. EM currencies will therefore likely remain under pressure and EM central banks have taken to managing the weakening through FX reserve depletion. But this is likely about speed control, rather than changing direction, and many USD/EM pairs have hit new highs this week. The currencies that should manage better are those where central banks have

hiked sufficiently to control inflation (i.e. positive real rates) and where external imbalances are less exposed by EM's ongoing fund outflows.

The continuous tightening of financial conditions starts to reach even the safer pockets of EM fixed income. Our primary focus all year has been the relentless pressure on EMs from the policy-induced tightening of financial conditions by the Fed. That tightening has been a catalyst to expose significant vulnerabilities in a range of financial assets, most notably starting from crypto/meme stocks to global equities. EM HY sovereigns have seen the largest fall in prices since the 2008 GFC. As the Fed continues to follow its hawkish stance, however, tighter financial conditions are weighing even on the 'safer' pockets of EM fixed income. The more vulnerable components of the asset class, like local currency assets and HY sovereign credit, were the first pillars to fall as UST 10y real rates went into positive territory in June/July. With real rates approaching 1.5%, IG sovereign credit and Asia FX have started to feel the strain and currently have higher weekly volatility than at any point over the last two years.

Depreciation pressures on currencies are being masked by aggressive interventions in the currency markets; these have limits. Back in July, we documented how EM central banks were becoming increasingly pro-active in currency markets, either via interventions or policies limiting depreciation. While that bout of pressure in July eased as markets rallied into August, a new round of pressure is building. EM central banks this year have continued to lose reserves at a rapid pace. This is particularly the case in Asia, where BoP pressures mount against a context of relatively contained inflation. Central banks have little desire to aggressively hike rates in this environment, and instead are running down FX reserves or using other measures to limit the FX fallout. The problem is portfolio outflows continue and, given we think the buyers' strike for EM bonds is unlikely to end anytime soon, persistent FX selling is not viable for the most part.

This week the PBOC announced several new measures to contain CNY weakness. CNY has been weakening through technically significant levels against the US dollar (7.00), and a stronger fixing bias has not stopped depreciation pressures. For China, this is taking place against a healthy trade surplus. The need to step up FX market interventions this week via FX forward reserve ratios, after stronger fixings did not stem depreciation suggests the forces for depreciation are pervasive. Accordingly, for countries with weaker external conditions, fewer buffers and low risk premium, the chances of more serious stress are rising, particularly as the buyers' strike for EM bonds looks set to continue. For markets with healthy external positions and manageable external debt, interest rates will need to rise to resolve the pressures (mostly in Asia). But for those with weaker current account balances and macro imbalances (Latam's commodity exporters – including CLP, COP and PEN) a more significant reckoning could be in the offing.

Over the past two weeks EM central banks indicated limited desire to increase the interest rate differential against the US. After last week's rate decisions by several EM central banks, none of which hiked by greater than the Fed's recent 75bp hike, this week Hungary hiked its policy by 125bp to 13.0%, but indicated the end of its cycle, while Czechia kept rates are on hold; Colombia hiked 100bp to 10% lower than consensus expectations of a 150bp hike. Whether this will be durable remains to be tested, but, with policy rates in the mid-teens, markets are willing to give some benefit of doubt. In Hungary's case we fade it by paying FRAs, while in Brazil we agree with the move and are both OW rates in the GBI-EM model portfolio and have been recommending DI Jan26 receivers.

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Overall, the short-end of yield curves sold-off significantly less in EM than in UST since August. We have discussed in multiple occasions the importance of UST yields in driving those of EM. In a model with inflation, core real rates help to explain around 3/4 of the movements in 2y yields across EM. Cooling inflation in both local terms and in the US have certainly contributed their share to the more dovish shift in EM central banks taking-off pressure of the short-end of EM curves. The divergence between these short-end EM yields and those of UST is not concentrated to Brazil and Hungary. Although GBI-EM weighted 2y IRS sold-off 50bp since early August, these moves stand far behind the 140bp move in 2y UST, resulting in one of the largest divergences between these two series in the post-COVID.

For further details, see *EM Fixed Income Focus*, J. Goulden et al, 29 Sep 2022.

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Forecasts & Analytics

Interest Rate Forecast

	30-Sep-22	30-Oct-22	31-Dec-22	31-Mar-23	30-Jun-23	30-Sep-23
	Actual	1m ahead	4Q22	1Q23	2Q23	3Q23
Rates		Forecast	Forecast	Forecast	Forecast	Forecast
Effective funds rate	3.08	3.10	4.10	4.35	4.35	4.35
SOFR*	2.96	3.05	3.80	4.30	4.30	4.30
3-month Libor	3.75	4.20	4.50	4.55	4.55	4.55
2-year T-note	4.21	4.25	4.45	4.30	4.20	4.05
3-year T-note	4.24	4.30	4.30	4.20	4.15	4.05
5-year T-note	4.04	4.05	4.00	3.90	3.85	3.80
7-year T-note	3.94	3.95	3.95	3.85	3.80	3.75
10-year T-note	3.80	3.80	3.75	3.65	3.60	3.55
20-year Treasury	4.07	4.10	3.80	3.70	3.70	3.70
30-year T-bond	3.76	3.75	3.65	3.60	3.60	3.60
Curves						
2s/5s	-17	-20	-45	-40	-35	-25
2s/10s	-40	-45	-70	-65	-60	-50
2s/30s	-44	-50	-80	-70	-60	-45
5s/10s	-24	-25	-25	-25	-25	-25
5s/30s	-28	-30	-35	-30	-25	-20
10s/30s	-4	-5	-10	-5	0	5

* SOFR forecasts reflect trailing 1m moving average as of the indicated date

Source: J.P. Morgan

Swap spread forecast*

	Actual	2Q22
	30-Sep-22	31-Dec-22
SOFR Swap Spread (bp)		
2-year	-1	10
5-year	-23	-25
10-year	-23	-25
30-year	-69	-40

*Forecast uses matched maturity spreads

Source: J.P. Morgan

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Economic forecast

%ch q/q, saar, unless otherwise noted

	22Q1	22Q2	22Q3	22Q4	23Q1	23Q2	23Q3	2021*	2022*	2023*
Gross Domestic Product										
Real GDP	-1.6	-0.6	2.0	1.5	1.0	0.8	0.8	5.7	0.3	0.7
Final Sales	-1.8	1.3	2.3	0.9	0.9	0.8	0.8	4.8	0.7	0.8
Domestic Final Sales	1.3	0.2	-0.4	2.0	2.0	2.0	1.9	5.4	0.8	1.9
Business Investment	7.9	0.1	0.6	4.5	4.0	3.8	3.3	5.0	3.2	3.6
Net Trade (% contribution to GDP)	-3.1	1.2	2.7	-1.2	-1.3	-1.2	-1.2	-0.5	-0.1	-1.1
Inventories (% contribution to GDP)	0.2	-1.9	-0.3	0.7	0.1	-0.1	-0.1	0.9	-0.3	-0.1
Prices and Labor Cost										
Consumer Price Index	9.2	10.5	5.4	1.2	3.1	3.5	3.0	6.7	6.5	3.1
Core	6.5	6.6	5.9	3.1	3.3	3.3	2.7	5.0	5.5	2.9
Employment Cost Index	5.8	5.4	4.6	4.5	4.2	4.2	4.2	3.9	5.1	4.2
Unemployment Rate (%, sa)	3.8	3.6	3.6	3.7	3.8	3.9	4.1	-	-	-

* Q4/Q4 change

Source: J.P. Morgan

Financial markets forecast

Credit Spread	Current	YE 2022
10Y swap spread*	-23	-25
FNMA 30yr 5% Front Tsy OAS	46	35
10Y AAA 30% New Issue CMBS**	142	140
3Y AAA Credit Cards fixed**	42	55
JULI portfolio spread*†	190	175
High Yield Index*†	585	625
Emerging Market Index†	569	425
Corporate Emerging Market Index (Broad)*†	397	375

	Current	YE 2022
S&P 500 (level)†	3586	4800
Brent ($/bbl)	88	102
Gold ($/oz)	1663	1720
EUR/USD	0.98	0.95
USD/JPY	145	147

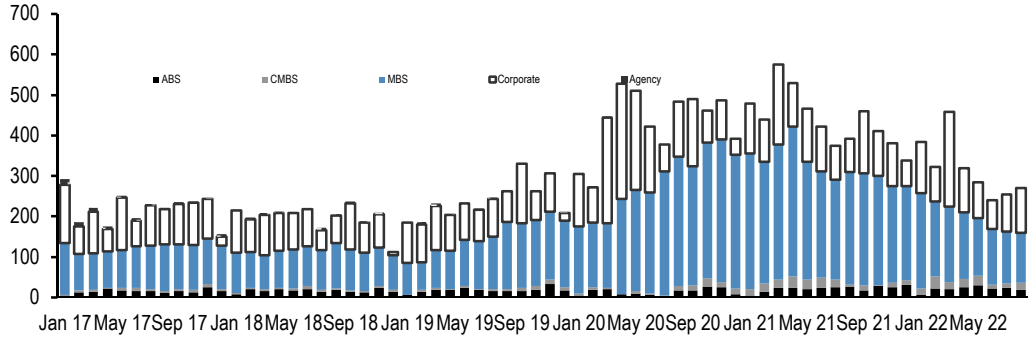
* spread to Treasuries

** spread to swaps

† Year-end forecasts only

Source: J.P. Morgan

Gross fixed-rate product supply*



*amount in $ billions

Source: J.P. Morgan

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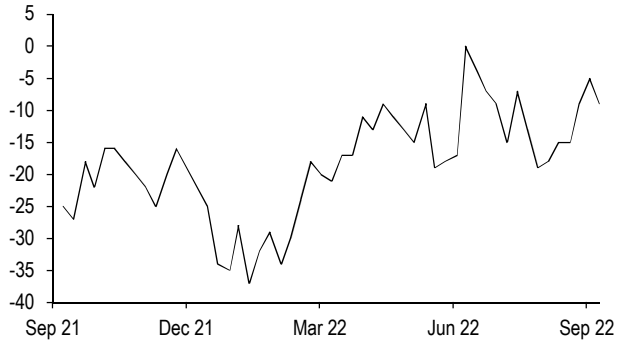
Treasury Client Survey

	Long	Neutral	Short	Changes
Sep 26, 2022	**13**	**65**	**22**	**7**
Sep 19, 2022	15	65	20	13
Sep 12, 2022	19	53	28	9
4-week avg	16	59	25	
52-week avg	12	58	30	

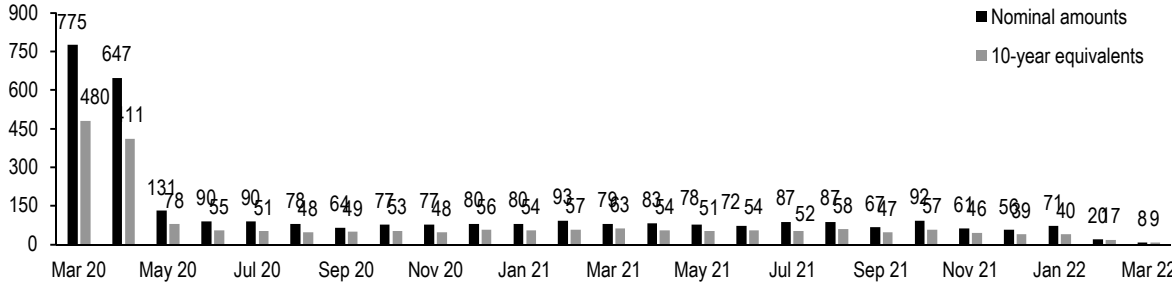
Source: J.P. Morgan



Source: J.P. Morgan

Covid-era Fed purchases of Treasuries

Monthly Fed QE* purchases of Treasuries in notional amounts versus in 10-year duration equivalents; $bn



* Starting 3/16/20
Source: Federal Reserve Bank of New York, J.P. Morgan

Fed QE* purchases of Treasuries per sector; $bn

	16-Mar-20 to 31-Oct-21		Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Total
0 to 2.25	955	0 to 2.25	11	20	22	6	0	59
2.25 to 4.5	624	2.25 to 4.5	16	7	21	0	4	48
4.5 to 7	444	4.5 to 7	11	10	11	3	0	34
7 to 20	226	7 to 10	6	3	5	3	2	19
20 to 30	319	10 to 22.5	4	6	3	3	0	17
1 to 7.5 TIPS	146	22.5 to 30	7	5	5	2	2	21
7.5 to 30 TIPS	95	1 to 7.5 TIPS	4	3	4	1	0	12
Bills	5	7.5 to 30 TIPS	2	2	1	1	1	7
Total	2813	Total	61	56	71	20	8	216

* Starting 3/16/20
Source: Federal Reserve Bank of New York

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Market Movers Calendar

Monday	Tuesday	Wednesday	Thursday	Friday
3 Oct **Manufacturing PMI** (9:45am) Sep final 51.7 **ISM manufacturing** (10:00am) Sep 51.5 **Construction spending** (10:00am) Aug -1.2% **Light vehicle sales** Sep 13.7mn Atlanta Fed President Bostic speaks (9:05am) New York Fed President Williams speaks (3:10pm)	**4 Oct** **Factory orders** (10:00am) Aug **JOLTS** (10:00am) Aug Dallas Fed President Logan speaks (9:00am) New York Fed President Williams speaks (9:00am) Cleveland Fed President Mester speaks (9:15am) Fed Governor Jefferson speaks (11:45am) San Francisco Fed President Daly speaks (1:00pm)	**5 Oct** **ADP employment** (8:15am) Sep **International trade** (8:30am) Aug -$68.2bn **Services PMI** (9:45am) Sep final 49.2 **ISM services** (10:00am) Sep 56.0 Atlanta Fed President Bostic speaks (4:00pm)	**6 Oct** **Initial claims** (8:30am) w/e Oct 1 200,000 Announce 10-year note (r) $32bn Announce 30-year bond (r) $18bn Announce 3-year note $40bn Chicago Fed President Evans speaks (1:00pm) Fed Governor Cook speaks (1:00pm) Fed Governor Waller speaks (5:00pm) Cleveland Fed President Mester speaks (6:30pm)	**7 Oct** **Employment** (8:30am) Sep 300,000 Average weekly hours 34.5 Unemployment rate 3.6% **Wholesale trade** (10:00am) Aug **Consumer credit** (3:00pm) Aug New York Fed President Williams speaks (10:00am)
10 Oct Chicago Fed President Evans speaks (9:00am) Fed's Vice Chair Brainard speaks (1:00pm) **Columbus Day, bond market closed**	**11 Oct** **NFIB survey** (6:00am) Sep Auction 3-year note $40bn	**12 Oct** **PPI** (8:30am) Sep Auction 10-year note (r) $32bn **FOMC minutes**	**13 Oct** **Initial claims** (8:30am) w/e Oct 8 **CPI** (8:30am) Sep Announce 20-year bond (r) $12bn Announce 5-year TIPS $21bn Auction 30-year bond (r) $18bn	**14 Oct** **Retail sales** (8:30am) Sep **Import prices** (8:30am) Sep **Business inventories** (10:00am) Aug **Consumer sentiment** (10:00am) Oct preliminary
17 Oct **Empire State survey** (8:30am) Oct	**18 Oct** **Business leaders survey** (8:30am) Oct **Industrial production** (9:15am) Sep **NAHB survey** (10:00am) Oct **TIC data** (4:00pm) Aug	**19 Oct** **Housing starts** (8:30am) Sep **Beige book** (2:00pm) Auction 20-year bond (r) $12bn	**20 Oct** **Initial claims** (8:30am) w/e Oct 15 **Philadelphia Fed manufacturing** (8:30am) Oct **Existing home sales** (10:00am) Sep **Leading indicators** (10:00am) Sep Announce 2-year FRN $24bn Announce 2-year note $42bn Announce 5-year note $43bn Announce 7-year note $35bn Auction 5-year TIPS $21bn	**21 Oct**

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Global Sovereign Research Universe*	6%	84%	10%
IB clients**	25%	60%	50%

*Please note that the percentages might not add to 100% because of rounding.
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